A Work Project, presented as part of the requirements for the Award of a Master's degree in Economics from the Nova School of Business and Economics

Family or Firm? Why Are the Women the Hardest Hit by the Pandemic Economic Crisis.

Ana Rita Adegas Cunha Nunes Damas

Student Number: 40873

Work project carried out under the supervision of:

Professor Ana Gouveia

January 2020

Abstract[*]

One striking effect of the pandemic economic crisis is the disproportionate adverse impact on women. This paper explores the roots of the gender heterogenous effects, using two rich and new micro-level databases. By formulating two hypotheses - the gender role and the sectorial composition hypothesis - we find that women are being severely affected by the current pandemic economic crisis both due to their traditional role as mothers and wives but also due to their prevalence in the hardest hit sectors such as accommodation and food services.

Keywords: Gender, COVID-19, Sector, Family.

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209)

[*] I would like to thank Professor Ana Gouveia for all the patience and support and to BPLIM and INE, to provide me the access to the micro-level data. I want to thank Professor Pedro Vicente and Victoire Girard for the comments and suggestions. Finally, I want to thank my mother, for always being by my side.

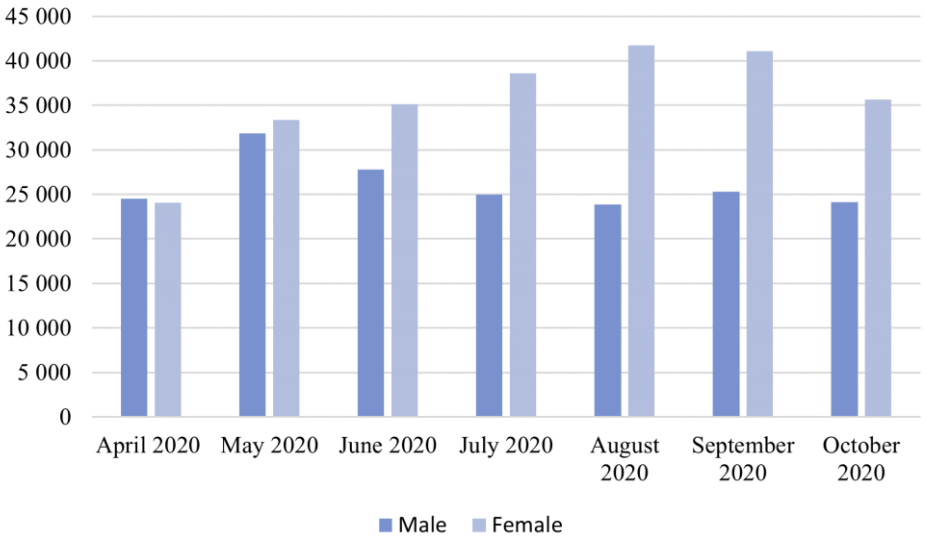
1. Introduction

An economic crisis affects differently people that belong to distinct social or demographic groups. The pandemic crisis, and the economic crisis that followed, has been highlighting old-established social inequalities, with the most vulnerable social groups suffering the most. Together with the younger and the poorer, there is another socioeconomic group that is being particularly harmed by the current crisis: the women.

A survey carried out in Portugal by ISCTE/ICS in May 2020 shows that the share of female respondents who are very worried about their financial position and that of their families is 14 percentage points (p.p.) above that of men (48% and 34%, respectively). The same for health concerns, with a gap of 10 p.p. (63% and 53%, respectively). Women have also been pointed out as the most psychological affected by the current crisis, reporting high levels of depression, anxiety, and stress (Paulino et al.,2020).

Figure 1 displays the monthly cumulative variation of the registered levels of unemployment. During the pandemic period, it has been an evident increase of the number of unemployed women, when compared to men in the same situation.

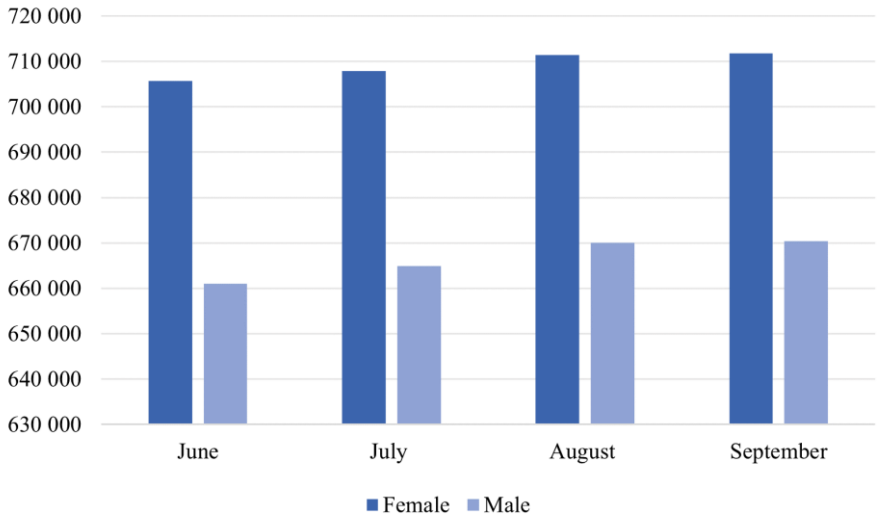
Figure 1: Monthly cumulative variation of unemployment, by gender



Source: IEFP.

In what regards to "simplified lay-off" (the Portuguese short-time working scheme), the number of women that accessed this measure clearly surpasses the number of men in the same situation– for instance, in August, the difference between the two accounts for close to 42 000 individuals (GEP.MTSS, 2020).

Figure 2: Number of individuals in simplified layoff



Source: GEP.MTSS.

Moreover, a recent report by the International Labour Organization (ILO) suggests that Portugal is the European Country in which female's salary decreased the most during the pandemics – for women, the fallout was 16%, clearly contrasting with the 11% for men.

This thesis aims at understanding the roots of the gender differences on the impact of the pandemic crises, exploring two possible explanations; one relates to gender roles in family support and the other to the sectorial composition of female work. To do so we use two rich micro-level datasets built during the pandemics: the first provides individual level data collected by ICS/ISCTE; and the second, from Statistics Portugal and Banco de Portugal, contains firm level data.

We show that women are being severely affected by the pandemic crisis because of the intensification of childcare and domestic work duties that results from the lockdowns and school closures (gender role hypothesis). Simultaneously, we also show that women are also strongly hit because they typically work on highly affected sectors (sectorial composition hypothesis). It is thus the combination of these factors that explains women outcomes during the recession. This result is relevant for policy makers and call for a gender-based agenda that allow for appropriate policy responses.

The remainder of the paper is organized as follows: in Section 2, we explore the rationale for the gender heterogenous effects of the pandemic economic crisis. We present our literature review, data and method, and results on Sections 3, 4 and 5, respectively. Finally, we conclude this paper by summarizing our results and reflecting about possible consequences of the current crisis for the future.

2. The roots of gender heterogeneous effects

2.1. The role of women

One possible explanation for the differential impact across men and women relate to the effects of the Great Lockdown. Schools and day centres close and children are sent back home to have online classes and to perform school activities online. During this period, several countries, including Portugal, implemented support measures that allowed parents to stay at home and teleworking was strongly encouraged (and even become mandatory, where possible). While the measures were gender neutral, there is evidence that gender roles are still present and thus one may expect the take up of additional family duties to be asymmetric. For the ones with minor children, women usually spend on average 6h per day on unpaid domestic work, more 4h per day than men (Sagnier et al. ,2019). The survey evidence during the pandemics confirms that women assumed an even more important role with school closures.

In the same line, the Eurofound's e-survey "Living, Working and COVID-19", launched to assess the impact of the pandemic in work-life balance and job quality, presents interesting but expected results that reinforce gender inequality. For instance, in Portugal and when asked about work-life balance, women's answers prove the intensity and frequency of this problem. To the question: "How often do you find it difficult to concentrate on your job because of your family responsibilities?", 8.5% of the inquired Portuguese woman reply, "all the time", almost doubling the share for male respondents (4.8%). Furthermore, when asked about the frequency of feeling too tired after work to do household jobs, 26% of women answer, "most of the time", 6pp above the ratio for men.

2.2 The sectorial composition of the crisis

Another possible explanation, beyond these gender disparities regarding "at home" work and family duties, concerns the sectorial composition of the crisis. Given the nature of the pandemics and the lockdowns that aim at stopping the spread of the virus, the most affected sectors are contact-intensive sectors, such as Accommodation and Food Services or Retail.

Similarly, to other countries, these are highly "feminized" sectors in Portugal: for instance, in Accommodation and Food Services sector close to 6 in every 10 employees are women (PwC (2015)) – this may explain the gender differences regarding unemployment.

3. Literature Review

While being a recent phenomenon, the literature regarding the implications of the COVID-19 pandemic on labour markets is evolving rapidly. One strand of this literature assesses to what extent this recession affects differently men and women, in order to grasp the implications of the current pandemic crisis on gender inequality.

The relation between gender gaps and periods of crisis is a widely studied topic in the literature and precedes the COVID-19 crisis. Hoynes, Miller, and Schaller (2012) use individual-level data from 1979 to 2011 from the Current Population Survey, Merged Outgoing Rotation Group (CPS-MORG) to measure how US employment and unemployment levels varied during the Great Recession according to gender. The impacts of the crisis are more strongly felt among men than women and the authors suggest that this result is justified by the fact that the hardest-hit sectors by the Great Recession, such as manufacturing and residential construction, usually employ a larger share of men. These are highly cyclical occupations, extremely exposed to variations in business cycles, which increases the vulnerability of workers in these sectors. Women, on the contrary, usually occupy acyclical areas such as education, health care or government sectors, less affected by the Great Recession. Due to the larger effect of the 2008 Financial Crisis on men, this is deeply associated with the so called "mancession" (Rampell ,2009; Irwin, Neil; Dennis,2009.; Thompson,2009).

Although the gap between male and female unemployment reached unprecedent levels in 2008, the disproportional impacts distribution of recessions among genders is not a novelty (Wall,2009). In fact, men have been severely harmed during pre – 2008 recessions; for instance,

in the period from 1969 to 1991, correspondent to the five recessions, men employment fell by approximately 3.1 percent, whereas women employment rose by 0.3 percent (Engmann, Kristie M; Wall,1982).

These examples illustrate that the effect of recessions on gender depends critically on the nature of the shock and the COVID-19 crisis has several distinctive features. Evidence suggests that women have been experiencing, since the beginning of the current crisis, higher unemployment levels (analogously, lower employment levels) than men. Alon et al. (2020) present two lockdown-related explanations for the high impact of the current crisis on women's employment: firstly, they suggest that national lockdowns and social distancing measures severely impact "contact-intensive" services such as accommodation and food services, hospitality or administrative, that typically retain a larger share of women (Mongey, Pilossoph, and Weinberg ,2020; Albanesi et al.,2020). Hence, women are considered, along the poorer, the hardest hit group by the COVID-19 crisis. To illustrate the severe impact of the current crisis on women's unemployment, the current crisis has been designated as a "shecession", a phenomenon described in the literature (Alon et al.,2020).

Furthermore, Alon et al. (2020) suggest a second explanation for the strong effect of the current crisis on women, which is deeply associated with childcare. As a consequence of the day centres and schools' closure, the authors emphasize the increase of childcare needs and the fact that women usually take responsibility for their kids, leading some of them to quit their jobs to do so (Adams-Prassl et al.,2020).

Several authors have been highlighting the unequal division of domestic work and childcare under Lockdown. For instance, Andrew et. al (2020) describe how parents in England are spending their time in the context of Lockdown, showing that mothers are spending more time in childcare and housework, compared to their partners. Their results suggest that mothers

find it harder to coordinate their working time with childcare and that, during Lockdown, women who have stopped working do more domestic work than men in the same situation do. Following the same reasoning, Farré et al. (2020) present evidence of the impact of COVID-19 in Spain, one of the hardest-hit countries in Europe. Although the authors find a substantial increase in the domestic work and childcare performed by men during Lockdown, they suggest women are still highly responsible for this kind of tasks, showing that this crisis reinforces gender inequality.

3.Data and Method

3.1. The gender role hypothesis:

i) Individual-level analysis:

To explore the gender role hypothesis, we first use data from the ICS/ISCTE survey, an individual-level database covering the months of March and May 2020. We rely solely on the second edition (May 2020), as it provides a more suitable framework to study the materialization of the effects of the crisis on individuals' working status, financial situation, and perceptions regarding the evolution of the pandemics; the March survey was carried out at a very early stage of the unfolding of the crisis.

We aim at assessing if women with children are more prone to work from home (teleworking) in comparison with men and with women with no children, while controlling for other socioeconomic characteristics. We also test for the probability of being under the short-time work scheme ("layoff simplificado").[1] We thus estimate the following regression:

$$(1) \qquad y_i = \beta_0 + \beta_1 Female_i + \beta_2 Younger_i + \beta_3 University_i + \beta_4 Children_i + \varepsilon_i$$

[1] While one may argue that the decision to be under short-time work schemes is solely of the employer, it is also true that the majority of firms do not have all their employees in the scheme, and thus there may be a selection of workers within the firm into the scheme.

Where i stands for individual i. The dependent variables are based on two dummies, namely (i) access to teleworking/remote working scheme (*y1*: 1 if the individual accessed the scheme, 0 otherwise) and (ii) access to the simplified lay-off, the Portuguese short-term remote working scheme (*y2*: 1 if the individual accessed the scheme, 0 otherwise). We control for sex, age, and level of education, respectively represented by *Female, Younger* and *University*: *Female* is a categorical variable equals 1 if the individual is a man, and 2 if it is a woman, while *Younger* is a dummy variable that takes the value 1 if the individual's age is between 18 and 44 years old and 0 if it is higher than 45 years old. To control for education, *University* is a dummy variable equals 1 the individual completed university, and 0 if the individual has completed high school or the third cycle. Also, we create a variable to represent the number of kids: (i) *Children* is a dummy variable that takes the value 1 if the individual does not have kids and 0, otherwise, (i.e., if the individual has kids in the kindergarten, pre-school, school from 1st year to high school, high school, or university). Our dummy does not handle the situation in which parents have a non-student kid (for example, those who are working).

We interact this variable, *Children*, with *Female*, to evaluate if women with kids accessed more to teleworking or lay-off when compared to men in the same situation. Hence, we can test to which extent gender roles are still present in today's households. To do so, we estimate the following regression:

(2) $$y_i = \beta_0 \; + \; + \beta_1 \, Younger_i + \; \beta_2 \, University_i + \beta_3 \, Female_i * Children_i + \; \varepsilon_i$$

Table 1 displays the summary statistics for our dependent variables, access to lay-off and teleworking, by gender. Despite the differences in means for our dependent variables, we do not find statistical evidence that women are more likely to access both teleworking and lay-off scheme. Adding family composition to the analysis allows further insights (Table 2): there is no statistically significant difference between women with and without children, in what

regards to teleworking. This provides support to the sectorial composition of the shock relatively to the family role argument: it is the sectors where women work – contact sectors, more subject to restrictions - that shape the higher reliance on teleworking, and not their family responsibilities.

Table 1: Descriptive statistics for teleworking and layoff

Variables	N	mean	sd
Teleworking			
Male	142	0.352	0.479
Female	147	0.442	0.498
Layoff			
Male	117	0.214	0.412
Female	111	0.261	0.411

Source: Author's computations based on ICS/ISCTE Survey (May edition).

Concerning layoff, men with and without kids present the same probability of accessing layoff in comparison with women with children. The share is significantly higher for women without children. A possible explanation may be that sectors with a higher share of women were the most affected (and that explains why women are more exposed to the layoff scheme), but there was a social concern in selecting those workers with lower family financial pressure, given the loss in income associated with the layoff scheme. In both cases, the descriptive analysis does not render support to the family roles assumption.

Table 2: Descriptive Statistics for teleworking and layoff (including the presence of kids)

Variables	N	Mean	sd	Min	Max
Layoff					
*Male*Children=0*	63	0.206	0.408	0	1
*Male*Children=1*	52	0.212	0.412	0	1
*Female*Children=0*	63	0.286	0.455	0	1
*Female*Children=1*	47	0.213	0.414	0	1
Teleworking					
*Male*Children=0*	76	0.342	0.478	0	1
*Male*Children=1*	65	0.369	0.486	0	1
*Female*Children=0*	82	0.451	0.501	0	1
*Female*Children=1*	64	0.422	0.498	0	1

Source: Author's computations based on ICS/ISCTE Survey (May edition).

To evaluate the impact of having kids at different ages on the access to lay-off and teleworking, we create a new variable *Children2*, to measure the number of kids. *Children2* is a categorical variable that is equal to 0 if the individual does not have kids, 1 if the individual has kids in the kindergarten, pre-school, or school from the first year to high school and 2 if the individual has kids on high school or university. With the inclusion of this variable, which replaces *Children*, we are not only evaluating if there are differences in the access to lay-off or teleworking due to the presence of kids: in this case, we want to assess if the access to lay-off or teleworking is different for parents that have younger children (i.e., kids in the kindergarten, pre-school or school), for parents that have older kids (i.e., kids in the high school or university) and finally, for those who do not have kids. Since the inclusion of *Children2* produces the same results as before (i.e., the results with *Children)*, we will not include it in our specification. The summary statistics for the independent variables are described in the following table (Table 3).

Table 3: Descriptive Statistics for the independent variables

Variables	(1) N	(2) mean	(3) sd	(4) min	(5) max
Female	622	1.539	0.499	1	2
University	622	0.659	0.474	0	1
Younger	622	0.352	0.478	0	1
Children	616	0.341	0.474	0	1

Source: Author's computations based on ICS/ISCTE (May edition).

An important limitation of the above specification is that we do not have access to work-related variables, namely the sector and the firm where the individual works. We thus explore an alternative dataset, with firm-level data (but no individual-level data).

ii) Firm-level analysis

We use data from COVID-IREE (*Inquérito Rápido e Excecional às Empresas*), a firm-level database with bi-weekly frequency from Statistics Portugal and Banco de Portugal, covering the period from April to June 2020[2]. This database assesses the impact of the pandemics on firms' activity, namely on turnover, workforce, prices, credit conditions and access to Government support measures. For those firms, we have access to a second database IES (*Informação Empresarial Simplificada*), also at firm-level, which provides annual balance sheet and profit and loss data, information that allow us to understand the health of these firms before the pandemic shock.

For the same quality of the firm pre-crisis and for the same magnitude of the shock (factors we control for in our regression) we test if sectors with a higher share of women[3] are more likely to resort to support measures that imply the workers staying at home (teleworking

[2] It is not possible to explore the panel dimension as the relevant questions used in our study are not repeated in the different vintages.

[3] We do not have access to the firm-level share of women, and thus we rely on the sectorial share to capture sectorial differences.

or layoff) than to use other support measures (such as credit guarantees or credit moratoria). Absent family duties, there should be no difference.

Our identification strategy thus relies on the economic sectors' degree of "feminization" (i.e., share of women). Using sectorial data from Statistics Portugal, we create a continuous variable that captures the degree of the feminization of the different granular sectors (CAE 3-digits)

We estimate the following regression:

$$(3) \qquad y_i = \beta_0 + \beta_1 Turnover_i + \beta_2 Activity_i + \beta_3 Financial_i + \beta_4 Liquidity_i + \beta_5 EBITDA_i + \beta_6 Profitability_i + \beta_7 Solvability_i + \beta_8 Growth_i + \beta_9 Share_i + \varepsilon_{it}$$

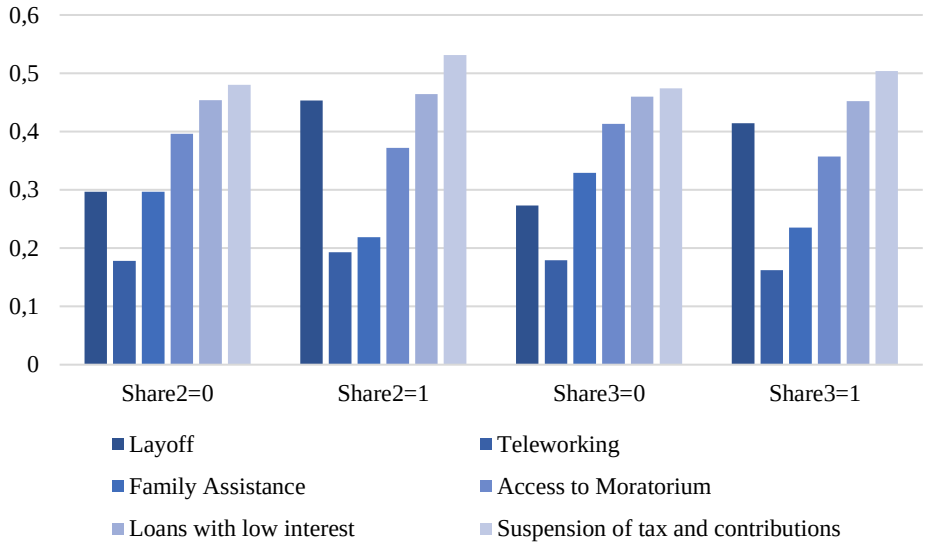
Following our research strategy, the dependent variables are (i) access to lay-off, the Portuguese short-time working scheme (*y1*: 1 if the firms accessed the scheme, 0 otherwise); (ii) use of teleworking/remote working scheme (*y2*: 1 if the firms accessed the scheme, 0 otherwise); (iii) workers in family assistance due to the state of emergency (*y3:* 1 if the workers accessed the family assistance, 0 otherwise); (iv) access to moratorium for the payments of interests and principal on existing loans (*y4:* if the firm accessed the moratorium for the payments of interests and principal on existing loans, 0 otherwise); (v) access to new loans with low interests or State guarantees (*y5:* if the firm accessed to new loans with low interests or State guarantees, 0 otherwise) and (vi) use of the suspension of payment of tax and contributory obligations (*y6:* if the firm used the suspension of payment of tax and contributory obligations, 0 otherwise).

We use OLS to evaluate if the access to lay-off, remote working and family assistance is higher in more "feminized" firms (i.e., firms that belong to sectors that employ a larger share of women), respectively represented by *y1*, *y2* and *y3*. These dependent variables allow us to

assess if firms with more women privilege the use of these measures to perform childcare and household work. We then compare the access of these firms to other Government support measures, respectively represent by *y4*, *y5* and *y6*. Absent gender roles, there should be no difference concerning the access to these measures and the access to layoff, remote working, and assistance to the family.

Regarding the independent variables, we include *Turnover*, a categorical variable that represents the estimation of the reduction of the turnover for each firm, to control for the intensity of the shock. We include *Activity*, as well, a categorical variable equals 1 if the enterprise can remain in activity without additional liquidity measures for less than one month or for one/two months and 0, if the firm is able to remain in activity without additional liquidity measures for more than three months. We also add several variables to our specification to speak for the pre-COVID-19 firm's situation: *Financial, Liquidity, EBITDA, Profitability, Solvability,* and *Growth* respectively represent financial autonomy, liquidity, EBITDA margin, profitability, solvability, and the sector's growth opportunities. The dimension and age of the firm are represented by *Age* and *Dimension*. Finally, *Share1* is a continuous variable that represents the proportion of women by sector (CAE-3 digits). Also, we create two dummy variables, *Share2* and *Share3*, which represent different scenarios concerning the women composition of each firm: *Share2* is a dummy variable that is equal to 1 if the proportion of women is greater or equal than 50% (and 0, otherwise) and *Share3* is a dummy variable that takes the value 1 if the proportion of women is greater or equal than 60% and 0 if it is lower than 40%. The means of our dependent variables, by *Share2* and *Share3*, are represented in Figure 3.

Figure 3: Means of the dependent variables, by *Share2* and *Share3*



Source: Author's computations based on COVID-IREE.

To answer our research question, we use data from the edition 23 of the COVID-IREE (i.e., from the first fortnight of July) and from the edition 17 (i.e., from week of 20th April). In this case, we do not use the temporal dimension of the dataset because the relevant research questions are not included in all editions of the inquiry.

5. Results

5.1. The gender role hypothesis

i) Individual-level analysis:

i) The case of teleworking:

Table 4 displays the estimates for the access to teleworking. As expected, access to remote working schemes is significantly higher for individuals that have completed university. There is no statistical evidence neither for *Younger, Female* nor for *Children:* hence, we can infer that there is no gender difference and that an individual with and without kids present the same probability of accessing teleworking.

To test our family role hypothesis, we interact *Female* with *Children*: this allows us to assess whether women with kids are more likely to work from home when compared to men in the same situation and to women without children. The results for this specification, that includes the interaction term, are described in Table 4, as well. We do not find evidence supporting the family role assumption.

ii) The case of Lay-off:

Table 4 presents the estimation results regarding layoff. As accessing layoff is a decision of the firm, and it is subject to conditionality (only available to firms with a severe loss in turnover), a positive coefficient on Female would render support to the sectorial composition hypotheses. We find a higher prevalence of younger and lower educated individuals. However, when controlling for education and age, women were not disproportionately more affected, which would be the case under the sectorial composition hypothesis.

Similar to teleworking, we interact Female and Children, in order to assess if there was selection of mothers into the scheme. This is possible as, within a firm, not all employees are under the scheme. Here, two factors play on opposite directions and thus the result is an empirical question: on the one hand, mothers could self-select into the scheme, in order to provide assistance to their children; on the other hand, given that the scheme entails a paycut, they are also less likely to be able to afford such a wage reduction. Either way, we find no evidence of statistical differences between mothers on the one hand and fathers or women without children.

Table 4: OLS estimates for teleworking and layoff

Variables	Teleworking	Teleworking	Layoff	Layoff
Younger	0.00499	0.00567	0.147**	0.156***
	(0.0553)	(0.0554)	(0.0567)	(0.0576)
University	0.359***	0.358***	-0.0281	-0.0353**
	(0.0560)	(0.0563)	(0.0608)	(0.0619)
Female	0.0473	0.0544	0.0563	0.112
	(0.0547)	(0.0734)	(0.0557)	(0.0782)
1.Children		0.0257		0.00549
		(0.0745)		(0.0758)
*Female*1*		-0.0157		-0.123
		(0.109)		(0.115)
Children	0.0177		-0.0530	
	(0.0544)		(0.0558)	
Constant	0.202***	0.198***	0.166***	0.137**
	(0.0518)	(0.0557)	(0.0518)	(0.0571)
Observations	287	287	225	225
R-squared	0.139	0.139	0.034	0.039

Notes: Table 4 presents the OLS estimates for teleworking and layoff and the correspondent robust standard errors. In the first two columns, we find the results estimates for teleworking: the first column results exclude the interaction term, while the second one includes it. In what regards layoff, the third column does not include the interaction term, while the fourth and last column includes it.

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

i) Firm-level analysis:

We also test the gender role hypothesis using firm-level information. In our regressions, we include different variables to capture the degree of feminization of each firm, namely *Share1*, *Share2* and *Share3*. Since these variables measure the same, we run three different regressions in order to allow for the presence of each one of these variables, separately. With the inclusion of *Share1*, *Share2* and *Share3*, we evaluate the impact of variations in firms' women proportion in the access of each scheme/each measure. Our estimates are represented in Table 5.

Considering the significance of our estimates, we conclude that *Share1*, *Share2* and *Share3* present significant evidence for the access to lay-off, teleworking and family assistance. Whether we are considering the case in which a firm has 50% of women (represented by the

inclusion of *Share2*) or the case in which it has 60% women and 40% men (represented by the use of *Share3),* we conclude that the proportion of women significantly influences the access to lay-off, teleworking and family assistance. The same verifies when we measure the proportion of women is represented by the continuous variable *Share1*. For Government measures (i.e., Family Assistance, Access to Moratorium, Access to loans with low interest and Suspension of tax and contributions), our estimates of *Share1, Share2* or *Share3* do not provide statistical evidence.

Focusing on the sign of our estimates, we conclude that, for lay-off and family assistance, the proportion of women, whether measured by *Share1, Share2* or *Share3*, has a positive impact: hence, firms with more women are recurring more to schemes like Lay-off or Family Assistance, as expected. The same does not happen for teleworking: we find a negative relation between the proportion of women and the access to teleworking.

We argue that the statistically significance of our estimates of *Share1, Share2* and *Share3* for lay-off, teleworking and family assistance, when compared to the non-significant estimates for the access Government measures, (i.e., Family Assistance, Access to Moratorium, Access to loans with low interest and Suspension of Tax and contributions), prove our gender role hypothesis. Absent gender roles, there should be no difference concerning the access to these measures.

We suggest that firms with a higher proportion of women rely more on layoff and family assistance schemes due to childcare needs and to domestic work. In the case of teleworking, the results show that women are less likely to access this measure. We argue that, in this period in which teleworking was not mandatory, women choose not to work from home because they are unable to reconcile their work with family duties. These results reinforce the hypothesis that women are being severely affected due to their status as mothers and wives.

Table 5: OLS Estimates

Variables	Layoff	Teleworking	Family Assistance	Access to Moratorium	Access to loans with low interest	Suspension of Tax and contributions
Share1	0.011***	-0.191***	0.06***	-0.008	0.021	-0.012
	(0.0015)	(0.0017)	(0.004)	(0.0012)	(0.0083)	(0.0012)
Share2	0.244***	-0.141**	0.181***	-0.002	0.004	-0.0095
	(0.0015)	(0.706)	(0.005)	(0.0012)	(0.0083)	(0.0012)
Share3	0.297***	-0.424**	0.233***	-0.061	0.035	-0.069
	(0.087)	(0.108)	(0.005)	(0.0682)	(0.0704)	(0.0690)

Notes: Table 5 displays the estimates for our variables of interest: layoff, teleworking, family assistance, access to moratorium, access to loans with low interest and suspension of Tax and contributions. We control for the decrease in firm's turnover *(turnover)* and for the additional months that the firm can remain in activity without additional liquidity measures *(activity)* to capture the intensity of the shock. We also include financial autonomy, liquidity, EBITDA margin, profitability, solvability, sector's growth opportunities, age and dimension to control for the health of the firm before the pandemics.

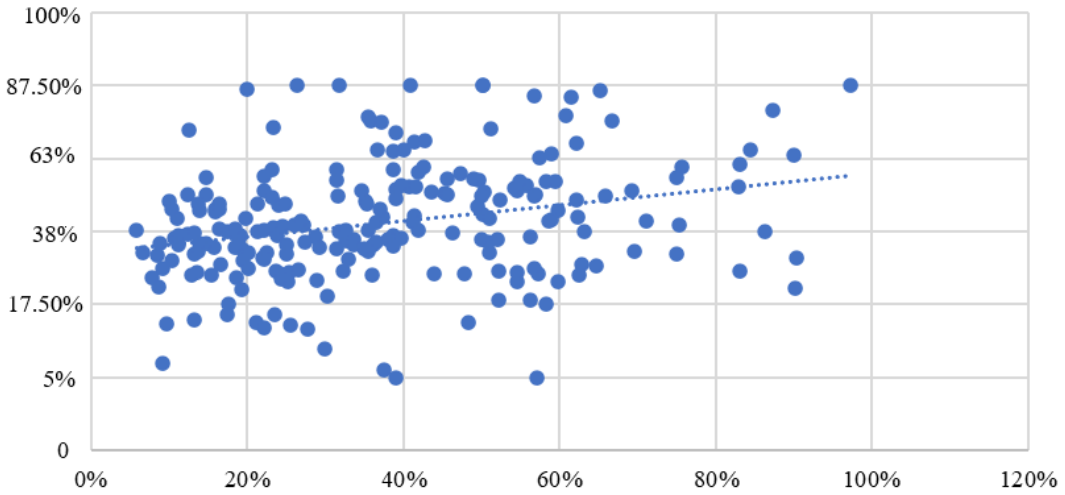
Robust Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.2. The sectorial composition hypothesis:

To test the sectorial composition hypothesis (i.e., to assess to which extent women are being severely affected because of the sectors in which they typically work), we first perform a scatter-plot analysis, represented in Figure 4. With this analysis, we aim to assess the relation between the share of women in each sector, displayed in x axis, with the decrease in turnover, represented in the y axis.

As one might observe from Figure 4, we find an evident positive relation between the share of women and the decrease in turnover, displayed by the trendline in the graph. This render support to our sectorial composition hypothesis: the highly "feminized" sectors are the ones who are being more negatively affected by the current pandemic economic crisis.

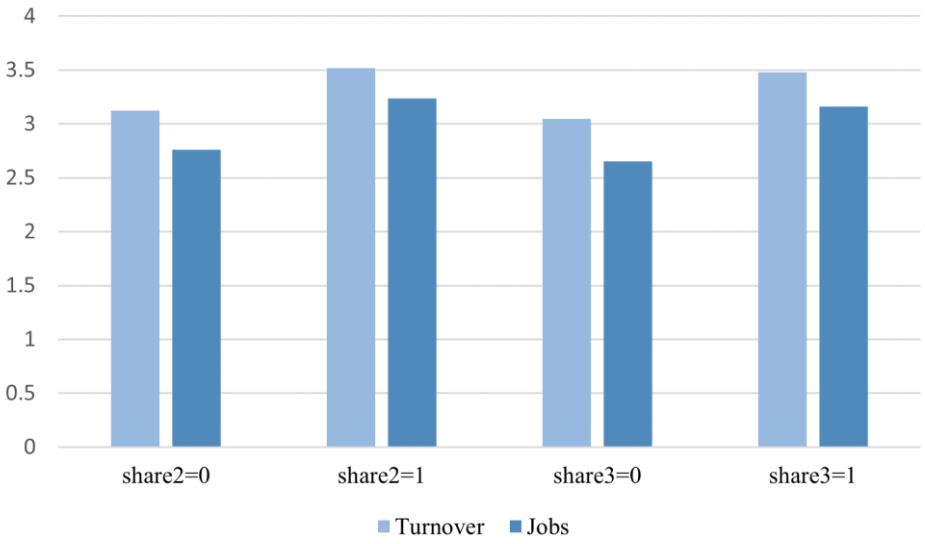
Figure 4: Evolution of sector's decrease in turnover, by women's proportion



Notes: The values displayed in the y axis corresponds to the medium decrease of turnover in each sector. Source: Author's computations based on COVID-IREE.

Second, we explore the descriptive statistics of two variables that represent the impact of the current pandemic crisis, by *Share2* and *Share3*, our dummies that represent the women proportion of the firm: *Turnover*, that represents the estimate for the decrease in turnover during the reference period, and *Jobs*, also a categorical variable representative of the reduction of persons employed in the reference period. In this analysis, we rely solely on our dummies to represent the degree of feminization – for this reason, *Share1*, our continuous variable, is excluded. These variables equal 1 if the decrease is estimated to be less than 5%, equals 2 if between 10% and 25%, equals 3 if between 26% and 50%, 4 if between 51% and 75% and finally, equals 5 if more than 75%. The results are displayed in Figure 5:

Figure 5: Descriptive Statistics of *Turnover* and *Jobs*, by *Share1* and *Share2*



Source: Author's computations based on COVID-IREE.

Finally, to test our sectorial composition analysis, we run an OLS regression. In this analysis, our dependent variable aims to represent the impact of the pandemic economic crisis on firms – hence, we rely on *Activity*, a dummy variable equals 1 if the enterprise can remain in activity without additional liquidity measures for less than one month or for one/two months and 0 if the firm is able to remain in activity without additional liquidity measures for more than three months. Our independent variables capture the degree of feminization of the firm. The estimate results are presented in Table 6. Besides the statistical significance evidence for the coefficients, we find that they are all positive, meaning that the proportion of women has a positive relation with the decrease in the number of months that the firm can remain in activity without liquidity measures.

Table 6: OLS Estimates

Variables	*Activity*
Share1	0.011***
	(0.0026)
Share2	0.396***
	(0.011)
Share3	0.433***
	(0.0146)

Notes: Table 6 displays the OLS estimates.

Robust Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. Conclusion

Following two different avenues - the gender role and the sectorial composition approaches - we aim to explore the origin of the disproportionate negative impact of the crisis on a particular group: women. We use individual-level data from a survey carried out by ICS/ISCTE, in May, to evaluate if women are being more severely affected due to increase in childcare and unpaid domestic work needs, which naturally intensified with the lockdown. Since this is a non-representative survey, we complement our analysis with *Inquérito Rápido e Excecional Às Empresas* (COVID-IREE), a rich database of *Banco de Portugal* and Statistics Portugal that combines information concerning the impact of the crisis on firms. This database allows us to test our sectorial composition hypothesis, as well.

We find an evident positive relation between the proportion of women and the decline in firm's turnover, which render support to our sectorial composition hypothesis. Women are overrepresented in those sectors that were more harmed by the containment measures put in place, in particular social distancing and limits to mobility. At the same time, our results are also in line with the gender role hypothesis. When comparing the access of the firms to other support measures, we find that firms with a higher proportion of women rely more on measures like layoff ("layoff simplificado") and assistance to the family. For teleworking, we argue that,

as it is much more an employee's decision, women decide not to rely to as much on this measure because they find it very difficult to reconcile their working and family duties. While the ICS/ISCTE survey does not render support to this gender role hypothesis, it is important to keep in mind that it is not representative and does not include the respondent's working sector, two important limitations. Women of higher qualifications are over represented, and thus we cannot exclude the possibility of selection bias.

Our study can be extended in a number of ways. In subsequent analysis, we will rely on worker level data, combined with the firm-level data already used, in order to better assess the prevalence of women at the company level, thus exploring within sector effects that will allow for a more robust identification strategy. Moreover, while family composition is a key factor to ascertain the family role hypothesis, our individual level data are not robust enough to perform a solid analysis. A more comprehensive and representative database is essential to verify our results. Finally, it would be extremely useful to have information on family links among the respondents, in order to be able to determine decisions at the household level.

The current pandemic economic crisis and its consequences call for a gender-based agenda. In this setting, ublic policy and appropriate policy responses are vital to fight gender inequality, a phenomenon that was reinforced with the crisis.

References

Adams-Prassl, Abi, Teodora Boneva, Marta Golin, and Christopher Rauh. 2020. 'Inequality in the Impact of the Coronavirus Shock: Evidence from Real Time Surveys'. *Journal of Public Economics* 189 (13183). https://doi.org/10.1016/j.jpubeco.2020.104245.

Albanesi, Stefania, Rania Gihleb, Jialin Huo, and Jiyeon Kim. 2020. 'Household Insurance and the Macroeconomic Impact of the Novel Coronavirus'. *Unpublished Manuscript, University of Pittsburgh*.

Alon, Titan, Matthias Doepke, Jane Olmstead-Rumsey, and Michèle Tertilt. 2020. 'This Time It's Different: The Role of Women's Employment in a Pandemic Recession'. *National Bureau of Economic Research*. https://doi.org/10.3386/w27660.

Engmann, Kristie M; Wall, Howard J. 1982. 'The Effects of Recessions Accross Demographic Groups'. *Nature* 297 (5861): 2. https://doi.org/10.1038/297002a0.

Farré, Lídia, Yarine Fawaz, Libertad González, and Jennifer Graves. 2020. 'How the COVID-19 Lockdown Affected Gender Inequality in Paid and Unpaid Work in Spain'. *IZA Discussion Paper* 13434 (13434).

Hoynes, Hilary, Douglas L. Miller, and Jessamyn Schaller. 2012. 'Who Suffers during Recessions?' *Journal of Economic Perspectives* 26 (3): 27–48. https://doi.org/10.1257/jep.26.3.27.

Irwin, Neil; Dennis, Brady. n.d. 'Jobs Market: Men, Hit Hardest in Recession, Are Getting Work Faster than Women - The Washington Post'. Accessed 25 December 2020. https://www.washingtonpost.com/business/economy/jobs-market-men-hit-hardest-in-recession-are-getting-work-faster-than-women/2011/07/06/gIQAbGxH1H_story.html.

Mongey, Simon, Laura Pilossoph, and Alex Weinberg. 2020. 'Which Workers Bear the

Burden of Social Distancing Policies?' *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3586077.

Paulino, Mauro, Rodrigo Dumas-Diniz, Sofia Brissos, Rute Brites, Laura Alho, Mário R Simões, and Carlos F Silva. 2020. 'COVID-19 in Portugal: Exploring the Immediate Psychological Impact on the General Population'. *Psychology, Health & Medicine*, 1–12.

Pwc. 2015. 'Mulheres Em Portugal: Onde Estamos e Para Onde Queremos Ir'. https://www.pwc.pt/pt/publicacoes/imagens/2015/pwc-mulheres-em-portugal.pdf.

Rampell, Catherine. n.d. 'As Layoffs Surge, Women May Pass Men in Job Force - The New York Times'. Accessed 25 December 2020. https://www.nytimes.com/2009/02/06/business/06women.html.

Sagnier, Laura, Alex Morell, Gloria Yanguas, and Beatrice Baumberger. 2019. *As Mulheres Em Portugal , Hoje: Quem São , o Que Pensam e Como Se Sentem.*

Thompson, Derek. 2009. 'Its Not Just a Recession. Its a Mancession!' *The Atlantic (July 9). Http://Www. Nber. Org/Papers/Wl4656. Pdf*.

Wall, Howard J. 2009. 'The "Mancession" of 2008-09: It's Big But It's Not Great', no. October: 4–9.

Appendix A – Data

A.1. Descriptive Statistics

Table 7: Descriptive Statistics

Variables	Freq.	Percent.
Lay-off		
Share2=0	1,945	29.79%
Share2=1	1,650	45.28%
Share3=0	1,371	27.28%
Share3=1	748	41.37%
Teleworking		
Share2=0	1,161	17.78%
Share2=1	702	19.26
Share3=0	898	17.87%
Share3=1	292	16.15%
Family Assistance		
Share2=0	1,149	29.69%
Share2=1	535	21.90%
Share3=0	1,008	32.84%
Share3=1	300	23.49%
Access to Moratorium		
Share2=0	2,127	39.59%
Share2=1	1,115	37.14%
Share3=0	1,178	41.30%
Share3=1	554	35.67%
Access to loans with low interest		
Share2=0	2,444	45.39%
Share2=1	1,397	46.43%
Share3=0	1,963	45.99%
Share3=1	712	45.18%
Suspension of tax or contributions		
Share2=0	2,651	47.99%
Share2=1	1,744	53.06%
Share3=0	2,090	47.55%
Share3=1	858	50.41%

Source: Author's computations based on COVID-IREE.

A.2. COVID-IREE Results

Table 8: OLS estimates including *share1*

Variables	Lay-off	Teleworking	Family Assistance	Access to Moratorium	Access to loans with low interest	Suspension of Tax or contributions
turnover						
2.10%-25%	0.265***	0.151	0.188	0.22**	0.610***	0.148
	(0.09)	(0.99)	(0.135)	(0.105)	(0.105)	(0.104)
3.26%-50%	0.870***	0.009	-0.594***	0.398***	0.658***	0.468***
	(0.09)	(0.103)	(0.129)	(0.103)	(0.103)	(0.100)
4.51%-75%	1.456***	0.055	-1.215***	0.362***	0.796***	0.739
	(0.12)	(0.130)	(0.136)	(0.106)	(0.108)	(0.105) ***
5.>75%	0.908***	0.31**	-1.587***	0.509***	0.873***	0.851***
	(0.125)	(0.138)	(0.135)	(0.102)	(0.104)	(0.102)
Activity	0.397***	-0.400***	-0.112***	0.616***	0.597***	0.512***
	(0.075)	(0.091)	(0.06)	(0.005)	(0.05)	(0.050)
Financial	-0.001	-0.006***	0.0011	-0.003***	-0.005***	-0.0041***
	(0.0011)	(0.012)	(0.0012)	(0.0006)	(0.509)	(0.001)
Liquidity	-0.0012	-0.012	0.0033	-0.026***	-0.0055***	-0.013***
	(0.006)	(0.007)	(0.012)	(0.006)	(0.011)	(0.005)
EBITDA	-0.103	-0.764	0.00167	-0.001	-0.002	-0.00128
	(0.028)	(0.0694)	(0.0036)	(0.0002)	(0.0194)	(0.00015)
Profitability	-0.130	0.268	-0.210	-0.433**	-0.094	0.031
	(0.216)	(0.244)	(0.216)	(0.207)	(0.204)	(0.157)
Solvability	0.005	0.407**	0.192	0.692	0.956	0.0521
	(0.177)	(0.193)	(0.203)	(0.137) ***	(0.146) ***	(0.148)
Growth	0.0016	-0.002*	-0.004	-0.004	-0.0018	-0.031
	(0.0011)	(0.0011)	(0.0076)	(0.0002)	(0.0105)	(0.107)
Share1	**0.011*** **	**-0.191*** **	**0.06*** **	**-0.008**	**0.021**	**-0.012**
	(0.0015)	(0.0017)	(0.004)	(0.0012)	(0.0083)	(0.0012)
Age	0.011***	-0.0039**	0.0008	0.005***	0.004***	0.0026***
	(0.0016)	(0.0018)	(0.0017)	(0.0014)	(0.0146)	(0.0015)
Dimension	0.004	-0.0039	0.0049**	-0.008	-0.015	-0.04***
	(0.011)	(0.018)	(0.012)	(0.0094)	(0.009)	(0.009)
Observations	2,235	2,235	2,705	3,141	3,170	3,314
R-squared	0.1391	0.0423	0.285	0.0866	0.1074	0.1245

Table 9: OLS estimates including *share2*

Variables	Lay-off	Teleworking	Family Assistance	Access to Moratorium	Access to loans with low interest	Suspension of Tax or contributions
Turnover						
2.10%-25%	0.296***	0.147	0.184	0.22**	0.607***	0.150
	(0.09)	(0.99)	(0.135)	(0.105)	(0.105)	(0.104)
3.26%-50%	0.906***	0.004	-0.596***	0.393***	0.652***	0.459***
	(0.09)	(0.103)	(0.129)	(0.103)	(0.103)	(0.100)
4.51%-75%	1.495***	0.055	-1.242***	0.362***	0.796***	0.737***
	(0.12)	(0.129)	(0.137)	(0.106)	(0.108)	(0.105)
5.>75%	0.908***	0.299**	-1.623***	0.509***	0.873***	0.843***
	(0.125)	(0.138)	(0.135)	(0.102)	(0.104)	(0.102)
Activity	0.386***	-0.406***	-0.212***	0.616***	0.597***	0.506***
	(0.075)	(0.0921)	(0.06)	(0.005)	(0.05)	(0.050)
Financial	-0.001	-0.006***	0.0011	-0.003***	-0.005***	-0.0041***
	(0.0011)	(0.012)	(0.0012)	(0.0006)	(0.509)	(0.001)
Liquidity	-0.0012	-0.012	0.0033	-0.026***	-0.0055***	-0.013***
	(0.006)	(0.007)	(0.012)	(0.006)	(0.011)	(0.005)
EBITDA	-0.102	-0.102	0.00167	-0.001	-0.002	-0.00128
	(0.0126)	(0.0136)	(0.0036)	(0.0002)	(0.0194)	(0.00015)
Profitability	-0.131	0.270	-0.229	-0.433**	-0.094	0.031
	(0.216)	(0.245)	(0.216)	(0.207)	(0.204)	(0.157)
Solvability	-0.006	0.408**	0.172	0.692	0.956	0.07234
	(0.174)	(0.193)	(0.199)	(0.137) ***	(0.146) ***	(0.148)
Growth	0.0016	-0.002*	-0.004	-0.004	-0.0018	-0.031
	(0.0011)	(0.0011)	(0.0076)	(0.0002)	(0.0105)	(0.107)
Share2	**0.244*** **	**-0.141** **	**0.181*** **	**-0.002**	**0.004**	**-0.0095**
	(0.0015)	(0.706)	(0.005)	(0.0012)	(0.0083)	(0.0012)
Age	0.0103***	-0.0039**	0.0008	0.005***	0.004***	0.0026***
	(0.0016)	(0.0018)	(0.0017)	(0.0014)	(0.0146)	(0.0015)
Dimension	0.075	-0.057**	0.0049**	-0.008	-0.015	-0.04***
	(0.011)	(0.0128)	(0.012)	(0.0094)	(0.009)	(0.009)
Observations	2,235	2,235	2,708	3,144	3,173	3,317
R-squared	0.1260	0.0434	0.2069	0.0855	0.1066	0.1238

Table 9: OLS estimates including *share3*

Variables	Lay-off	Teleworking	Family Assistance	Access to Moratorium	Access to loans with low interest	Suspension of Tax or contributions
Turnover						
2.10%-25%	0.252***	0.055	0.137	0.374**	0.712***	0.199
	(0.108)	(0.120)	(0.150)	(0.118)	(0.120)	(0.118)
3.26%-50%	0.895**	0.072	-0.643***	0.573***	0.706***	0.498***
	(0.108)	(0.121)	(0.143)	(0.118)	(0.118)	(0.115)
4.51%-75%	1.648***	-0.205	-1.295***	0.621***	1.017***	0.929***
	(0.155)	(0.181)	(0.155)	(0.123)	(0.127)	(0.124)
5.>75%	0..738***	0.404	-1.623***	0.658***	1.037***	0.770***
	(0.150)	(0.171)	(0.135)	(0.118)	(0.121)	(0.117)
Activity	0.542***	-0.750***	-0.158***	0.542***	0.554***	0.537***
	(0.094)	(0.134)	(0.150)	(0.60)	(0.061)	(0.050)
Financial	0.006	-0.07***	0.0011	-0.002***	-0.005***	-0.0041***
	(0.0014)	(0.016)	(0.0012)	(0.0007)	(0.0014)	(0.001)
Liquidity	-0.0012	-0.0076	0.0033	-0.026***	-0.0055***	-0.013***
	(0.006)	(0.007)	(0.012)	(0.006)	(0.011)	(0.005)
EBITDA	-0.147	-0.559	0.00167	-0.001	-0.002	-0.00128
	(0.0847)	(0.0463)	(0.0036)	(0.0002)	(0.0194)	(0.0006)
Profitability	-0.644	0.364	-0.229	-0.433**	-0.094	0.031
	(0.296)	(0.324)	(0.216)	(0.207)	(0.204)	(0.157)
Solvability	-0.151	0.548**	0.172	0.685 ***	0.956 ***	0.07234
	(0.233)	(0.268)	(0.199)	(0.137)	(0.146)	(0.148)
Growth	0.0016	-0.004*	-0.004	-0.004	-0.0018	-0.031
	(0.0011)	(0.0011)	(0.0076)	(0.0007)	(0.0105)	(0.107)
Share3	**0.297*** **	**-0.424** **	**0.233*** **	**-0.061**	**0.035**	**-0.069**
	(0.087)	(0.108)	(0.005)	(0.0682)	(0.0704)	(0.0690)
Age	0.009***	-0.0059**	0.0008	0.005***	0.004***	0.0026***
	(0.002)	(0.0023)	(0.0017)	(0.0011)	(0.0146)	(0.0015)
Dimension	0.035***	-0.063***	0.0049**	0.005	-0.015	-0.04***
	(0.013)	(0.0165)	(0.012)	(0.111)	(0.009)	(0.009)
Observations	1,466	1,466	1,815	2,170	2,165	2,269
R-squared	0.1285	0.0696	0.199	0.0673	0.0967	0.1120