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**PROFITABILITY AND FINANCIAL DECISIONS DURING 2008-2009
FINANCIAL CRISIS: EVIDENCE FROM PRIVATE FIRMS**

TESIS PARA OPTAR AL GRADO DE MAGISTER EN ECONOMÍA APLICADA

MEMORIA PARA OPTAR AL TÍTULO DE INGENIERO CIVIL INDUSTRIAL

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RESUMEN DE MEMORIA PARA OPTAR AL TITULO DE: Ingeniero Civil Industrial y grado de Magister en Economía Aplicada
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The recent episodes of global financial crises have had significant effects on firms' financial decisions and profitability, as well as on their investment and growth. Although it is widely accepted that financial crises have pernicious effects, the study of the impact of crises on private firms is still incipient. Recent academic papers explore the effects of crises on firm growth, financial structure and decisions (see, e.g., Kroszner, Laeven and Klingebiel, 2007; Campello, Giambona, Graham and Harvey, 2011; Campello, Graham and Harvey, 2010). However, these studies focus on publicly tradable firms and relatively little empirical work investigates the effect of crises on private firms. This paper contributes to the literature by exploring the effect of the recent 2008-2009 financial crisis on private firm's cash holdings, leverage, and profitability.

This paper employs a novel database that covers more than 140.000 private firms in United Kingdom (UK) during the period from 2005-2011. The database contains firm-level accounting indicators such as profit and loss income statement as well as financial ratios. The firm-level data is merged with industry level measures of external financial dependence and market regulation. This study conducts panel data regressions that consider firm and year fixed effects to control time-invariant firm's heterogeneity and macroeconomic factors in UK.

The study shows that in period of financial stability regulated firms have higher levels of cash holdings than non-regulated firms. Regulated firms are also less leveraged than non-regulated firms. Additionally, firms that rely more on external finance have more liquid assets than those that are less-dependent on external capital. In terms of profitability, in periods of financial stability regulated private firms and those that rely more on external finance are more profitable than non-regulated firms and those private firms less dependent on external finance, respectively. Additionally, the paper demonstrates that financial crises tend to decrease private firms' cash holdings and increase firms leverage, as well as to decrease firms' profitability.

The paper also explores some heterogeneities. The paper's major results suggest that crises tend to increase cash holdings and decrease leverage of private firms relatively more reliant on external finance. Additionally, the paper demonstrates that crises tend to decrease cash holdings and increase the profitability of regulated firms relatively more as compared to non-regulated private firms.

This study contributes to the literature improving our understanding of how private firms react to episodes of financial crises. Additionally, it has important implications for firm managers, investors and regulators, because it may help them to take decisions more informed decisions during periods of financial distress.

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Los recientes episodios globales de crisis financieras han generado efectos significativos tanto en las decisiones financieras de las firmas, en su rentabilidad, como en la inversión y el crecimiento. Es de conocimiento común que las crisis financieras tienen efectos negativos sobre las economías, sin embargo, el impacto de las crisis sobre las firmas privadas aún es desconocido. Estudios recientes exploran el efecto de las crisis sobre el crecimiento de las firmas, su estructura financiera y sus decisiones (Kroszner, Laeven and Klingebiel, 2007; Campello, Giambona, Graham and Harvey, 2011; Campello, Graham and Harvey, 2010). Sin embargo, estos estudios se enfocan en firmas públicamente transables, y es poca la investigación relativa al efecto de las crisis sobre firmas privadas. Esta investigación contribuye a la literatura por medio de explorar el efecto de la crisis financiera de los años 2008-2009 sobre el nivel de efectivo, el apalancamiento, y la rentabilidad, de las firmas privadas.

Esta tesis emplea una base de datos del Reino Unido, con información de cerca de 140.000 firmas privadas, desde el año 2005 al año 2011. La base de datos contiene información de los estados de resultados de las firmas, como sus ingresos y sus costos, como también ratios financieros de las firmas. Para complementar la información, se agregan índices de la dependencia en capital externo y de regulación de mercado, a nivel de la industria de las firmas. Se utiliza finalmente, una base de datos de panel, y la metodología de la regresión lineal, la cual considera el efecto fijo por firma y por año, para controlar la heterogeneidad y los factores macroeconómicos en el Reino Unido.

La investigación muestra que en tiempos sin crisis financieras, las firmas privadas reguladas tienen mayores niveles de efectivo y menores niveles de apalancamiento que las firmas no reguladas. Además, las firmas privadas más dependientes en capital externo, tienen mayor liquidez. Con respecto a la rentabilidad de las firmas privadas, en tiempos de estabilidad financiera, las firmas más dependientes en capital externo son más rentables. Las crisis financieras tienden a disminuir el nivel de efectivo y la rentabilidad de las firmas, y aumentar su apalancamiento.

Esta tesis explora heterogeneidades. El principal resultado sugiere que en tiempos de crisis, se tiende a aumentar el nivel de efectivo y disminuir el apalancamiento en firmas más dependientes en capital externo. Además, se tiende a disminuir los niveles de efectivo, y aumentar la rentabilidad de las firmas privadas reguladas, en relación a las no reguladas.

Este estudio contribuye a la literatura por medio de aumentar el conocimiento de cómo las firmas privadas reaccionan a las crisis financieras, y tiene implicancias sobre los inversionistas y los reguladores de la economía, pues les permitirá tomar mejores decisiones informadas, en una futura crisis financiera.

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1. Introduction

While it is widely accepted that financial crises have negative consequences for an economy, relatively little empirical work investigates the effect over private firms, compared to publicly tradable firms. The empirical research of private firms remains in its infancy, and there are just body theories to fill the lack of information of it, and the reason of this, is that it is difficult to find private firms data, because they do not have to disclose their financial information. Furthermore, there are no studies about the crisis effect over the financial structure of a private firm according to their external dependence level, which is the ratio between the capital expenditure of an industry and the difference between it and the operational cash flows of the industry. Besides, we also investigate whether a private firm is regulated, it is more affected by a financial crisis than a nonregulated company, i.e., firms which the price is not exogenously fixed.

According to liquidity shocks, and how these reactions affect firms' profitability. This empirical research will be done with introduces a novel panel dataset that covers more than 140,000 non-financial firms in the United Kingdom over the period 2005-2011. The data contains private firms-level accounting data, such as balance sheet items, profit and loss income statement, and financial ratios. Also, financial and operational variables were created to estimate our model and homogenize the data.

The methodology followed in this study is to iterate over our baseline equation, varying the use of firm fixed effects and year fixed effect. This paper also uses control variables, such as turnover and assets. The estimator used to estimate these results is the OLS, which is the most efficient estimator because there is not an endogeneity problem.

The general results of the paper shows that crises decrease firms' cash holdings. This effect is stronger in regulated firms, but it is compensated in external financed firms. The paper also shows that financial crises increase firm's leverage. This effect may be caused by a reversal causality in the data, because the crises may be caused as a consequence of lack of money because the amount of lending's in the economy. Nevertheless, regulated firms and with high levels of external dependence compensate the effect. Thirdly, financial crises decrease firms' profitability, compared to non-crises episodes, as it is expected, because a firm will reduce it performance when the economy is less active, because there is fewer transactions and there is minus money on it.

Additionally, this paper examines some heterogonous effect of crises. The paper's major results suggest that firms relatively more reliant on external finance have a lower impact on their cash holdings than other firms less dependent during a financial crisis. Furthermore, during a financial crisis period, their leverage level decreases comparative to firms less dependent on external funding. Considering the profitability, during normal times, firms that have a higher level of external dependence usually have higher profitable results than firms that aren't indebted.

To achieve robustness in the study, the firms are differentiated by their size, replicating the general model, and concluding which firm size is more affected by the crisis, and which one is more representative of the economy. When a firm is created, either is public or private, it needs employees, and the amount of employees it has, determines the size of the firm (e.g. Kumar, Rajan and Zingales, 1999). Normally, we can define 3 big firm groups according to its size: Small, Medium and Large firms.

Although this definition is valid for every company ownership, the information available depends either the firm took the decision of becoming publicly tradable or not, which is mainly because they are looking for more sources of external capital, knowing that in a future, they are going to have better credit conditions than if they stood as a private firm. Besides, the database in use, and the amount of information of private firms on it, allows to expand the investigation and replicate studies done with publicly tradable firms, and contribute to the literature in the knowledge of private firms.

This paper contributes to the literature in several dimensions. First, it studies the effect of financial crises on the United Kingdom economy using data from private firms. Second, it examines the effect of crises over both, external financial dependence and regulation private firms' characteristics. Third, it explores potential heterogeneities on the effects of financial crises.

The paper has important implications for regulators, firm managers and investors. First, it is helpful for the literature because it fills the misinformation of a financial crisis consequence over private firms. On other hand, it has positive effects over private firms, because it may help them to take decisions during a future financial crisis, and to understand the behavior of the economy during the shock. Lastly, it has positive implications for the policy makers, which will be able to establish more accurate strategies to sustain the economy.

Finally, the main objective of this paper is to study the answer to the question: "How does a financial crisis affect private firms financial structure and profitability?"

2. Literature Review

A rich body of research explore the effect of financial crises because it has important effects over the financial and operational structure of the firms, as well as their profitability. These financial distresses also alter the economy growth, liquidity and investments. There are three branches of literature, over which empirical research usually focuses: growth, founding sources and financial decisions.

The first branch of literature examines the relationship between crises and growth. For example, Kroszner, Laeven and Klingebiel, (2007) investigates the growth impact of banking crisis on industries with different levels of dependence on external finance. The hypothesis behind raises that if banks are the key institutions allowing credit constraints to be relaxed, then a sudden loss of these intermediaries, a system where banks are important should have a disproportionately contractionary impact on the sector that flourished due to their reliance on banks.

To examine this, the authors estimate the model for three subperiods, named before, during and after a financial crisis. This is the first similarity between our study and theirs. A second connection lies in the use of Rajan and Zingales (1998) data, through the use of their index of external dependence (ED) at the industry level for a sample of US firms.

The main result of Kroszner, Laeven and Klingebiel paper is that in non-crisis periods, sectors relatively more reliant on ED grow disproportionately faster in countries with deep financial system, which is consistent with Rajan and Zingales (1998), but in crisis periods, the relationship is opposite: financial crisis have a disproportionately negative impact on sector that rely heavily on ED in developed countries. This investigation was done with public firms, which motivates our study, by using private firm's information.

A second representative paper of the first study branch is Beck, Demirgüç-Kunt and Maksimovic (2005), which focuses in the importance of a firm size, searching for the effect of individual financing obstacles, such as underdevelopment, corruption and difficulties in dealing with banks, and the effects they have in the firm growth according to its size. Different is what we're trying to study on this paper, where a global obstacle, such as a financial crisis, is affecting private firms, no longer publics, and their financial consequences. Nonetheless, the groups creation is very similar, dividing the firms according to the number of employees.

“Financial and Legal Constraints to Growth: Does Firm Size Matter?” results indicate that a firm growth, given their study parameters and objective, is very dependable of the firm size, and the smallest firms are consistently the most adversely affected by all obstacles. At the same time, they find that small firms are likely to face tougher obstacles in obtaining finance, accessing legal systems, or dealing with corruption. These results motivate to study robustness of the main regressions by differentiating the firms according to its size.

The second branch of literature explores the relationship between founding sources and growth. For example, Allen, Carletti, Qian and Valenzuela (2014) focuses in the importance of alternative finance in develop and developing countries, in contrast to traditional financing, which provides significant sources of funds for firms in developed countries. This is important because it reiterates the importance of financial decisions in develop countries like United Kingdom, and supports the use of a single develop country, and allows the data to be more homogeneous, avoiding obstacles confronted in cross-country studies regarding omitted variables.

The study shows than in China and India, non-listed firms do not rely on financial markets or banks for most of their financing needs, and conduct business outside legal system. They rely on alternative financing channels. This motivates to examine what happens in a developed and western country, such as United Kingdom. The authors establish that in most countries, small and medium firms contribute most to economic growth, while others studies conclude the importance of large firms, mainly in the employment creation (e.g. Konings, Lehmann and Schaffer, 1996).

According to the financial decisions studies, Campello, Giambona, Graham and Harvey (2010) is a very cited and representative investigation. This paper examines how firms managed liquidity during the 2008-2009 financial crisis. This article is the first to study during a credit crisis the demand for credit lines, the associated costs, how easy is to initiate or renew lines, the consequences of violating a credit line covenant, the outcomes of renegotiation after violations, and how private and public firms manage liquidity coming from credit lines, cash holdings, and profits. It also provides a new insight into the relation between liquidity management and real expenditure during a crisis.

This paper is interesting for our investigation because the authors study how firms managed their credit lines during the crisis, and how companies' cash and profitability affect the use of credit lines, ie, they examine the relation between our dependent variables: leverage, cash assets and ROA during a credit crisis. This encourages our study to use this dependent variables, and relate them with important financial decisions, such as the capital expenditure, the external dependence, and if the firms are regulated or nontradable.

The third branch of literature studies the general effects of financial crises over economies. For example, Campello, Graham and Harvey (2011) examines the real effect of financial constraints, such as 1998-1999 financial crisis, over public firms, which is the main difference between the paper and this document. Nevertheless, this is not the only difference; this investigation studies several firm's decisions, such as tech spending, employment or capital spending, unlike this paper, which studies two big segments, financial decisions and concluding the effect over the firm's profitability.

“The Real Effects of Financial Constraints: Evidence from a Financial Crisis” results, regarding to Asia, Europe and United States, indicate that public financially constrained

firms reduce their investment, technology capital, marketing and number of employees, as well as their savings and dividend distributions, relative to unconstrained firms during financial crisis.

Complementing the general studies, Beck, Demirguc-Kunt, Laeven, and Levine (2008) examines the importance of financial development. It has the same idea of segmenting the firm data according to the firm size, even though the authors use public firms' information.

Even though the authors started recognizing that “Some theories of the firm argue that financial development is particularly beneficial to large firms. Others predict that financial development is especially important for lowering transaction costs and informational barriers that hinder small firm growth.” (Beck et al., 2008) , they find that financial development boosts the growth of small-firm industries over than large firms industries. This, encourages to see if after understanding the general financial global crisis effects, small private size firms have the same behavior which was diagnosed in “Finance, Firm Size, and Growth” for public firms.

3. Sample Characteristics and Data Description

3.1 Data

The primary data source used in this study comes from Amadeus-Bureau Van Dijk database, which contains both publicly tradable and private firms-level accounting data, such as balance sheet items, profit and loss income statement, and financial ratios. Although Amadeus-Bureau Van Dijk database have several countries information, the analysis in this study focuses only on United Kingdom firms, because institutional and macroeconomic context tends to be more homogeneous within a single country, and with it, we avoid obstacles confronted in cross-country studies regarding omitted variables.

In the database, we find out that there were 3 different types of private firms, and 11 of publicly tradable firms, see Table 15. Because there are not much studies about private firms, and the data source has a lot of information about them, it was decided to just use private firm information. To do this, it was necessary first to homogenize the data set, creating the variable quoted, which acquires the value 0 if it is a private firm on period t , or 1 if it is public. This variable was created by a combination between operational and financial description of the firm; by using leverage and ROE, in the financial context, and the firm's assets and sales.

After doing the homogenization, the public firms observations were removed, by deleting every observation which quoted variable had value 0. Finally, with the left observations, variables category and size were created. The first one is categorized by the number of employees the firm has, according to the United Kingdom government. The firm is small if it has less than 51 employees, it is medium size if the number of personnel is less than 251. If is not small or medium, the firm has a large size. The second variable values 0 if the firm is small, 1 if the firm size is medium, or 2 if it is a large firm. The objective of this variable it is to be able to compare the difference in the effect of a financial constraint depending on the private firm size, strengthening our results.

As a measure of firm performance it is use the ROA index of a firm, representing the profitability of it in different periods of time. To study the financial decisions of the firms it is use the leverage level and their cash holdings. According to the independent variables, this paper presents the Rajan and Zingales (1998) measure of financial dependence by sector based on U.S. firm-level data. On the mentioned paper, the external dependence index is calculated as the fraction of capital expenditures not financed with cash flow from operations. The sectors considered by Rajan and Zingales (1998) are a mix of three-digit and four-digit ISIC (International Standard of Industrial Classification) level industries. About the regulated dummy, this paper presents the Bekaert, Harvey, Lundblad and Siegel (2007) identification of regulated firms by sector based on U.S. industry-level data. Regulated industries are apparently lees able to explode global growth opportunities.

The 6-years-period analysis cover from 2005 to 2011, which is a period characterized by episodes of financial stability and financial distress such as 2008 financial crisis, which is considered to be the worst financial crisis since the Great Depression, during 1930. To reduce potential error in data coding, for each variable we dropped all firm-year observations at the top and bottom 1% of the distribution. Thus, our final sample consists of more than 140,000 non-financial firms in the United Kingdom and more than 500,000 firm-year observations. The descriptions, units, and sources of the variables are presented in Table 1 in the Appendix. General statistics descriptive of all variables used in this study are reported in Table 1.

3.2 Descriptive statics

It's important to understand the main variables of the study. As it was mentioned above, it is possible to differentiate between financial and operational variables. Appendix Table 1 lists the variables used in this paper and shows, for each, how many observations were present in the investigation, their mean and standard deviation, as well as their minimum and maximum value. Table 1 and Table 2 at the appendix section will list the same information for financial and operational variables according to the firm size, to achieve the robustness study.

3.3 Variables description

The group of variables serves as control or as dependent variables, but they are characterized according to their origin, if it is financial or operational variables. Next, the variables are characterized and defined.

Financial variables:

Leverage: Companies rely on a mixture of owners' equity and debt to finance their operations. A leverage ratio is any one of several financial measurements that look at how much capital comes in the form of debt, or evaluates the ability of a company to meet financial obligations.

Cash holdings: It is the amount of liquid money the company have to pay its obligations.

ROA (Return On Assets): Is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings.

ROE (Return On Equity): Is the amount of net income returned as a percentage of shareholders' equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

Operational variables:

Turnover: Turnover is an accounting term that calculates how quickly a business collects cash from accounts receivable or how fast the company sells its inventory.

Size: It is the category in which a firm belong according to how many employees the firm has, according to the United Kingdom government.

4. Regression Analysis

The central question of this study is to explore, within the private firm, how does a financial crisis changes the financial decisions, and how does this affects the profitability of the firm, according to the industry which belongs, specifically during the global financial crisis of 2008-2009. A complementary question is to study if the main results obtained before are robust according to the company size. It is important to notice that, during the study-period, the size of the company don't vary, so the variable size is constant during the 6-years-period analysis. Thus, we estimate the following baseline regression:

$$y_{it} = \alpha + \beta IC_i \times Crisis_t + A_i + B_t + \varepsilon_{it}$$

Where y_{it} represents a financial decision, or a measure of profitability, of the firm i during the period t . It is important to observe that y_{it} is a continuous variable. The variable $Crisis_t$ is an indicator variable that takes a value of 1 while the crisis lasts (2008 and 2009), and 0 for the other years. The variable IC_{it} represents an Industry Characteristic, which can be characterized by the external dependence index, or if the industry is regulated. This are exogenous variables, created from the results obtained in Rajan and Zingales (1998), and in Bekaert, Harvey, Lundblad and Siegel (2007) respectively.

A_i and B_t are vectors of firm and industry-time dummy variables, respectively, and ε_{it} is the error term. $Crisis_t$ is not included as a stand-alone variable in all of our iterations because it is subsumed by the firm-year fixed effects. Is important to make clear that our coefficient of interest is β .

4.1 Methodology

This paper employs a novel database for public and private firms in United Kingdom. The data is developed as a panel data, which changes by year, economic decisions, and financial results. At the database, we find out that there were 3 different types of private firms, and 11 of public firms, so it was necessary to homogenize the data set, creating the variable quoted, which acquires the value 0 if it is a private firm on period t , or 1 if it is public. This variable was created by a combination between operational and financial description of the firm. After doing the homogenization, the public firms observations were removed, by deleting every observation which quoted variable had value 0. Finally, with the left observations, we created the variables category and size. The first one is categorized by the number of employees the firm has, according to the United Kingdom government.

The estimator used to estimate these results is the OLS, which is the most efficient estimator because there is not an endogeneity problem. The independent variables used in this study are the turnover of a firm, the amount of assets, a dummy for crisis, the index of external dependence and a dummy if the firm industry is regulated or not. The variables turnover and assets, are results of a firm production and business functioning, and

because of it, there is not an endogeneity problem. Crisis, is also an exogenous variable, because it is not a firm decision, that is why it wouldn't create any problems in the efficiency of the OLS estimator.

Different is what happens with the external dependence index and the regulated dummy variable, which despite of being firm decisions, are able to be used as an exogenous variable in this investigation. The first one is a variable constructed at an industry level, which is based on a data of United States firms. As it is mentioned in Kroszner, Laeven and Klingebiel (2007), where Rajan and Zingales (1998) data is also used, the financial structure of US industries is an appropriate benchmark because, as the financial market is relatively open, sophisticated and developed, they should allow the country firms to face the fewer obstacles to achieve their desired financial structure. This characteristic offers a valid and exogenous way to identify the level of external dependence of any industry in the world under the statement that there are economic and technological reasons that explains why some industries are more dependent on external finances than others.

Moreover, the regulated dummy variable is useful as an external variable because a firm does not decide if it is going to be regulated or not. The first theory of why a regulation is adopted is the public interest, which assumes that the regulatory regime will both aim for and achieve economic efficiency (Peltzman et al., 1989). The second one is the economic theory and regulatory capture, which explains that regulations comes to serve the interests of those regulated, where it serves as a response to "interest group" demands, and public choice theory which focuses on rent seeking behavior (Posner 1974). A third theory establishes that the public choice and the pressure groups are also a reason to be regulated (Becker 1983).

According to the secondary element of each study, small, medium and large firms operate in a similar environment: All firms are based in the United Kingdom and subject to the same reporting requirements for the data used in this paper. That way, the previous specifications keep being valid for each size model.

At "Results" section, Table 3, 4 and 11 will present the main results from the estimation of our baseline regressions by ordinary least squares. Beside, tables between 5 and 10, and tables 12, 13 and 14, will present the secondary result for each size.

5. Results

5.1 Financial decisions

Table 3 reports the result of exploring whether the level of cash holdings of a private firm react to the financial crisis of 2008-2009. Models 1, 4 and 7 report the results of the baseline equation, without using any fixed effects, modelling with the external dependence index, the dummy if the firm is regulated, and both of them, respectively. Models 2, 5 and 8 replicate the regression, but controlling by firm fixed effect, using the variable labeled SIC_3. Finally, the models 3, 6 and 9 report the results of the baseline equation, using firm and year fixed effect.

Column 1 indicates that those firms that are more dependent on external finances, have more cash holdings, and even in crisis periods, when generally there is less cash holdings, the need of cash compensates the effect, being positive but lower. Column 3 shows that those firms that are more dependent on external finance, have a lower impact on their cash holdings than other firms less dependent during a financial crisis.

Column 4 shows that a regulated firm have more cash than firms that are not. Nevertheless, the difference between the cash holding is not big. Unlike with the external dependence index, the crisis effect is not compensated, and it has a negative impact over the firms' cash holdings.

Columns 7 to 9 replicates the previous results controlling by the external dependence index and the regulated dummy. It is possible to observe that there is no difference controlling by one or both variables.

Table 4 reports the result of exploring whether the level of leverage of a private firm reacted to the financial crisis of 2008-2009 or not. Models 1 to 9 report the same results that Table 5 models did.

Column 1 indicates that those firms that are more dependent on external finance have a higher level of leverage. Even though is an obvious result, is important to obtain evident outcomes, to increase the level of confidence on the data. Column 2 shows that generally, firms tend to increase their level of leverage during a crisis, but the reason of these is that the cause of the crisis are the low interest rates which motivated the leverage, furthermore, there is a high correlation between both variables. Column 3 indicates that a firm that is more dependent on external finances, during a financial distress decreases it level of leverage, relative to a company that is not.

Column 4 indicates that a regulated firm have lower levels of leverage, mainly because they are first need services firms. Despite of it, during a financial crisis their level of leverage increases, however it is not significant.

Columns 7 to 9 replicates the previous results controlling by the external dependence index and the regulated dummy. It is possible to observe that when we control by both independent variables, the conduct of a regulated firm changes, it increases its level of leverage during a financial distress, and the effect is significant. The other results keep the same.

It is important to notice that replicating the models with capital expenditure rather than external dependence would return the same results, but we used the external dependence variable because it is used more frequently in literature.

5.2 Profitability

Table 11 reports the result of the 2008-2009 financial crisis over the private firms profitability, represented by the index Return On Assets (ROA), which is an indicator of how profitable a company is relative to its total assets. Models 1, 4 and 7 report the results of the baseline equation, without using any fixed effect, modelling with the external dependence index, the dummy if the firm is regulated, and both of them, respectively. Models 2, 5 and 8 replicate the regression, but controlling by firm fixed effect, using the variable labeled SIC_3. Finally, the models 3, 6 and 9 report the results of the baseline equation, using firm and year fixed effect.

Column 1 indicates that those firms that have a higher level of external dependence, usually have higher profitable results than firms that aren't indebted. This is consistent with Modigliani-Miller (1958) study, which affirms that debt is good for a company and it increases their value, in a real economy. Column 2 shows that a financial crisis will decrease the profitability of a firm. However, there is no evidence that demonstrate a significant effect of a crisis on firms highly dependent on external financing.

An interesting result is obtained from studying the effect of a financial crisis over regulated firms. Column 4 indicates that a regulated firms tend to have higher profits than a nonregulated firm, and as was mentioned before, a financial crisis will decrease the profitability of a firm, but column 5 shows that this expected decrease in profit, because of the financial crisis, is compensated in regulated industries and the net effect over the profits is 0.

It is relevant to note that the results obtained with ROA as the dependent variable, are similar with ROE as dependent variable. However, the results are less significant with ROE.

6. Additional Results

6.1 Financial decision according to the firm size

To achieve robustness in our prior results, is important to difference the firms according to its size. Regarding to small firms, the results are consistent, as it is expected, because the large amount of small firms in any economy, as well as in the data, which represents nearly a 54% of the total of private firms. Therefore, small size firms that are highly dependent on external finance will have superior levels of cash holdings during a financial crisis. Even thought, during a financial distress the firms with these characteristics will reduce their level of leverage, relatively to the economy average. On other hand, medium size firms, which are those firms with more than 50 employees but less than 250, have the same results trend, but this are not significant.

Finally, large firms are not affected as other firms. The main reason is that they have enough retain earnings to survive a liquidity crisis without changing their financial structure. This result is different to medium size firms, because in this case there is not a trend, results are nulls.

With the breakdown done between firm size, it is possible to conclude that general results are robust with small and medium size result, despite the last ones are not significant. It is also possible to conclude that large firms don't change their financial structure during a financial crisis.

6.2 Profitability according to the firm size

The same way it was done with financial decisions results, it is important to confirm if this general results are consistent with all the firms in the economy. To do this, we will use the methodology used before, modeling the baseline regression according to the firm size.

Regarding to small firms, it is relevant to distinguish that without crisis, a firm with a high index of external dependence will have a more pronounced effect than the average of the firms in the economy. It is different the conduct during a financial crisis. The crisis doesn't affect the profits of a small firm as much as it does to a medium or large size firm.

The behavior of a medium size firm during a financial distress is interesting. Even though firms with higher levels of external finance don't have a significantly superior ROA index, and a crisis period have an important negative effect on medium size firms, the conjoint effect is positive. A middle firm with high levels of external dependence during a financial crisis is expected to have higher profits than those that are self-finance. Another difference between medium size firms and the average economy effect is that the effect on the regulated firms is not compensated, moreover, a crisis has a global negative effect on medium size service firms.

Finally, large firms only differ with the economy average in Column 1. The large firms contradict the Modigliani-Miller with taxes theory, because a firm with higher levels of external dependence are expected to have lower profit results. The effect during a financial crisis is the same than the average of the economy.

7. Conclusions

During the financial crisis of 2008-2009, companies worldwide were affected by a severe liquidity and credit shock. There's widely accepted financial literature about public firms, but there is a lack of information about the crisis effect over private firms. The use of Amadeus-Bureau Van Dijk database provided us an opportunity to learn about a developed and advanced financial structure country private firms' reactions to a financial distress, as it is United Kingdom economy. For this study, we observe some important firms' characteristics, such as the external finance dependence or if it is regulated.

Our model allows to study and verify beliefs of a private firm in "normal" non-crisis periods, but it also let us understand how does financial decisions vary during financial crises, and the effect over the profits of the company. Regarding to financial decisions, we find that firms relatively more reliant on external finance have a lower impact on their cash holdings than other firms less dependent on external capital during a financial distress. It is also remarkable that this kind of private firms normally have higher levels of leverage, furthermore during a financial crisis period, their leverage level decreases comparative to companies less dependent on external funding.

Considering the final profits, during normal times, firms that have a higher level of external dependence usually have higher profitable results than firms that aren't indebted. This is consistent with Modigliani-Miller (1958) study, which affirms that debt is good for a company and it increases their value.

On the other hand, the cash holdings of a regulated private firm without crisis is expected to be the same as a non-regulated firm. Nevertheless, during a financial crisis, the cash assets of a regulated private firm is projected to be relatively lower. As well, their leverage levels are lower than non-regulated firms, mainly because they are first need services firms. Despite of it, during a financial crisis their level of leverage increases, however it is not significant.

According to the firm final results, regulated firm tend to have higher profits than a nonregulated firm, and a financial crisis would decrease the profitability of a firm, but the expected decrease in profit is compensated in regulated industries, and the net effect over the profit is 0.

Although previous conclusions are for an average private firm in a developed economy, there are more representative results according to the size of the firm. The financial decisions general results are robust with small and medium size result, despite the middle firms' outcomes are not significant. It is also possible to conclude that large firms don't change their financial structure during a financial crisis. The main reason of this is that they have enough retain earnings to survive a crisis without changing their financial structure.

In the same way, the profit results were studied according to the firm size. The first important outcome is that the crisis doesn't affect the profits of a small firm as much as it does to a medium or large size firm. A medium size firm with high levels of external dependence during a financial crisis is expected to have higher profits than those that are self-finance, also, during a non-crisis period, higher external dependence implies lower profits. Another difference between medium size firms and the average economy effect is that the effect on the regulated firms is not compensated, moreover, a crisis has a global negative effect on medium size service firms.

Finally, it is possible to conclude that large firms during financial crisis, reacts the same way that the average of the economies' firms. Nonetheless, we found an interesting result during normal times; the large firms contradict the Modigliani-Miller theory, because a firm with higher levels of external dependence, in a real economy with taxes, is expected to have lower profit results, therefore, debt is not good for private large firms.

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Appendix

Table 1: Description of Variables

This table describes the variables used in the empirical model, including the variables' names, descriptions, units, and sources.

Name	Description	Unit	Source
Leverage	Average total liabilities divided by the average total equity	Ratio	Amadeus-Bureau Van Dijk
Cash Assets	Cash divided by total assets	Ratio	Amadeus-Bureau Van Dijk
ROA	Net income divided by total assets	Ratio	Amadeus-Bureau Van Dijk
Employees	Number of actives employees in the firm	Basis points	Amadeus-Bureau Van Dijk
External Dependence	External finance industry-level index	Basis points	Rajan and Zingales (1998)
Regulated	Government body exerts a level of control over firms	Dummy	Bekaert, Harvey, Lundblad and Siegel (2007)
Assets	Firms' total assets	EUR \$ (in log)	Amadeus-Bureau Van Dijk
Turnover	Accounting term that calculates how quickly a business collects cash from accounts receivable	EUR \$ (in log)	Amadeus-Bureau Van Dijk
Size	Number of actives employees in the firm	(0= Small, 1= Medium, 2= Large)	Amadeus-Bureau Van Dijk

Table 2: General Descriptive Statics

Variable	Obs	Mean	Std. Dev.	Min	Max
Leverage	517.989,00	0,71	0,75	0,00	8,60
Cash Assets	479.695,00	0,25	0,29	0,00	1,00
ROA	466.661,00	6,26	20,20	-72,25	84,28
Log(Employees)	482.459,00	3,25	1,93	0,00	12,49
External Dependence	533.768,00	0,51	0,21	-0,45	1,49
Regulated	533.768,00	0,09	0,28	0,00	1,00
Log(Assets)	525.465,00	7,78	2,56	0,00	13,91
Log(Turnover)	441.791,00	8,06	2,54	0,00	13,64
Small Firms					
Leverage	279.070,00	0,73	0,88	0,00	8,60
Cash Assets	258.077,00	0,32	0,32	0,00	1,00
ROA	250.661,00	6,77	2,32	-72,25	84,28
Log(Employees)	289.857,00	1,98	1,18	0,00	3,89
External Dependence	289.857,00	0,51	0,20	-0,45	1,49
Regulated	289.857,00	0,07	0,26	0,00	1,00
Log(Assets)	285.968,00	6,74	2,43	0,00	13,91
Log(Turnover)	249.997,00	6,82	2,23	0,00	13,64
Medium Firms					
Leverage	135.475,00	0,69	0,55	0,00	8,55
Cash Assets	128.933,00	0,14	0,18	0,00	1,00
ROA	134.949,00	5,61	15,23	-72,25	84,24
Log(Employees)	138.422,00	4,62	0,44	3,91	5,52
External Dependence	138.422,00	0,50	0,23	-0,45	1,49
Regulated	138.422,00	0,12	0,32	0,00	1,00
Log(Assets)	137.594,00	9,22	1,19	0,00	13,91
Log(Turnover)	123.043,00	9,63	1,07	0,00	13,64
Large Firms					
Leverage	53.447,00	0,73	0,45	0,00	8,47
Cash Assets	50.067,00	0,11	0,15	0,00	1,00
ROA	53.088,00	5,28	1,42	-72,01	84,16
Log(Employees)	54.180,00	6,55	0,95	5,52	12,49
External Dependence	54.180,00	0,52	0,25	-0,45	1,49
Regulated	54.180,00	0,11	0,31	0,00	1,00
Log(Assets)	50.996,00	10,84	1,42	0,00	13,91
Log(Turnover)	49.336,00	11,21	1,13	0,69	13,64

Table 3: Financial Decisions: Cash Assets

Cash Holdings	1	2	3	4	5	6	7	8	9
External Dependence	0.036*** (0.002)						0.037*** (0.002)		
Regulated				0.008*** (0.002)			0.011*** (0.002)		
Crisis	-0.025*** (0.002)	-0.013*** (0.003)		-0.016*** (0.001)	-0.007*** (0.001)		-0.022*** (0.002)	-0.010*** (0.003)	
Crisis x External Dependence	0.015*** (0.004)	0.007 (0.005)	0.020*** (0.006)				0.013*** (0.004)	0.005 (0.005)	0.021*** (0.006)
Crisis x Regulated				-0.018*** (0.003)	-0.019*** (0.003)	-0.017*** (0.006)	-0.018*** (0.003)	-0.018*** (0.003)	-0.018*** (0.006)
Turnover (t-1)	0.004*** (0.000)	0.011*** (0.000)	0.011*** (0.000)	0.004*** (0.000)	0.011*** (0.000)	0.011*** (0.000)	0.004*** (0.000)	0.011*** (0.000)	0.011*** (0.000)
Assets (t-1)	-0.052*** (0.000)	-0.051*** (0.000)	-0.051*** (0.000)	-0.052*** (0.000)	-0.051*** (0.000)	-0.051*** (0.000)	-0.052*** (0.000)	-0.051*** (0.000)	-0.051*** (0.000)
Constant	0.605*** (0.003)	0.551*** (0.002)	0.529*** (0.003)	0.623*** (0.002)	0.550*** (0.002)	0.534*** (0.002)	0.604*** (0.003)	0.550*** (0.002)	0.530*** (0.003)
Observations	251,795	251,795	251,795	251,795	251,795	251,795	251,795	251,795	251,795
R-squared	0.195	0.269	0.276	0.194	0.269	0.276	0.195	0.269	0.276
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.195	0.268	0.274	0.193	0.268	0.274	0.195	0.268	0.274

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Financial Decision: Leverage

Leverage	1	2	3	4	5	6	7	8	9
External Dependence	0.160*** (0.009)						0.157*** (0.009)		
Regulated				-0.038*** (0.005)			-0.027*** (0.005)		
Crisis	0.066*** (0.009)	0.036*** (0.008)		0.060*** (0.003)	0.036*** (0.003)		0.061*** (0.009)	0.030*** (0.008)	
Crisis x External Dependence	-0.003 (0.017)	0.007 (0.015)	-0.046** (0.019)				0.000 (0.017)	0.011 (0.015)	-0.048** (0.019)
Crisis x Regulated				0.031*** (0.011)	0.038*** (0.011)	0.028 (0.017)	0.027** (0.011)	0.039*** (0.011)	0.030* (0.017)
Turnover (t-1)	0.044*** (0.001)	0.046*** (0.001)	0.045*** (0.001)	0.043*** (0.001)	0.046*** (0.001)	0.045*** (0.001)	0.044*** (0.001)	0.046*** (0.001)	0.045*** (0.001)
Assets (t-1)	-0.066*** (0.001)	-0.073*** (0.001)	-0.073*** (0.001)	-0.065*** (0.001)	-0.073*** (0.001)	-0.073*** (0.001)	-0.066*** (0.001)	-0.073*** (0.001)	-0.073*** (0.001)
Constant	0.814*** (0.008)	0.945*** (0.006)	1.013*** (0.009)	0.898*** (0.007)	0.945*** (0.006)	0.997*** (0.007)	0.817*** (0.008)	0.945*** (0.006)	1.012*** (0.009)
Observations	271,271	271,271	271,271	271,271	271,271	271,271	271,271	271,271	271,271
R-squared	0.017	0.048	0.054	0.015	0.048	0.054	0.017	0.048	0.054
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0167	0.0469	0.0516	0.0149	0.0469	0.0516	0.0168	0.0469	0.0516

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Small Firms Cash Assets

Cash Holdings	1	2	3	4	5	6	7	8	9
External Dependence	0.022*** (0.004)						0.024*** (0.004)		
Regulated				0.026*** (0.003)			0.027*** (0.003)		
Crisis	-0.045*** (0.004)	-0.019*** (0.004)		-0.030*** (0.002)	-0.014*** (0.002)		-0.041*** (0.004)	-0.017*** (0.004)	
Crisis x External Dependence	0.023*** (0.008)	0.008 (0.008)	0.029*** (0.010)				0.021*** (0.008)	0.008 (0.008)	0.031*** (0.010)
Crisis x Regulated				-0.033*** (0.006)	-0.018*** (0.006)	-0.018* (0.010)	-0.033*** (0.006)	-0.018*** (0.006)	-0.020** (0.010)
Turnover (t-1)	0.005*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.004*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.004*** (0.001)	0.010*** (0.001)	0.010*** (0.001)
Assets (t-1)	-0.056*** (0.001)	-0.053*** (0.001)	-0.053*** (0.001)	-0.056*** (0.001)	-0.053*** (0.001)	-0.053*** (0.001)	-0.056*** (0.001)	-0.053*** (0.001)	-0.053*** (0.001)
Constant	0.650*** (0.004)	0.599*** (0.003)	0.563*** (0.005)	0.660*** (0.003)	0.599*** (0.003)	0.576*** (0.004)	0.647*** (0.004)	0.599*** (0.003)	0.563*** (0.004)
Observations	131,739	131,739	131,739	131,739	131,739	131,739	131,739	131,739	131,739
R-squared	0.159	0.244	0.254	0.159	0.244	0.254	0.160	0.244	0.254
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.159	0.242	0.250	0.159	0.242	0.250	0.160	0.242	0.250

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: Small Firms Leverage

Leverage	1	2	3	4	5	6	7	8	9
External Dependence	0.234*** (0.017)						0.230*** (0.017)		
Regulated				-0.056*** (0.010)			-0.047*** (0.010)		
Crisis	0.110*** (0.017)	0.050*** (0.014)		0.092*** (0.006)	0.044*** (0.005)		0.103*** (0.017)	0.044*** (0.014)	
Crisis x External Dependence	-0.025 (0.033)	-0.003 (0.026)	-0.080** (0.032)				-0.021 (0.033)	0.000 (0.026)	-0.083*** (0.032)
Crisis x Regulated				0.071*** (0.021)	0.066*** (0.020)	0.037 (0.032)	0.065*** (0.021)	0.066*** (0.020)	0.043 (0.032)
Turnover (t-1)	0.042*** (0.002)	0.038*** (0.002)	0.038*** (0.002)	0.042*** (0.002)	0.038*** (0.002)	0.038*** (0.002)	0.043*** (0.002)	0.038*** (0.002)	0.038*** (0.002)
Assets (t-1)	-0.070*** (0.002)	-0.078*** (0.002)	-0.078*** (0.002)	-0.069*** (0.002)	-0.078*** (0.002)	-0.078*** (0.002)	-0.070*** (0.002)	-0.078*** (0.002)	-0.078*** (0.002)
Constant	0.810*** (0.013)	1.027*** (0.009)	1.092*** (0.012)	0.936*** (0.010)	1.027*** (0.009)	1.078*** (0.012)	0.815*** (0.013)	1.027*** (0.009)	1.094*** (0.012)
Observations	142,567	142,567	142,567	142,567	142,567	142,567	142,567	142,567	142,567
R-squared	0.019	0.060	0.068	0.016	0.060	0.068	0.019	0.060	0.068
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0186	0.0581	0.0636	0.0164	0.0582	0.0636	0.0187	0.0582	0.0636

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Medium Firms Cash Assets

Cash Holdings	1	2	3	4	5	6	7	8	9
External Dependence	0.042*** (0.003)						0.043*** (0.003)		
Regulated				-0.000 (0.002)			0.004 (0.002)		
Crisis	-0.004 (0.003)	-0.002 (0.003)		0.000 (0.001)	-0.000 (0.001)		-0.002 (0.003)	0.001 (0.003)	
Crisis x External Dependence	0.008 (0.005)	0.001 (0.006)	0.001 (0.008)				0.006 (0.006)	-0.001 (0.006)	0.002 (0.008)
Crisis x Regulated				-0.011*** (0.004)	-0.012*** (0.004)	-0.011 (0.007)	-0.012*** (0.004)	-0.012*** (0.004)	-0.011* (0.007)
Turnover (t-1)	0.009*** (0.001)	0.017*** (0.001)	0.018*** (0.001)	0.008*** (0.001)	0.017*** (0.001)	0.018*** (0.001)	0.009*** (0.001)	0.017*** (0.001)	0.018*** (0.001)
Assets (t-1)	-0.030*** (0.001)	-0.032*** (0.001)	-0.032*** (0.001)	-0.029*** (0.001)	-0.032*** (0.001)	-0.032*** (0.001)	-0.030*** (0.001)	-0.032*** (0.001)	-0.032*** (0.001)
Constant	0.315*** (0.007)	0.274*** (0.007)	0.264*** (0.007)	0.336*** (0.007)	0.274*** (0.007)	0.263*** (0.007)	0.314*** (0.008)	0.274*** (0.007)	0.264*** (0.007)
Observations	78,378	78,378	78,378	78,378	78,378	78,378	78,378	78,378	78,378
R-squared	0.027	0.135	0.143	0.024	0.135	0.143	0.027	0.135	0.143
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0272	0.132	0.135	0.0240	0.132	0.135	0.0273	0.132	0.135

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8: Medium Firms Leverage

Leverage	1	2	3	4	5	6	7	8	9
External Dependence	0.104*** (0.011)						0.101*** (0.011)		
Regulated				-0.028*** (0.007)			-0.019*** (0.007)		
Crisis	0.036*** (0.011)	0.026*** (0.010)		0.041*** (0.005)	0.035*** (0.005)		0.035*** (0.012)	0.024** (0.010)	
Crisis x External Dependence	0.014 (0.022)	0.021 (0.018)	0.006 (0.024)				0.015 (0.022)	0.023 (0.019)	0.005 (0.024)
Crisis x Regulated				0.009 (0.013)	0.012 (0.013)	0.014 (0.021)	0.007 (0.013)	0.013 (0.013)	0.013 (0.021)
Turnover (t-1)	0.032*** (0.003)	0.042*** (0.003)	0.040*** (0.003)	0.031*** (0.003)	0.042*** (0.003)	0.040*** (0.003)	0.032*** (0.003)	0.042*** (0.003)	0.040*** (0.003)
Assets (t-1)	-0.058*** (0.003)	-0.072*** (0.002)	-0.073*** (0.002)	-0.056*** (0.003)	-0.072*** (0.002)	-0.073*** (0.002)	-0.058*** (0.003)	-0.072*** (0.002)	-0.073*** (0.002)
Constant	0.870*** (0.024)	0.961*** (0.021)	1.016*** (0.023)	0.928*** (0.024)	0.961*** (0.021)	1.020*** (0.022)	0.877*** (0.024)	0.961*** (0.021)	1.015*** (0.023)
Observations	82,772	82,772	82,772	82,772	82,772	82,772	82,772	82,772	82,772
R-squared	0.011	0.052	0.059	0.009	0.052	0.059	0.011	0.052	0.059
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0108	0.0486	0.0516	0.00903	0.0486	0.0516	0.0109	0.0486	0.0516

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9: Large Firms Cash Assets

Cash Holdings	1	2	3	4	5	6	7	8	9
External Dependence	0.020*** (0.003)						0.022*** (0.004)		
Regulated				0.010*** (0.003)			0.012*** (0.003)		
Crisis	-0.005 (0.004)	-0.002 (0.004)		-0.003 (0.002)	-0.002 (0.002)		-0.004 (0.004)	0.000 (0.004)	
Crisis x External Dependence	0.004 (0.007)	-0.003 (0.007)	0.004 (0.010)				0.002 (0.007)	-0.005 (0.007)	0.004 (0.010)
Crisis x Regulated				-0.008 (0.006)	-0.010* (0.005)	-0.007 (0.008)	-0.009 (0.006)	-0.010* (0.005)	-0.007 (0.008)
Turnover (t-1)	0.020*** (0.001)	0.027*** (0.001)	0.027*** (0.001)	0.019*** (0.001)	0.027*** (0.001)	0.027*** (0.001)	0.020*** (0.001)	0.027*** (0.001)	0.027*** (0.001)
Assets (t-1)	-0.032*** (0.001)	-0.036*** (0.001)	-0.036*** (0.001)	-0.031*** (0.001)	-0.036*** (0.001)	-0.036*** (0.001)	-0.032*** (0.001)	-0.036*** (0.001)	-0.036*** (0.001)
Constant	0.234*** (0.009)	0.202*** (0.009)	0.192*** (0.009)	0.241*** (0.009)	0.202*** (0.009)	0.193*** (0.009)	0.231*** (0.009)	0.202*** (0.009)	0.192*** (0.009)
Observations	32,249	32,249	32,249	32,249	32,249	32,249	32,249	32,249	32,249
R-squared	0.037	0.137	0.148	0.036	0.137	0.148	0.038	0.137	0.148
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0371	0.129	0.130	0.0362	0.129	0.130	0.0374	0.129	0.130

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10: Large Firms Leverage

Leverage	1	2	3	4	5	6	7	8	9
External Dependence	0.086*** (0.011)						0.083*** (0.012)		
Regulated				-0.027*** (0.008)			-0.019** (0.008)		
Crisis	0.007 (0.012)	-0.001 (0.012)		0.017*** (0.006)	0.023*** (0.005)		0.004 (0.012)	-0.004 (0.013)	
Crisis x External Dependence	0.027 (0.021)	0.051** (0.022)	0.045 (0.031)				0.030 (0.021)	0.053** (0.022)	0.045 (0.031)
Crisis x Regulated				0.016 (0.016)	0.014 (0.016)	0.019 (0.025)	0.015 (0.016)	0.018 (0.016)	0.018 (0.025)
Turnover (t-1)	0.040*** (0.004)	0.054*** (0.004)	0.053*** (0.004)	0.039*** (0.004)	0.054*** (0.004)	0.053*** (0.004)	0.040*** (0.004)	0.054*** (0.004)	0.053*** (0.004)
Assets (t-1)	-0.053*** (0.004)	-0.058*** (0.003)	-0.058*** (0.003)	-0.050*** (0.004)	-0.058*** (0.003)	-0.058*** (0.003)	-0.052*** (0.004)	-0.058*** (0.003)	-0.058*** (0.003)
Constant	0.792*** (0.028)	0.745*** (0.026)	0.752*** (0.027)	0.831*** (0.027)	0.744*** (0.026)	0.763*** (0.027)	0.797*** (0.028)	0.745*** (0.026)	0.752*** (0.027)
Observations	34,452	34,452	34,452	34,452	34,452	34,452	34,452	34,452	34,452
R-squared	0.013	0.064	0.074	0.011	0.064	0.074	0.013	0.064	0.074
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0127	0.0560	0.0563	0.0105	0.0559	0.0562	0.0127	0.0560	0.0563

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 11: Profitability: ROA

ROA	1	2	3	4	5	6	7	8	9
External Dependence	0.829*** (0.205)						0.887*** (0.206)		
Regulated				0.396*** (0.146)			0.457*** (0.147)		
Crisis	-0.871*** (0.211)	-1.156*** (0.211)		-0.658*** (0.089)	-1.043*** (0.088)		-0.945*** (0.216)	-1.316*** (0.215)	
Crisis x External Dependence	0.556 (0.401)	0.426 (0.390)	0.149 (0.492)				0.590 (0.403)	0.541 (0.391)	0.094 (0.493)
Crisis x Regulated				0.606** (0.276)	1.042*** (0.284)	0.875* (0.453)	0.611** (0.278)	1.073*** (0.285)	0.870* (0.454)
Turnover (t-1)	1.898*** (0.026)	2.028*** (0.033)	2.002*** (0.033)	1.884*** (0.026)	2.027*** (0.033)	2.002*** (0.033)	1.890*** (0.026)	2.027*** (0.033)	2.002*** (0.033)
Assets (t-1)	-2.406*** (0.032)	-2.517*** (0.034)	-2.493*** (0.034)	-2.394*** (0.032)	-2.517*** (0.034)	-2.494*** (0.034)	-2.401*** (0.032)	-2.517*** (0.034)	-2.494*** (0.034)
Constant	10.170*** (0.225)	10.522*** (0.169)	10.952*** (0.213)	10.574*** (0.207)	10.525*** (0.169)	10.701*** (0.198)	10.128*** (0.227)	10.525*** (0.169)	10.977*** (0.212)
Observations	255,691	255,691	255,691	255,691	255,691	255,691	255,691	255,691	255,691
R-squared	0.024	0.041	0.047	0.024	0.041	0.047	0.024	0.041	0.047
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0240	0.0396	0.0445	0.0240	0.0396	0.0445	0.0241	0.0396	0.0445

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 12: Small Firms ROA

ROA	1	2	3	4	5	6	7	8	9
External Dependence	2.011*** (0.373)						1.985*** (0.374)		
Regulated				-0.401 (0.256)			-0.323 (0.257)		
Crisis	0.245 (0.377)	-0.600 (0.372)		-0.281* (0.145)	-0.926*** (0.143)		0.180 (0.382)	-0.716* (0.376)	
Crisis x External Dependence	-0.940 (0.725)	-0.477 (0.693)	-1.253 (0.832)				-0.906 (0.726)	-0.419 (0.693)	-1.333 (0.834)
Crisis x Regulated				0.680 (0.509)	1.158** (0.522)	0.918 (0.833)	0.615 (0.510)	1.146** (0.523)	1.024 (0.836)
Turnover (t-1)	2.048*** (0.037)	2.184*** (0.051)	2.134*** (0.051)	2.039*** (0.038)	2.184*** (0.051)	2.135*** (0.051)	2.049*** (0.038)	2.184*** (0.051)	2.134*** (0.051)
Assets (t-1)	-2.520*** (0.042)	-2.724*** (0.049)	-2.677*** (0.049)	-2.512*** (0.042)	-2.725*** (0.049)	-2.677*** (0.049)	-2.521*** (0.042)	-2.725*** (0.049)	-2.677*** (0.049)
Constant	9.358*** (0.338)	11.050*** (0.261)	12.005*** (0.379)	10.408*** (0.287)	11.049*** (0.261)	11.864*** (0.318)	9.395*** (0.340)	11.050*** (0.261)	11.970*** (0.385)
Observations	130,768	130,768	130,768	130,768	130,768	130,768	130,768	130,768	130,768
R-squared	0.026	0.046	0.054	0.026	0.046	0.054	0.026	0.046	0.054
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0257	0.0442	0.0488	0.0255	0.0442	0.0487	0.0257	0.0442	0.0488

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 13: Medium Firms ROA

ROA	1	2	3	4	5	6	7	8	9
External Dependence	0.169 (0.277)						0.418 (0.279)		
Regulated				1.419*** (0.194)			1.459*** (0.196)		
Crisis	-2.107*** (0.296)	-2.014*** (0.275)		-1.218*** (0.130)	-1.320*** (0.125)		-2.222*** (0.306)	-2.167*** (0.284)	
Crisis x External Dependence	1.976*** (0.566)	1.568*** (0.504)	2.109*** (0.658)				2.017*** (0.570)	1.687*** (0.508)	2.089*** (0.659)
Crisis x Regulated				0.503 (0.383)	0.635* (0.356)	0.439 (0.579)	0.626 (0.386)	0.766** (0.358)	0.346 (0.580)
Turnover (t-1)	2.312*** (0.063)	2.667*** (0.075)	2.631*** (0.075)	2.311*** (0.063)	2.661*** (0.075)	2.630*** (0.075)	2.329*** (0.063)	2.666*** (0.075)	2.631*** (0.075)
Assets (t-1)	-1.956*** (0.065)	-2.137*** (0.066)	-2.112*** (0.066)	-1.928*** (0.065)	-2.133*** (0.066)	-2.112*** (0.066)	-1.944*** (0.065)	-2.137*** (0.066)	-2.112*** (0.066)
Constant	1.856*** (0.576)	0.241 (0.570)	-0.076 (0.606)	1.527*** (0.568)	0.250 (0.570)	0.165 (0.600)	1.293** (0.579)	0.234 (0.570)	-0.161 (0.609)
Observations	82,437	82,437	82,437	82,437	82,437	82,437	82,437	82,437	82,437
R-squared	0.018	0.042	0.051	0.019	0.042	0.051	0.019	0.042	0.051
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0176	0.0382	0.0432	0.0184	0.0381	0.0431	0.0188	0.0382	0.0432

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 14: Large Firms ROA

ROA	1	2	3	4	5	6	7	8	9
External Dependence	-1.026*** (0.362)						-0.888** (0.365)		
Regulated				0.920*** (0.289)			0.833*** (0.292)		
Crisis	-1.438*** (0.380)	-1.098*** (0.387)		-1.471*** (0.175)	-1.608*** (0.172)		-1.583*** (0.392)	-1.274*** (0.398)	
Crisis x External Dependence	0.107 (0.685)	-0.791 (0.702)	-0.432 (0.979)				0.183 (0.689)	-0.656 (0.706)	-0.467 (0.979)
Crisis x Regulated				0.920* (0.519)	1.013** (0.514)	1.053 (0.792)	0.964* (0.522)	0.964* (0.516)	1.063 (0.792)
Turnover (t-1)	2.359*** (0.102)	2.729*** (0.115)	2.723*** (0.115)	2.388*** (0.103)	2.727*** (0.115)	2.723*** (0.115)	2.375*** (0.103)	2.728*** (0.115)	2.723*** (0.115)
Assets (t-1)	-2.403*** (0.092)	-2.660*** (0.098)	-2.661*** (0.098)	-2.432*** (0.092)	-2.659*** (0.098)	-2.661*** (0.098)	-2.411*** (0.092)	-2.658*** (0.098)	-2.661*** (0.098)
Constant	6.363*** (0.841)	4.523*** (0.840)	4.375*** (0.874)	5.714*** (0.831)	4.533*** (0.840)	4.485*** (0.868)	6.099*** (0.844)	4.518*** (0.840)	4.215*** (0.878)
Observations	34,22	34,22	34,22	34,22	34,22	34,22	34,22	34,22	34,22
R-squared	0.025	0.064	0.080	0.025	0.064	0.080	0.025	0.064	0.080
Firm Fixed Effects	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year Fixed Effects	NO	NO	YES	NO	NO	YES	NO	NO	YES
Adjusted R-squared	0.0244	0.0562	0.0620	0.0250	0.0562	0.0620	0.0251	0.0562	0.0620

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 15: Firms differentiation

Firm Classification	Number of Firms
Guarantee	81922
Not classified	37
Private	261239
Private Limited	55545
Private limited company	117925
Public AIM	544
Public company (AIM)	894
Public company (not quoted)	3585
Public company (quoted)	754
Public company (quoted OFEX)	95
Public Investment Trust	327
Public quoted OFEX	376
Public (AIM)	2844
Public, investment trust	468
Public, not quoted	12256
Public, quoted	2166
Unlimited	925
Unlimited company	324
Total general	542226