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The effect on the performance of listed family and non-family firms

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Abstract

Purpose – The purpose of this paper is to examine whether the ownership of public firms is related to accounting and market performance, comparing family and non-family listed firms.

Design/methodology/approach – The paper uses regression analysis, considering a sample of Portuguese family and non-family firms (NFF) for the period between 1999 and 2010.

Findings – Overall, the results show that family firms (FF) are older, are more indebted and have higher debt costs than NFF. However, they present lower levels of risk. The evidence suggests that FF outperform NFF when the author considers a market performance measure. The market performance of family-controlled firms is more sensitive to the crisis periods and age, compared to their counterparts. The empirical findings suggest that under economic adversity, the performance is especially compromised by the firms' age.

Research limitations/implications – A limitation of this study is the small size of the sample, which derives from the small size of the Portuguese stock market, the Euronext Lisbon.

Originality/value – This paper offers some insights on the ownership of public firms and firm performance by investigating a small European economy. The study also contributes to the stream of firm performance, considering new independent variables as determinants of firm performance, such as operational risk. Finally, the study examines the interaction between ownership and performance under both steady and adverse economic conditions, giving the opportunity to analyze whether firm performance differs according to market conditions.

Keywords Accounting performance, Family firms, Market performance

Paper type Research paper

1. Introduction

Over decades, several studies document evidence that family firms (FF) are common in publically-traded firms worldwide. La Porta *et al.* (1999) analyzed 27 countries, finding evidence that about 50 percent of firms in their sample were family-controlled. Faccio and Lang (2002) find that more than 60 percent of listed firms in France, Italy, and Germany are FF. Sraer and Thesmar (2007) analyzed listed French firms and concluded that more than 60 percent of the firms are managed by founding families. Studies on the US document relatively lower percentage values for FF, with Anderson and Reeb (2003) and Villalonga and Amit (2006)[1] finding percentages of 35 and 37, respectively. As regards Portugal, Faccio and Lang (2002) find evidence that FF constitute about 60.34 percent of firms sampled and that in about 50 percent of the FF, the controlling owner is in management.

Other studies centre on the main determinants of firm performance, particularly the accounting (Allouche *et al.*, 2008; Smith, 2008; Nunes *et al.*, 2012) and the market performance (Anderson and Reeb, 2003; Pérez-González, 2006; Martínez *et al.*, 2007; Sraer and Thesmar, 2007; Zhou, 2012). Although they focus on the effect of liquidity on firm performance (Deloof, 2003; Fagiolo and Luzzi, 2006; Oliveira and Fortunato, 2006;



Moreno *et al.*, 2010) and on the relationship between debt and firm performance (Titman and Wessels, 1988; Chan *et al.*, 2003; La Rocca *et al.*, 2011; Moreno and Castillo, 2011), they did not examine the effects of operational risk and generalized economic adversity on the firms performance.

In this context, our study aims to investigate whether FF outperform non-family counterparts, considering both accounting and market measures of firm performance as well as to analyze the firms' performance, conditioned by the financial and economic crisis, in order to test whether FF are higher performers than their counterparts even in recession periods, considering a sample made up of the 58 Portuguese non-financial firms (NFF) listed on Euronext Lisbon for the period 1999-2010. From the full sample, 35 firms were classified as FF (about 60 percent) and 23 as NFF.

This study contributes to the existing literature on the ownership of public firms and firm performance by investigating a small European economy. More specifically, it examines the performance of FF in the context of Portugal. The history, capital market, and characteristics of businesses in this continental European country differ greatly from English-speaking countries, where most studies on FF have been conducted. The study also contributes to the stream of firm performance, considering new independent variables as determinants of firm performance, such as the operational risk. Finally, the study examines the interaction between ownership and performance under both steady and adverse economic conditions. Analyzing periods of financial boom and of recession separately gives the opportunity to analyze whether firm performance differs according to market conditions. The results suggest that the influence of risk on firms' performance is different between family and NFF, but only for a performance measure. The evidence proposes that, under adverse economic conditions, performance is particularly affected by the firm's debt level. Overall, the empirical findings support the view that FF outperform NFF.

The remainder of this paper is organised as follows. Section 2 provides a literature review and develops the research hypotheses. Section 3 presents the data, the variables and the method of analysis. Section 4 presents and discusses the research results. Finally, Section 5 concludes the paper.

2. Literature review and hypotheses development

2.1 FF, NFF and performance

One difficulty in this sort of study is the definition of FF and NFF. Different studies have used different classifications of FF (Bennedsen and Nielsen, 2010). Most definitions include three main dimensions: families holding a significant part of the capital; family members retaining significant control over the firm and family members holding top management positions (Villalonga and Amit, 2006)[2]. For example, Westhead *et al.* (2001) based their FF definition on the extent to which a firm is managed by members from a single dominant family group, with the firm being classified as FF if the family hold more than 50 percent of the shares. Anderson and Reeb (2003) use the percentage of equity owned by the founding family and the presence of family members on the board of directors, thus subscribing to a hybrid view of ownership and board control. Zahra (2005) asked, in a survey targeting a group of 2,000 US companies, whether firms were family owned.

Following La Porta *et al.* (2000) and Setia-Atmaja *et al.* (2009), we define FF as those in which the founding family or a family member controlled 20 percent or more of the equity, and was involved in the top management of the firm.

The arguments on the performance of FF compared to NFF are supported on the literature on agency theory (Jensen and Meckling, 1976; Jensen, 1986) and on corporate governance (Villalonga and Amit, 2006). According to Jensen and Meckling (1976) and Jensen (1986), agency costs diminish a firm's value. However, when the ownership and control of a firm are held by the same party, the agency costs associated with conflicts of interest and information asymmetries draw back (Jensen and Meckling, 1976). Consequently, FF have incentives to reduce agency conflicts and maximize firm value (Demsetz and Lehn, 1985). Higher levels of FF performance might occur from the better alignment of interests between shareholders and managers (Anderson and Reeb, 2003). Anderson *et al.* (2003) state that FF present fewer agency conflicts between equity and debt than non-family counterparts, reducing agency costs that might lead to higher levels of performance. In addition, family shareholders have long-term outlooks and implement optimal investment policies over the long run, which results in improved performance (Stein, 1989). In line with this argument, James (1999) concludes that FF invest more efficiently than NFF because the family wants to pass the firm onto succeeding generations and Le Breton-Miller and Miller (2006) argue that the long-term investments of family-controlled firms grow from specific governance conditions and produce competitive asymmetries, which create capabilities that are sustainable.

Sraer and Thesmar (2007) analyze the performance of French FF over the period 1994-2000, finding that FF outperform other firms. Their results are in line with those of Anderson and Reeb (2003), who analyze the relationship between founding-family ownership and firm performance in the US market, concluding that FF perform better than non-family ones. More precisely, they find that when family members serve as CEO, performance is better than with outside CEOs, suggesting that family ownership is an elective organizational structure. Scholes *et al.* (2012) investigate listed FF in the UK between 2007 and 2009, finding that FF have superior profitability and considerably less debt than their counterparts, but have a lower growth rate. Allouche *et al.* (2008) find evidence of better performance among Japanese FF and other authors find evidence of FF higher performance in advanced and competitive economies (Anderson and Reeb, 2004; Peng and Jiang, 2010; Essen *et al.*, 2011). Moreover, some literature documents the success of FF in markets considered as weak and developing institutional environments (Bertrand and Schoar, 2006). Indeed, the evidence suggests that FF do well in underdeveloped capital markets (Bhattacharya and Ravikumar, 2001), weak formal protection for minority investors (Burkart *et al.*, 2003) and poor commercial law (Gilson, 2007), which might be our case, as we focus on a small European economy.

However, some prior literature suggests that FF can lead to poorer firm performance than NFF. Fama and Jensen (1985) argue that large concentrated stockholders such as founding families may derive greater benefits from following objectives such as technological innovation, firm growth, or firm survival than from enhancing shareholder value. Moreover, founding families may pursue actions that maximize their personal utility, serving family interests, instead of profit maximization (Demsetz and Lehn, 1985; DeAngelo and DeAngelo, 2000). Shleifer and Vishny (1997) suggest that one big cost of concentrated family ownership arises when unqualified family members run the firm. Several other reasons are aimed to explain the FF lower performance than NFF (Gedajlovic *et al.*, 2012), such as the expropriation of wealth by inside family owners from minority shareholders (Bertrand *et al.*, 2002), the misallocation of resources (Morck and Yeung, 2003), the inefficient allocation of resources (Almeida and

Wolfenzon, 2006) and the feeling of obligation one family member feels to aid another at a time of need (Villalonga and Amit, 2010).

Analyzing a sample of Canadian firms, Morck *et al.* (1988) find that heirs and founders are outperformed by widely held corporations, which is in agreement with the results of Holderness and Sheehan (1988), who find that FF have lower levels of Tobin's Q ratio than their counterparts. Pérez-González (2006) uses US data from CEO successions to examine the impact of inherited control on firm performance. Their results suggest that heirs may be worse managers than outside CEOs. These results have been confirmed by Bennedsen and Nielsen (2010), who investigate the impact of family characteristics in corporate decision-making and the consequence of this on firm performance, using a sample of Danish firms analyzed for the 1994-2002 period. The authors found that family successions have a large negative causal impact on firm performance, concluding that professional and non-family CEOs provide extremely valuable services to the organizations they head.

Other studies find mixed or inconclusive results (Khanna and Rivkin, 2001; Claessens *et al.*, 2002). Using a Bayesian approach, Block *et al.* (2011) find that whereas family and founder ownership are associated with superior performance, the results for family and founder management are more ambiguous. Some researchers conclude that the evidence concerning FF' performance is sensitive to the different definitions of FF (Westhead and Cowling, 1998; Maury, 2006; Miller *et al.*, 2007; Allouche *et al.*, 2008), which could explain the mixed results obtained so far.

Although there are no consensual conclusions concerning the corporate performance of FF, we expect FF to have better performance levels than their counterparts. In this context, and in order to compare the results with previous evidence, we formulate the following classic hypothesis:

H_1 . FF outperform NFF.

2.2 Risk

Agency theory suggests that the higher the ownership level (which is likely to occur in FF), the greater the alignment between owners and managers (Jensen and Meckling, 1976; Fama and Jensen, 1983). Consequently, this interest alignment between family and the firm may motivate the implementation of innovative ideas that stimulate growth and improve firm performance (Zahra, 2005), but increase business risk. Jensen and Meckling (1976) suggest that business risk, among other variables, influences firm performance. Indeed, there is broad evidence that firms with highly volatile operating earnings are more likely to be exposed to risk (Fama and Jensen, 1983; Titman and Wessels, 1988; Adams and Buckle, 2003).

As shown in the literature, managers, like individuals, tend to be risk-averse (Mehran, 1995). The evidence that FF are more adverse to financial risk than NFF (Mishra and McConaughy, 1999) leads us to predict that they are also more adverse to operational risk. On this basis, we formulate H_2 :

H_2 . The negative relationship between operational risk and firm performance is stronger for FF than NFF.

2.3 Employment

There is no specific literature concerning the relationship between employment and firm performance. However, according to the Atkinson (1984) model, employment is

associated with versatility and the ability to perform different functions and roles in the firm's business activities. This contributes to functional flexibility, which, in our point of view, can lead to relatively superior performance. Lepak *et al.* (2003) find evidence that a greater use of knowledge-based employment is positively associated with firm performance. Moreover, Zhou (2012) finds evidence of a positive relationship between employment and profitability.

Based on this evidence and on the institutional context effect on FF (Bhattacharya and Ravikumar, 2001; Burkart *et al.*, 2003), we formulate the following hypothesis:

- H₃*. The positive relationship between employment and firm performance is stronger for FF than NFF.

2.4 Crisis

There has been no examination of the phenomenon of performance with particular focus on the surrounding economic environment. Indeed, the relationship between crisis and performance has not yet been explored in the European context.

In turbulent economic and market conditions, there are fewer investment opportunities, which can lead to relatively lower performance. Indeed, Mitton (2002) finds evidence of lower returns during the East Asian financial crisis of 1997-1998.

One characteristic of recession periods is the high volatility of share prices (Veronesi, 1999). Moreover, investors tend to be irrational and to overreact to poor market conditions (Glode *et al.*, 2010). Consequently, high volatility and investor overreaction may counteract the value premium of founder firms. Zhou (2012) states that during a crisis, unqualified management may increase costs for FF, which diminishes more the FF than the NFF performance. In addition, other arguments can reinforce the assumption that the expected negative relationship between crisis and firm performance will be stronger for FF than NFF, such as the feeling of obligation the family members feel to aid another at a time of need (Villalonga and Amit, 2010), the bigger incentive that NFF have to take risky projects (Anderson and Reeb, 2003) and the role of CEO or board members being family members or not. Indeed, Pérez-González (2006) and Bennedsen and Nielsen (2010) find evidence that heirs may be worse managers than outside CEOs, concluding that professional and non-family CEOs provide extremely valuable services to the organizations they head. Based on this reasoning, we formulate the last hypothesis:

- H₄*. The negative relationship between crisis and firm performance is stronger for FF than NFF.

3. Research method

3.1 Data

The sample consists of all the Portuguese non-financial FF and NFF listed on the Euronext Lisbon during the period from 1999 to 2010. The specificity of the sample period is a result of data availability. Data were obtained from SABI, a private database provided by Bureau van Dijk and complemented with additional information collected from annual company reports. There are 58 firms in the full sample, corresponding to 583 observations. The number of observations in the sample is conditioned by the size of the Portuguese stock market as well as the availability of data. Given that this study aims to investigate the relationship between the ownership of public firms and

firm performance, we consider also two research sub-samples: the FF sub-sample of 35 firms, corresponding to 377 observations and the NFF sub-sample of 23 firms and 206 observations.

FF constitute about 60 percent of the global sample, a percentage similar to that found by Faccio and Lang (2002) for Portugal (60.34 percent). The evidence that almost 65 percent of the observations are related to FF is consistent with the evidence that family shareholders are common in publically traded firms (Claessens *et al.*, 2000; Faccio and Lang, 2002; Anderson and Reeb, 2003; Villalonga and Amit, 2006).

3.2 Variables and research model

Because we want to examine the influence of public firms' ownership on firm performance, our dependent variable is performance (PERF).

We consider two kinds of performance: accounting performance and market performance. To analyze accounting performance, we use three measures:

- (1) the operating return on assets (OROA), calculated as the operating earnings divided by total assets. We use OROA because it is unaffected by any changes in capital structure, which determines the corporate tax base;
- (2) return on equity (ROE), computed as the ratio of net earnings to equity; and
- (3) sales growth (SG), calculated as the change in the natural logarithm of sales. To measure market performance, and following Pérez-González (2006), we employ the market-to-book (MB) ratio, computed as the market value to the book value of the equity. We opt to consider MB instead of Tobin's Q ratio, since Zhou (2012) has recently shown that Tobin's Q is not an accurate measure of performance during crisis periods, because inventors tend to be irrational and share price volatility is high.

As regards independent variables, we consider the operational risk (RISK), the employment (EMPLOY) and market crisis (CRISIS) variables.

Following Mishra and McConaughy (1999), we measure RISK as the standard deviation (calculated over the past three years) of operating income before depreciation to annual sales. We define EMPLOY as the natural logarithm of the number of employees in the firm (Zhou, 2012). In order to identify CRISIS, we consider a dummy variable which is one if a fiscal year is considered a year of financial recession, and zero otherwise. We assume that financial crisis really strikes the financial market in 2008-2010, thus, CRISIS will take the value one for 2008-2010, and zero otherwise.

As control variables, we consider firm age (AGE), leverage (LEV) and the cost of debt (COST).

Like previous studies (Bhaird and Lucey, 2009; Nunes *et al.*, 2012), we expect a positive relationship between AGE, calculated as the natural logarithm of the difference between incorporation year and a fiscal year, and firms performance. We consider LEV as the ratio of total debt to total assets (Mishra and McConaughy, 1999; Chen *et al.*, 2010). It cannot be predicted, a priori, the expected signal for this variable. On the one hand, it is expected a positive relationship between debt and performance because, according to the theory of free cash flow (Jensen, 1986), debt is a disciplining device. On the other hand, and based on the assumptions of the pecking order theory (Myers, 1984; Myers and Majluf, 1984), profitable firms have low levels of debt capital because they are able to use internal financing (Rajan and Zingales, 1995). In this context, it is expected

a negative relationship between profitability and debt. Although some authors find a negative relation between the two variables (Rajan and Zingales, 1995; Flannery and Rangan, 2006; La Rocca *et al.*, 2011), other authors question the expected relationship between them (Constantinides and Grundy, 1989; Barclay and Smith, 1995). COST is considered as the after-tax cost of debt, calculated as the ratio of interest expenses by interest-bearing short-term and long-term debt, multiplied by one minus the marginal tax rate. It is expected a negative relationship between the COST and the firms' performance.

In order to analyze the relationship between performance and their determinants, we employ the following regression model:

$$\begin{aligned} \text{PERF}_{i,t} = & \alpha + \beta_1 \text{FF}_{i,t} + \beta_2 \text{RISK_FF}_{i,t} + \beta_3 \text{EMPLOY_FF}_{i,t} \\ & + \beta_4 \text{CRISIS_FF}_{i,t} + \beta_5 \text{RISK}_{i,t} + \beta_6 \text{EMPLOY}_{i,t} + \beta_7 \text{CRISIS}_{i,t} \quad (1) \\ & + \beta_8 \text{AGE}_{i,t} + \beta_9 \text{LEV}_{i,t} + \beta_{10} \text{COST}_{i,t} + \text{IND}_i + \varepsilon_{i,t} \end{aligned}$$

PERF consists of the different measures of accounting and market performance already specified; $\text{FF}_{i,t}$ is a dummy variable which is one if a firm is considered a family firm, and zero otherwise; RISK_FF , EMPLOY_FF and CRISIS_FF are interaction terms between the dummy that identifies FF and the performance determinants (independent variables): RISK, EMPLOY and CRISIS. We consider the variables included in the interaction variables also as standalone variables, in order to see if the effects of these variables are statistically different between family and NFF. AGE, LEV and COST are control variables. IND are industry dummy variables representing the main industry sectors:

- primary sector (agriculture and fishing);
- secondary sector (manufacturing and construction); and
- tertiary sector (services and commerce).

We use pooled OLS regressions and present the standard errors corrected for heteroscedasticity and covariance, based on the White's (1980) heteroscedasticity consistent standard errors method.

Table I describes the variables used in this study.

In order to analyze whether the determinants of performance differ between expansion and recession periods, we split the sample in two sub-periods: before the crisis (1999-2007) and during the crisis (2008-2010).

4. Research results

4.1 Descriptive statistics

Table II reports the descriptive statistics for the variables used in the subsequent analysis for FF and NFF, as well as the difference in means. The last columns present the *t*-statistic and Wilcoxon Z statistics for differences in mean and median values between the two sub-samples, respectively. We winsorize the variables at their 1 and 99 percentile levels to mitigate the effect of outliers.

Although FF present higher values than NFF for all the performance measures, the mean differences are not statistically significant, suggesting that FF do not significantly outperform NFF. FF are different from NFF in what concerns RISK, EMPLOY, AGE,

Variables	Measures
	Dependent variables
<i>Performance (PERF)</i>	
Accounting performance	
Operating return on assets (OROA)	Ratio of operating earnings to total assets
Return on equity (ROE)	Ratio of net earnings to equity
Sales growth (SG)	Change in the natural logarithm of sales between year t and year $t - 1$
Market performance	
Market-to-book (MB) ratio	Ratio of market value to book value of equity
	Independent variables
Family firms (FF)	Dummy variable that takes the value 1 if the firm is a FF and zero otherwise
Operational risk (RISK)	Standard deviation of operating income before depreciation to annual sales (calculated over the past three years)
Employment (EMPLOY)	Natural logarithm of the number of employees in the firm
Market crisis (CRISIS)	Dummy variable, which is one if a fiscal year is considered a year of financial recession, and zero otherwise
	Control variables
Firm age (AGE)	Natural logarithm of the difference between incorporation year and the fiscal year
Leverage (LEV)	Ratio of total debt to total assets
Cost of debt (COST)	Ratio of interest expenses by interest-bearing short-term and long-term debt, multiplied by one minus the marginal tax rate
IND	Industry dummy variables representing the main industry sectors: (1) primary sector (agriculture and fishing); (2) secondary sector (manufacturing and construction); and (3) tertiary sector (services and commerce)

Table I.
Variables

Note: This table describes the dependent and independent variables

LEV and COST. FF are older, have more employees, are more indebted and the cost of debt is higher, but present lower levels of operational risk.

The Wilcoxon test statistics for significance of differences in medians indicate that the median value for the variables RISK, EMPLOY, AGE and COST are significantly different for FF and NFF. The median differences for OROA and LEV are statistically significant at the 5 and 10 percent level, respectively.

Table III shows the performance measures means before the crisis period (1999-2007) and during the crisis (2008-2010), as well as the differences in mean and median variables between the two periods, considering all the firms (Panel A), FF (Panel B) and NFF (Panel C).

Panel A shows that OROA, ROE and MB differ by period. Before the crisis period, the firms are more profitable than in the crisis period, except for the ROE results, which suggests that ROE is not an appropriate measure of firm performance. The difference in results before and during the crisis is due to FF (Panel B), since none of the mean differences for NFF is statistically significant (Panel C). Consequently, the results suggest that FF are more sensitive to crisis periods than NFF.

The Wilcoxon test statistics for significance of differences in medians indicate that, with the exception of ROE for the global sample, the median value for all the variables

Table II.
Descriptive statistics

	FF			NFF			Mean Differences			Median differences		
	Mean	Median	Minimum	Maximum	SD	Mean	Median	Minimum	Maximum	SD	t-value	Wilcoxon Z test
OROA	0.067	0.041	-0.163	1.473	0.188	0.046	0.031	-0.413	0.794	0.190	1.324	-2.084**
ROE	0.075	0.084	-2.078	1.873	0.324	0.040	0.082	-2.794	2.653	0.735	0.0341	-0.542
SG	0.003	0.001	-0.039	0.041	0.013	0.002	0.001	-0.046	0.046	0.015	0.0006	0.264
MB	2.372	1.068	-1.411	35.843	5.429	1.817	1.144	-6.444	14.704	3.276	0.5555	1.341
RISK	0.604	0.266	0.013	5.933	0.979	1.233	0.490	0.010	13.411	2.288	-0.6293	-4.624*
EMPLOY	7.428	7.393	4.868	10.862	1.487	6.118	6.191	1.099	10.237	2.263	1.3105	8.407*
AGE	3.384	3.497	1.099	5.069	0.746	2.935	3.238	0.693	4.220	0.929	0.4496	6.365*
LEV	0.711	0.728	0.021	1.356	0.208	0.670	0.693	0.125	1.325	0.261	0.0411	2.083**
COST	0.044	0.020	0.000	0.427	0.081	0.021	0.010	0.000	0.113	0.026	0.0228	3.910*

Notes: Statistically significant at: *1, **5 and ***10 percent levels, respectively; this table provides the means, median, minimums, maximums and the standard deviations (SD) of the variables for the FF and NFF sub-samples, as well as the differences in mean variables between FF and NFF; the significance levels for means differences are based on a two-tailed t-test and the median differences are based on the Wilcoxon Z test; FF are those in which the founding family or family member controlled 20 percent or more equity, and was involved in the top management of the firm; the variables are defined in Table I

	Before crisis		During crisis		Mean Differences	<i>t</i> -value	Median differences Wilcoxon Z test
	Mean	Median	Mean	Median			
<i>Panel A: all firms (N = 583)</i>							
OROA	0.067	0.039	0.034	0.038	0.032	1.703**	-1.267
ROE	0.041	0.080	0.138	0.091	-0.097	-1.904**	-1.989*
SG	0.003	0.001	0.002	0.001	0.000	0.094	0.321
MB	2.410	1.192	1.336	0.870	1.073	2.244*	1.587
<i>Panel B: family firms (N = 377)</i>							
OROA	0.076	0.042	0.039	0.040	0.037	1.588	-1.817**
ROE	0.060	0.084	0.125	0.084	-0.066	-1.659**	-1.994**
SG	0.003	0.001	0.002	0.001	0.001	0.488	-0.125
MB	2.665	1.184	1.383	0.871	1.282	1.931**	1.227
<i>Panel B: non-family firms (N = 206)</i>							
OROA	0.051	0.027	0.025	0.035	0.026	0.786	1.672**
ROE	0.009	0.074	0.165	0.108	-0.156	-1.217	-0.933
SG	0.002	0.001	0.003	0.002	-0.001	-0.420	-1.231
MB	1.960	1.203	1.239	0.841	0.721	1.264	0.130

Notes: Statistically significant at: *5 and **10 percent levels, respectively; this table shows the performance measures means and medians before the crisis period (1999-2007) and during the crisis (2008-2010), as well as the differences in mean and median variables between the two periods, considering all the firms, the FF and the NFF; the significance levels for means differences are based on a two-tailed *t*-test and the median differences are based on the Wilcoxon Z test; FF are those in which the founding family or family member controlled 20 percent or more equity, and was involved in the top management of the firm; the variables are defined in Table I

Table III.
Performance measures before and during the crisis period

are statistically insignificant or only significant at the 10 percent level, before and during crisis period, which suggest no major effects of outliers.

Table IV reports the Pearson correlations for the independent variables for FF (Panel A) and NFF (Panel B).

For both the sub-samples, the correlation coefficients are low (below 0.48). Consequently, correlation coefficients do not appear to be sufficiently large to cause concern about multicollinearity problems. None of the variance inflation factors (VIFs) are greater than 10, indicating no problematic degree of collinearity.

4.2 Regression estimators

Table V reports the regression (1) results considering the three accounting measures of performance (OROA, ROE and SG) and the market performance measure (MB). The *t*-statistics are corrected for heteroscedasticity using the White (1980) method.

The best explanatory models for the relationship between the independent variables and the firms' performance are the ones in which the dependent variable is the MB and the OROA, so we will mainly interpret these regression results. The model that presents the lower R^2 value is the ROE model, suggesting that ROE is not an appropriate measure of firm performance, which is consistent with the conclusion obtained in Table III.

In what concerns the MB regression, the results show that the FF coefficient is positive and statistically significant, giving support to the hypothesis that FF outperform NFF (H_1). The effects of RISK, EMPLOY and CRISIS variables are not statistically different between family and NFF. Consequently, the results do not show

	OROA	ROE	SG	MB	LEV	RISK	EMPLOY	AGE	COST
<i>Panel A – family firms</i>									
OROA	1								
ROE	0.021	1							
SG	0.054	0.056	1						
MB	0.016	0.070	0.038	1					
LEV	-0.151	0.139	-0.228	0.034	1				
RISK	0.026	0.068	-0.140	0.032	0.085	1			
EMPLOY	0.062	0.083	0.080	-0.072	0.008	-0.128	1		
AGE	0.058	-0.173	-0.161	-0.190	0.179	0.070	-0.069	1	
COST	0.035	0.078	-0.001	-0.059	-0.009	-0.054	0.161	0.133	1
<i>Panel B – non-family firms</i>									
OROA	1								
ROE	0.217	1							
SG	-0.025	0.002	1						
MB	-0.196	-0.474	0.034	1					
LEV	-0.016	0.053	-0.009	-0.153	1				
RISK	-0.199	-0.108	-0.113	-0.039	-0.042	1			
EMPLOY	0.199	0.052	0.137	0.164	0.368	-0.382	1		
AGE	0.367	0.051	-0.128	-0.292	-0.253	-0.125	-0.242	1	
COST	-0.119	-0.028	0.050	0.088	0.079	-0.065	0.218	-0.101	1

Table IV.
Pearson correlation
matrix

Notes: This table presents the Pearson correlations among variables for the FF (Panel A) and NFF (Panel B); FF are those in which the founding family or family member controlled 20 percent or more equity, and was involved in the top management of the firm; the variables are defined in Table I

evidence for H_2 , H_3 and H_4 , respectively. The AGE coefficient is negative and statistically significant, which suggests that the older the firm, the lower the MB.

Concerning the OROA regression results, we can see that FF do not outperform NFF, giving no support to H_1 . The variables that explain the OROA measure of performance are the EMPLOY, AGE and LEV. The results show a positive and significant coefficient for the EMPLOY variable, as expected. However, the coefficient is not statistically different from zero in what concerns the interaction effect between EMPLOY and family influence. Thus, although the variables are statistically different between family and NFF, the results do not support the hypothesis that the positive relationship between employment and firm performance is stronger for FF than NFF (H_3). As expected, the relationship between AGE and performance is positive. Finally, the results show that the higher the leverage, the lower the OROA.

In addition, we would like to see whether the variables included in the model have different effects before and during the crisis, considering the market performance measure.

In order to analyze whether the determinants of market performance differ between expansion and recession periods, we run a regression similar to equation (1), but considering the sub-sample of FF and the interaction variables related to crisis period. Table VI shows on the basis of the MB measure of performance.

The results show that crisis affects negatively the firm performance, consistent with the Table V results. In addition, MB is negatively influenced by AGE.

For robustness reasons, we consider some additional variables, such as the board independence and the firm size. Our results do not differ significantly[3], so our main

$$\text{PERF}_{i,t} = \alpha + \beta_1 \text{FF}_{i,t} + \beta_2 \text{RISK_FF}_{i,t} + \beta_3 \text{EMPLOY_FF}_{i,t} + \beta_4 \text{CRISIS_FF}_{i,t} + \beta_5 \text{RISK}_{i,t} + \beta_6 \text{EMPLOY}_{i,t} + \beta_7 \text{CRISIS}_{i,t} + \beta_8 \text{AGE}_{i,t} + \beta_9 \text{LEV}_{i,t} + \beta_{10} \text{COST}_{i,t} + \text{IND}_i + \varepsilon_{i,t}$$

Dependent variable	OROA		ROE		SG		MB	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Constant	-0.1651	-2.860*	0.1155	0.719	0.0101	2.467**	5.1988	3.504*
FF	0.0626	0.948	-0.2019	-1.098	0.0036	0.774	3.6628	2.157**
RISK_FF	0.0129	1.120	0.0626	1.956***	-0.0009	-1.048	0.3157	1.068
EMPLOY_FF	-0.0136	-1.507	0.0282	1.119	-0.0003	-0.484	-0.3785	-1.626
CRISIS_FF	0.0032	0.082	-0.0888	-0.815	-0.0014	-0.509	-0.4479	-0.445
RISK	-0.0055	-0.900	-0.0386	-2.273**	-0.0006	-1.279	-0.0803	-0.512
EMPLOY	0.0251	3.870*	-0.0121	-0.672	0.0008	1.716***	0.1268	0.760
CRISIS	-0.0399	-1.240	0.1342	1.497	0.0014	0.595	-0.7011	-0.847
AGE	0.0490	5.114*	-0.0327	-1.227	-0.0022	-3.218*	-1.2140	-4.928*
LEV	-0.1064	-3.076*	0.1671	1.736***	-0.0089	-3.610*	-0.5138	-0.578
COST	-0.0438	-0.381	0.1998	0.624	0.0003	0.039	-0.5802	-0.196
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	583	583	583	583	583	583	583	583
Adjusted R ²	0.074	0.074	0.010	0.010	0.046	0.046	0.047	0.047

Notes: Statistically significant at: *1, **5 and ***10 percent levels, respectively; this table shows the OLS regression (1) results; the t-statistics are corrected for heteroscedasticity using the White (1980) method; the estimates include industry dummy variables (statistically insignificant), but not show; the variables are defined in Table I

Table V.
Regression results

$$MB_{i,t} = \alpha + \beta_1 CRISIS_{i,t} + \beta_2 RISK_{i,t} + \beta_3 EMPLOY_{i,t} + \beta_4 AGE_{i,t} + \beta_5 LEV_{i,t} + COST_i + IND_t + \varepsilon_{i,t}$$

	Coefficient	t-value
Constant	8.2630	3.915*
CRISIS	-1.2693	-1.910**
RISK	0.2241	0.779
EMPLOY	-0.2640	-1.390
AGE	-1.5575	-3.987*
LEV	1.9833	1.444
COST	-0.3741	-0.107
	0.2753	0.412
Industry dummy		Yes
N		377
Adjusted R ²		0.059

Notes: Statistically significant at: *1 and **10 percent levels, respectively; this table shows the OLS regression (1) results adapted for the FF sub-sample, considering the market performance measure; the *t*-statistics are corrected for heteroscedasticity using the White (1980) method; the estimates include industry dummy variables (statistically insignificant), but not show; the variables are defined in Table I

Table VI.
Regression results for FF

conclusions do not change. In addition, we vary the definition of FF in order to analyse if results are stable when ownership varies, considering FF as the ones with at least one individual or a family with more than 25 percent of the voting rights. Compared to Table V results, the percentage of the total variation in performance explained by the model (*R*²) slightly increases for the OROA and ROE dependent variables, and decreases for the other two (SG and MB), suggesting that evidence concerning FF performance is somewhat sensitive to the different FF definitions (Westhead and Cowling, 1998; Maury, 2006; Miller *et al.*, 2007; Allouche *et al.*, 2008).

4.3 Results discussion

Based on Table II results, we can see that although the FF present higher mean values for all the performance measures, the differences between the performance means of FF and NFF are not statistically significant. Consequently, we find no evidence for the hypothesis that FF outperform NFF (*H*₁). These results are consistent with others that are inconclusive (Khanna and Rivkin, 2001; Claessens *et al.*, 2002; Block *et al.*, 2011; Zhou, 2012). Consequently, our evidence does not provide significant enough results, suggesting that the evidence concerning family firm performance might be sensitive to the different definitions of performance as well as sensitive to the definition of FF (Westhead and Cowling, 1998; Maury, 2006; Miller *et al.*, 2007; Allouche *et al.*, 2008).

The higher level of EMPLOY can be associated with the bigger size of firms (it might be a surrogate for size) as well as with the higher level of operational risk, influenced by high personnel costs.

The empirical evidence that FF are more indebted than NFF is in line with the evidence of Pindado and Torre (2008), Setia-Atmaja *et al.* (2009) and Setia-Atmaja (2010), but contrary to the results of Mishra and McConaughy (1999) and Allouche *et al.* (2008). The evidence that FF are more dependent on lenders than NFF might be explained by the lower level of risk for FF, which allows for higher levels

of debt. In addition, older business owners tend to present lower levels of preference for equity (Romano *et al.*, 2000) and, in our sample, FF are indeed older. This may also suggest that FF are less concerned about financial risk, since their cost of debt is higher, but are more concerned with maintaining their control over the firm than their counterparts (Pindado and Torre, 2008). Finally, FF might use debt as a substitute for independent directors (Setia-Atmaja *et al.*, 2009; Setia-Atmaja, 2010).

Table III results suggest that FF are more sensitive to crisis periods than NFF. In addition, it seems that ROE present some difficulties as a performance indicator (Martínez *et al.*, 2007). One possible explanation for the difference of OROA and ROE accounting measures before and during crisis might be the associated with the FF's enhanced ability to generate higher operational earnings but its lower capacity to generate financial earnings, which is related to a weaker financial performance. Indeed, FF are more indebted and have higher debt costs, which is associated with the higher interest expenses and lower net earnings, used to calculate ROE. One reason that might explain the market measure (MB) performance results is associated with the fact that market measures are mainly driven by the market price of shares (Zhou, 2012). High volatility of share price is one of the characteristics of recession periods (Veronesi, 1999). In addition, investors are prone to be irrational and overreact to poor market conditions during recessions (Glode *et al.*, 2010). Consequently, during crisis period, share prices are undervalued and MB declines. Indeed, we calculate the average monthly return volatility of the sample, finding that during the crisis period (2008-2010), the volatility of monthly returns is higher than in the rest of the sample period, which is in agreement with the arguments above.

Although the lower levels of the correlation coefficients (Table IV) do not cause concern about multicollinearity problems, the negative correlation between COST and LEV for FF and the very low correlation coefficient for NFF is somewhat strange. However, it might be associated with the weight of interest-bearing debt that results in interest expenses and the other liabilities, free of expenses.

The evidence that one of the regression models (Table V) with higher R^2 is the one in which the dependent variable is MB, together with the Table II results (although not statistically significant, the higher t -value for the mean differences is for the MB variable), indicates that the market performance (MB) is the measure that best explains firm performance.

Considering the market performance measure, we find evidence for the hypothesis that FF outperform NFF (H_1), which is in line with previous studies (Anderson and Reeb, 2003; Sraer and Thesmar, 2007; Allouche *et al.*, 2008; Scholes *et al.*, 2012). However, in relation to the accountability measures, the results are consistent with others that are inconclusive (Claessens *et al.*, 2002; Zhou, 2012). Consequently, our evidence does not provide significant enough results, suggesting that the evidence concerning family firm performance is sensitive to the different definitions of performance.

The AGE coefficient shows a negative relationship between age and performance. Although it does not have the expected signal, one possible reason might be the life cycle of firms. Older firms are more likely to be in the maturity phase, with lower levels of growth opportunities, and, consequently, with lower levels of market performance.

Concerning the accounting performance measures, the best model is the one in which the dependent variable is OROA. Regarding employment, the results show a positive and significant relationship between EMPLOY and OROA, suggesting that employment

contributes to enhancing FF performance, which is in agreement with the results of Lepak *et al.* (2003) and Zhou (2012). This evidence might be associated with better skills to perform the requisite functions and roles in the firm's business activities, contributing to functional flexibility, and consequently, to higher levels of performance (Atkinson, 1984). The results do not show a positive relationship between EMPLOY and OROA for FF, not giving support to H_3 . However, we must be cautious when interpreting this result, because the employment variable might be a surrogate for size, not detecting a supposed higher implication of FF in the human resource management area.

AGE positively influences performance, which is in accordance with the evidence that older firms are more able to obtain higher levels of performance (Bhaird and Lucey, 2009; Nunes *et al.*, 2012).

In what concerns the LEV coefficient, the results show a negative effect of debt on firm performance, which is in agreement with previous studies, such as those by Rajan and Zingales (1995), Flannery and Rangan (2006), Martínez *et al.* (2007) and La Rocca *et al.* (2011) and gives support to the pecking order theory.

Considering the ROE performance measure, the coefficient on RISK shows that the higher the operational risk, the lower the profitability. The evidence that firms with high volatility of operating earnings are more likely to be exposed to risk (Fama and Jensen, 1983; Titman and Wessels, 1988; Adams and Buckle, 2003) may explain our results showing a negative impact of RISK on performance. However, the coefficient on RISK considering the interaction effect between RISK and FF is positive, showing a different effect of RISK on ROE between FF and NFF.

Finally, the results shown in Table VI suggest that market performance is negatively affected by crisis.

5. Conclusion

This study investigates the relationship between the ownership of Portuguese public firms and both accounting and market performance, by comparing family and NFF using data for the period 1999-2010.

Overall, the empirical results suggest that FF outperform NFF, but only as regards the MB performance measure, which proposes that founding family presence is positively related to market performance. However, for accounting performance, the results do not provide support for the hypothesis that FF perform better than NFF. Consequently, our evidence does not provide significant enough results, suggesting that the evidence concerning family firm performance is sensitive to the different definitions of performance used.

Compared to their NFF counterparts, FF are more indebted and older, with higher debt costs and present lower levels of risk. The results show that FF are more dependent on lenders than non-family companies, which is consistent with the evidence of Pindado and Torre (2008), Setia-Atmaja *et al.* (2009) and Setia-Atmaja (2010).

Before the crisis period, the firms were more profitable than in the crisis period, excluding the ROE results, which suggest that ROE is not an appropriate ratio for measuring firm performance (Martinez *et al.*, 2007). In addition, the CRISIS effect on performance is stronger for FF than NFF.

The evidence does not support the hypotheses that the negative relationship between performance and operational risk as well as crisis, and the positive relationship between performance and employment is stronger for FF than NFF.

Finally, the results suggest some differences in the market measure performance before and during the crisis period, being the MB negatively influenced by crisis and by AGE.

Our study has some limitations. First, the sample is of small size, which is inherent to the small size of Portuguese capital market. Second, the analysed period is limited to the data availability. Third, the definition of FF could influence the results.

In future research, we would like to analyse whether the performance is driven by FF or founder led firms. Previous literature argues that family involvement in terms of ownership, management and control may not be enough to explain how families contribute to their business (Zellweger *et al.*, 2010). In this context, we would like to consider several dimensions of family-related social factors that create familiness (Pearson *et al.*, 2008), focusing on the family aspect of familiness (Zellweger *et al.*, 2010).

In addition, we would like to explore whether FF differ from non-family firm in what concerns their main purposes. FF might have goals that are not necessarily the firms' growth and the wealth maximization (DeAngelo and DeAngelo, 2000; Chrisman *et al.*, 2009). Moreover, it will be interesting to see if public FF performance differs from their private counterparts. The former are market-oriented, so they need to respond to the market (shareholders, analysts and investors), which focuses on performance. Consequently, public FF are forced to assume a more disciplined strategy.

Notes

1. Villalonga and Amit (2006) report that 19 percent of sample firms have control enhancing mechanisms such as dual shares, pyramids and voting agreements and La Porta *et al.* (1999) find evidence of the presence of pyramid structures and crossholdings in countries with strong legal investor protection.
2. For more detail about family ownership, management and control (Zellweger *et al.*, 2010).
3. For simplicity and space reasons, we do not report the results. However, they are available upon request to authors.

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