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Research paper

The Impact of Capital Structure on Abnormal Return: Does Family Control Impact?

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Abstract

Purpose: This study analyses the impact of family control in the relationship between abnormal returns and gearing for Portuguese listed firms. Moreover, it provides new evidence on this field taking into account firms' heterogeneities, namely size effect.

Design/methodology/approach: This paper uses a panel data of Portuguese listed firms with different capital structure and various industries. The sample period is from 1999 to 2012.

Findings: The models results show that size effect causes inference on results. To small-size firms, abnormal return declines with firm's gearing, but it increases with market gearing to large-size firms. To the overall sample firm's gearing is insignificant in explaining the firm's abnormal return. Moreover, firm's performance and risk, and free-risk rate cause impact on abnormal return.

Practical implications: The paper conclusions are relevant for institutional and individual investors, since they have more information about Portuguese firms and about the impact of gearing on the firm's abnormal return. Results are also important for practitioners, because it expands international evidence on abnormal return, which are focused on large countries as the U.K. and the U.S.

Originality/value: The majority of the studies in this research area focus on the impact of gearing on abnormal returns. This study goes a step further introducing the impact of family control on this relationship. Moreover, I also take into account the firm's heterogeneities, offering new insights to this stream.

Keywords: Family Firms, family control, F-PEC scale, Abnormal returns, Capital Structure, Gearing.

I. Introduction

The impact of debt intensity in the firm's stock return is not a new thematic. Since 1958 (and later in 1963) Modigliani and Miller highlight that the firm's cost of equity increases with debt intensity due to its financial risk. This fact is related with the binomial risk-return trade-off. Shareholders should earn higher return to be

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compensated for additional risk the firm can take. Since then this thematic has been greatly researched, but results are mixed and inconclusive.

Some researchers, as Fama & French (1992), Strong and Xu (1997), Ho, Strange and Piesse (2008), Gomes and Schmid (2010), found a positive relationship between market gearing and returns. Although, in regards to book gearing, results are mixed: some found a negative relationship (Fama & French, 1992, Strong and Xu, 1997, Muradoğlu and Sivaprasad, 2012), while others found any impact (Gomes and Schmid, 2010). Garlapi and Yan (2011) explained that debt intensity is useful to explain the firm's stock return, especially for firm with high probabilities of failure.

In this study I go a step further. I not only analyze the relationship between gearing (book and market) and abnormal returns, but also the impact of family control on this relationship. Anderson and Reeb (2003), Margaritis and Psillaki (2010), Croci, Doukas, and Gonenc (2011), Schmid (2012), and Lisboa (2015) found that family control as impact on the firm's capital structure. Moreover, other researchers, as Corstjens, Maxwell, Peyer, and Van der Heyden (2006), Cella (2009), Fahlenbrach (2009) and Miralles-Marcelo, Miralles-Quirós and Lisboa (2014), found that family firms exhibit abnormal returns compared to non-family firms. Moreover this study adds empirical evidence to this stream since it offers new insights into the sources of firms' heterogeneities. Miller, Breton-Miller, Lester, and Cannella Jr (2007) argue that family and non-family firms are not homogeneous groups. Therefore I divide the sample into small and big-size firms to take into account the impact of the size.

Using a panel data of Portuguese listed firms, with different capital structure and various industries, results show size effect cause impact on results. To small-size firms, abnormal return declines with firm's gearing, but it increases with market gearing to large-size firms. To the overall sample firm's gearing is insignificant in explaining the firm's abnormal return. This result is of greater importance in the sense that may contribute to explain some of the differences found in previous studies with regard to book gearing effect. To my knowledge, there is no comprehensive study on capital structure and abnormal return taking into account the firm's heterogeneities.

Following this introduction, section 2 presents the theoretical background and the hypothesis of this study. Section 3 describes the sample data and methodology employed. Section 5 presents empirical results. Finally, Section 6 offers concluding remarks.

II. Theoretical Background and Hypotheses

The CAPM model proposed by Sharpe (1964), and developed by Lintner (1965), Treynor (1965) and Black (1972), establish that expected returns are linear in beta alone. Although, many researchers suggested that expected returns may be related with other factors. Banz (1981) and Reinganum (1981) found that small-size firms earn higher return to compensate the additional risk of failure. Later on, Bhandari (1988) and Fama & French (1992) shed light to the importance of debt to explain expected stock returns. Fama & French (1993) verified that risk factors related to size and book-to-market equity are important to explain the variation in stock returns. Finally, Fama & French (1996) and others after it (e.g. Garlapi and Yan, 2011) summarize that abnormal returns can be justified by the existence of financial risk due to debt intensity.

Previous studies examining the impact of gearing and stock return found mixed evidence. Market gearing positively impacts return (e.g. Fama & French, 1992, and

Gomes and Schmid, 2010 to U.S.; Strong and Xu, 1997 to U.K.; Ho, Strange and Piesse, 2008 to Hong Kong.). Market leverage might be a proxy of financial risk that is reward in the marketplace. Although, with regards to book gearing, results are mixed: some found a negative relationship (Fama & French, 1992, Strong and Xu, 1997, Muradoğlu and Sivaprasad, 2012), while others found any impact (Ho, Strange and Piesse, 2008, Gomes and Schmid, 2010). Ho, Strange and Piesse (2008) argued that market gearing subsumes book gearing and captures the whole effect of the book-to-market variable. Investors may re-value some of the firm's assets even when it is not recorded in financial statements, which explains the different impact of market and book gearing on returns. Moreover, book market is from accounting statements which shows the past of the company, while return is related with investors' expectations of the future value of the company.

The following hypotheses naturally follow:

Hypothesis 1: Abnormal return is positively related with market gearing.

Hypothesis 2: Book gearing has no impact on abnormal returns.

In the context of corporate governance debt is relevant because it helps: 1) to solve agency conflicts between shareholders and managers (Jensen and Meckling, 1976); 2) the firm to access to capital in order to finance its growth, especially the smallest ones (Gomez-Mejia, Larraza-Kintana, and Makri, 2003). Family and non-family firms present different capital structure and singular reasons to look for debt (Margaritis and Psillaki, 2010, Croci, Doukas, and Gonenc, 2011, Schmid, 2012, and Lisboa, 2015). Family firms avoid external capital as it increases the firm risk and, in turn, the family personal one. The family wants to sustain the firm presence on the market and pass on to future generations because it is related with the family socio-emotional wealth (Gomez-Mejia, Haynes, Nuñez-Nickel, Jacobson, and Moyano-Fuentes, 2007). This leads to concentration of information about the firm. Financial investors may lack of sufficient information about family firms since it is scarce and less transparent (Schmid, 2012). Therefore, market gearing may have greater impact to non-family firms than to family ones. Family firms are more risky to investors due to their peculiarities. Therefore these firms may present an abnormal return due to its ownership structure. In fact, Corstjens, Maxwell, Peyer, and Van der Heyden (2006), Cella (2009), Fahlenbrach (2009) and Miralles-Marcelo, Miralles-Quirós and Lisboa (2014), found that family firms exhibit abnormal returns compared to non-family firms.

Taken together, these arguments suggest the following hypothesis:

Hypothesis 3: Abnormal return is positively related with family control.

The firms' heterogeneities can cause inference in results (Miller, Breton-Miller, Lester, and Cannella Jr., 2007). Size effect may moderate the relationships of firms and capital structure and returns. Smaller firms usually earn greater return to compensate additional risk of financial problems and inefficiencies (Fama & French, 1993). Investors have more facility in access to information of large-size firms, and so can reflect their expectations for the future in the firms' market value. Therefore, market gearing may be more accurate to explain large-firms abnormal returns than to small size-ones.

This lead to the following hypothesis:

Hypothesis 4: Size effect cause inference on the impact of gearing on abnormal return.

III. Data and Methodology

3.1. Data

This study analyses Portuguese listed firms in Euronext Lisen from 1999 to 2012. Portugal is a country almost unexplored in both financial and corporate governance areas, but that is gaining prominence in the last few years. Studying Portugal is a way to expand international evidence and to analyze if results to large-size countries are also confirmed to small-scale countries, as Portugal. Studying the impact of family and non-family firms in Portugal is also relevant since around 80% of the Portuguese firms and half of PSI 20 (the Portuguese market index) firms are family firms (Miralles-Marcelo, Miralles-Quirós, and Lisboa, 2014). This study aims to explain why the majority of firms all over the world are family firms.

3.2. Variables

The financial data was obtained from Datastream while ownership information was collected in Amadeus database.

CAAR is the cumulative average of abnormal return. First I calculate the monthly abnormal return for each stock as the difference between its stock return and return of PSI 20 (Portuguese index). The cumulative average of abnormal return is the 12 months of abnormal return.

Dfam is a dummy variable which is one when the firm is a family firm and zero otherwise. In this study the concept of family firms focus on the definition of family-controlled firm (Klein, 2000). Firms are identified as family if they meet two criteria: 1) family members control part of the voting stock; 2) family members are present on the board of directors as CEO or other. This definition is similar to that of Anderson, Reeb and Mansi (2003), and Miralles-Marcelo, Miralles-Quirós, and Lisboa (2014). First I collected the names of the firm owners and members of the board of directors. Then I manually classify firms as family or non-family firms.

Market gearing is the ratio of total assets to equity market value.

Book gearing is the total assets divided by equity book value.

MTBV is the market-to-book value ratio.

Size is the firm size measured as the logarithm of total assets.

ROA is the return on assets, measured as the operating income before depreciations divided by total assets.

Interest is the annual average of the monthly free-risk rate to Portugal.

Risk is the standard deviation of twelve months return.

Table 1: Variable descriptive statistic

Variable	Mean	S.D.	Max	Min.	Expected Sign	Justification
CAAR	0.1671	0.8018	8.8321	-1.2606		
Dfam	0.5232	0.4998	1.0000	0.0000	+	Family firms' information is scarcer and less transparent than those of non-family firms. Therefore, financial investors may ask for an abnormal return to compensate the additional risk.
Market gearing	0.3179	3.2512	48.343	-44.222	+	Market gearing might be a proxy of financial risk that is reward in the marketplace.
Book gearing	0.4939	0.5589	6.1911	-4.8343	NR	Book gearing is calculated from the accounting statements which show the past of the company, while returns are related with investors' expectations of the future value of the company. Therefore these variables may be unrelated.
MTBV	1.6745	4.6851	34.340	-96.120	+	Firms with higher market-to-book value are growing firms with less stability about the future and so can be compensated by the marketplace.
Size	5.6158	1.0204	7.9970	2.4314	-	Smaller firms usually earn greater return to compensate additional risk of financial problems and inefficiencies.
ROA	0.0124	0.1012	0.6788	-1.1819	-	Firms with superior financial performance may present less risk due to higher operating results. Therefore the market may compensate investors of firms with low ROA.
Interest	0.0425	0.0265	0.1258	0.0165	-	As free-risk rate increases, abnormal return may reduce since free-risk rate may be more similar to market return and thus to firms' stock return.
Risk	0.0306	0.0325	0.3519	0.0000	+	Riskier firms may present higher abnormal return due to the binomial risk-return.

The table present the descriptive statistics of CAAR (cumulative average abnormal return), Dfam (dummy variable that is one when the firm is a family firm and zero otherwise), market gearing (Assets/MV), book gearing (Assets/BV), MTBV (market-to-book value), size (natural logarithm of the firm's assets), ROA (return on asset), interest (average return of the free-risk rate), risk (standard deviation of twelve months return) of family and nonfamily firms. The column titled "expected sign" indicates the expected relationship (+ positive or – negative) between the firm's abnormal return measured as the cumulative average of abnormal return the variables included in the sample.

Table 1 reports the descriptive statistics of the variables in study. CAAR is in mean 16.71%, but very volatile. In the sample there are more family than non-family firms, since Dfam is, in mean, more than 0.5. This confirms that family firms are more prevalent in the stock market than non-family firms, as expected. Market and book gearing present different results confirming that these variables have different perspectives in measuring the firm's debt level. While book market focus on the company past, market value focus on future expectations. Market gearing is smaller than book gearing, suggesting that investors' point of view about the firm is higher than its accounting value. In regard to market to book value is in mean 1.67. The sample contains small and large firms. CAAR is, in mean, higher than interest, and less volatile. Finally, ROA and risk are both positive.

Table 2 reports the correlation matrix.

Table 2: Correlation matrix

	CAAR	Dfam	M.Gear.	B.Gear.	MTBV	Size	ROA	Interest	Risk
CAAR	1								
Dfam	-0.0324	1							
M. Gearing	-0.0140	-0.0143	1						
B. Gearing	-0.0723	0.0687	-0.4010	1					
MTBV	0.0795	-0.0141	-0.0026	-0.0167	1				
Size	-0.2213	-0.0329	0.0809	0.2760	0.0892	1			
ROA	0.0279	0.0918	-0.0433	-0.1032	0.0164	0.0869	1		
Interest	-0.0111	0.0070	0.0639	0.0625	-0.0612	0.0943	0.0004	1	
Risk	0.5012	-0.0093	-0.0587	-0.0411	-0.0927	-0.3643	-0.2060	0.1094	1

The table present the correlation matrix of all the variables included in the sample: CAAR (cumulative average abnormal return), Dfam (dummy variable that is one when the firm is a family firm and zero otherwise), market gearing (Assets/MV), book gearing (Assets/BV), MTBV (market-to-book value), size (natural logarithm of the firm's assets), ROA (return on asset), interest (average return of the free-risk rate), risk (standard deviation of twelve months return) of family and nonfamily firms.

From Table 2 I find the expected relationship between firm's average of abnormal return and MTBV, Size, Interest and Risk, but the opposite relationship with Dfam,

market gearing and ROA. CAAR and Risk are the more related variables, with a correlation of 0.5. Moreover, none of the others variables in our sample are highly correlated, at least not to a significant extent.

Before presenting the results from the multivariate analysis, table 3 presents the comparison of the mean values of the variables to family and non-family firms, and the main differences between them.

Table 3: Variables difference of a Mean Test

	CAAR	Market Gearing	Book Gearing	MTBV	Size	ROA	Interest	Risk
Total								
Family	0.1370	0.2735	0.5407 **	1.6061	5.5750	0.0211 **	4.2443	0.0303
Non-Family	0.1934	0.3667	0.4530	1.7489	5.6623	0.0037	4.2236	0.0322
Small-size firms								
Family	0.2611	-0.0998	0.4173 *	1.2147	4.8492	0.0284***	4.0415	0.0406
Non-Family	0.3252	0.1466	0.3290	1.3490	4.8574	-0.0166	4.0753	0.0406
Large-Size firms								
Family	0.0111	0.6389	0.6661	2.0037	6.3124***	0.0138***	4.4503	0.0197
Non-Family	0.0270	0.6541	0.6097	2.2539	6.6789	0.0293	4.4108	0.0216

This table presents the mean values of CAAR (cumulative average abnormal return), market gearing (Assets/MV), book gearing (Assets/BV), MTBV (market-to-book value), size (natural logarithm of the firm's assets), ROA (return on asset), interest (average return of the free-risk rate), risk (standard deviation of twelve months return) of family and nonfamily firms.

*, **, *** indicate a difference in means between family and nonfamily firms at the 1%, 5% and 10% significance levels, respectively.

The following facts emerge from Table 3. 1) Family and non-family firms present different book gearing and ROA, but similarities with regard to the other variables. 2) Abnormal returns are more evident to small-size firms than to large size firms. 3) Larger-firms present higher market to book value. 4) The difference between market and book gearing is more significant to small-size firms than to large-size ones.

3.3. Models

To measure the impact of family business on the cumulative average of abnormal return, the following model is regressed:

$$CAAR_{i,t} = \alpha_{i,t} + \beta_1 \times Dfam_{i,t} + \beta_2 \times Market\ Gearing_{i,t} + \beta_3 \times Book\ Gearing_{i,t} + \beta_4 \times MTBV_{i,t} + \beta_5 \times Size_{i,t} + \beta_6 \times ROA_{i,t} + \beta_7 \times Interest_t + \beta_8 \times Risk_{i,t}$$

This model is similar to that of Strong and Xu (1997), and Muradoğlu and Sivaprasad (2012).

To deal with firms heterogeneities the sample was divided in two: small and large companies. The division was done taking into account the mean size of family and non-family firms.

Models are estimated using the GMM (Generalized Method of Moments) approach of Mackinlay and Richardson (1991). The instrumental variables are the ones at the right side of the equation.

V. Empirical Results

Table 4 presents results from the tests of model proposed. The sample comprises 711 observations, 372 to family firms and 339 to non-family ones, for the period 1999-2012. For the overall sample abnormal return is positively related with the firm's MTBV, ROA and risk and negatively explained by the free-risk rate. Growing firms, with higher MTBV, usually can earn more profits in the future, but also present more uncertainties than to stable firms. Therefore the marketplace gives to these firms an abnormal return due to the binominal risk-return. The same happens with regard to risk, as expected. Moreover, as free-risk rate increases, abnormal return decreases suggesting that returns of both market and stocks may be more near to free-risk rate. Finally, abnormal returns also increases with ROA, contrary to my expectations. Higher performance firms are compensated by the market due to its efficiency. This suggests that financial risk is measured by other variables rather than by ROA. Family control does not cause any impact contrary to expectations (Hypothesis 3). The results do not change when we analyze family and non-family firms in separate.

Table 4: Capital Structure Impact on Abnormal Return

	Total Period			Small Firms			Large Firms		
	Total	Family	Non-Family	Total	Family	Non-Family	Total	Family	Non-Family
C	0.0379	0.0318	-0.3459	-0.1977 *	-0.3426 ***	-0.3162 *	0.0675	0.0988	0.0874
D_{Fam}	-0.0635	-	-	-0.1111	-	-	-0.0000	-	-
Market Gear.	0.0075	0.0113	0.0113	0.0213	0.0275 **	0.0620	-0.0513 ***	-0.1449 ***	-0.0298 *
Book Gear.	-0.0017	0.0509	-0.0227	0.0871	0.1743 *	0.0959	-0.0433	0.0493	-0.1258 **
MTBV	0.0217 ***	0.0257 **	0.0197 ***	0.0204 ***	0.0135	0.0195 **	0.0251 ***	0.0239 *	0.0066
Size	-0.0385	-0.0472	0.0120	-	-	-	-	-	-
ROA	1.1460 ***	1.0530 ***	1.3273 ***	1.2882 ***	1.3418 **	1.3823 ***	0.0845	-0.3377	0.3498
Interest	-1.7745 *	-0.2823	-3.9944 **	-2.1810	2.4023	-6.9202 **	-0.1068	0.3295	0.0056
Risk	13.151 ***	9.6598 ***	19.750 ***	14.148 ***	9.7513 ***	21.682 ***	-2.1009	-4.3501	0.4386
Observations	711	372	339	376	184	192	335	188	147
Adj-R square	28.55%	26.63%	33.81%	29.02%	29.33%	35.52%	10.13%	16.84%	9.02%

This table presents the estimates of CAAR (cumulative average abnormal return) on D_{fam} (dummy variable that is one when the firm is a family firm and zero otherwise), market gearing (Assets/MV), book gearing (Assets/BV), MTBV (market-to-book value), size (natural logarithm of the firm's assets), ROA (return on asset), interest (average return of the free-risk rate), risk (standard deviation of twelve months return). Results are present to the total sample, Family Firms and Non-Family firms, and subsamples of small and large-size firms.

*, **, *** Significant at the 10%, 5% and 1% levels, respectively.

Although, firms heterogeneities, namely size effect, cause inference in results, validating hypothesis 4. To small-size firms, in general the same variables presented before cause impact on the cumulative abnormal return. Moreover, as expected in hypothesis 1 (but no in hypotheses 2), market gearing and book gearing positively influence the abnormal returns of these companies. As debt level increases, the market may compensate investors with abnormal returns. This is consistent with the results of other authors as Fama & French (1992), Strong and Xu (1997), Muradoğlu and Sivaprasad (2012). To family firms, investors are more concerned with debt intensity of the firm rather than the differences between market and book value of equity. This explains the insignificance of MTBV in explaining family firms' abnormal return. Similar conclusion was found by Muradoğlu and Sivaprasad (2012). As information about family firms is scarcer, investors may be more focus on the firms' debt intensity, rather than growing opportunities or intangible assets.

To large size firms market gearing causes the opposite impact on return. Investors may think that large size firms should have sufficient self-finance to support investments and if companies are looking for debt it can be to accomplish personal aims, rather than to maximize the firm value. The other variables have the same impact on abnormal return as presented before. To these firms, the explanation power of the model is smaller, but the number of observations is also less.

VI. Conclusions

This paper analyses the relationship between gearing and abnormal returns. I take into account the impact of family control on this relationship and of size effect. The empirical findings of this study show that size is a moderator of proposed relationship. To small-size firms, abnormal return increases with firms' gearing, both market and book. Although, to large-size firms, abnormal return decreases with market gearing. These results suggest that, as small firms are less operational efficiency and present more distress problems, the marketplace compensates investors of firms with more financial risk due to debt. Large-size firms should self-finance their own investments and thus debt intensity causes the opposite reaction on the market. As these firms increase debt their stock return decreases since this may mean that the firm is less efficient in developing its own activity.

The strength of this paper is its contribution to existing literature. It provides a better knowledge of abnormal return by considering the firms heterogeneities as moderator of the relationship between abnormal return and capital structure. Empirical results show that this effect can cause inference in results and, therefore can explain the differences found by previous researchers on this thematic.

Second, I also distinguish between family and non-family firms, contributing to corporate governance literature. Contrary to previous results that found that family and non-family firms present different capital structure and performance, in this study I find that, with regard to abnormal return, there is no significant difference between both types of firms.

Third, I analyze Portugal, a country almost unexplored either in asset pricing and corporate governance. Portugal is a small-sized market that is gaining prominence in the world financial market. The majority of the studies in this area focus on larger economies as the U.S. and the U.K. Therefore, analyzing this country is a way to expand international evidence.

The paper main aims are accomplished with this study. Although it has some limitation that open useful potential to future research. Future research should focus on other small-scale countries to confirm the extension of this results. As the number firms in the sample is scarce (due to the country dimension), I haven't take into account the impact of industries on results, but some studies, as Muradoğlu and Sivaprasad (2012) also conclude that it can also cause inference. Lastly, future research should focus on family firms and see if CEO's identity, blockholders or the composition of board of directors cause impact on the proposed relationship. As information about family firms is scarcer and less transparent, the market may take into account some governance variables when are evaluating these firms.

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