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Investor sentiment and share returns: evidence on family firms

La confianza de los inversores y los retornos de las empresas: evidencia en las empresas familiares

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Abstract

Purpose – The purpose of this paper is to examine the effect of investor sentiment on share returns, exploring whether this effect is different for public family and non-family firms.

Design/methodology/approach – The author uses the European Economic Sentiment Indicator data, from Directorate General for Economic and Financial Affairs as a proxy for investor sentiment and focused on the share returns of family and non-family firms, using panel data methodology.

Findings – Using data from listed family and non-family firms for the period between 1999 and 2011, in accordance with behavioural finance theory, the results indicate that there is a negative relationship between sentiment and share returns. In addition, the author found no difference between family and non-family firms in what concerns the effect of sentiment on share returns. The evidence also suggests that young, large and medium growth firms are most affected by sentiment. Finally, the results suggest that the evidence concerning the relationship between sentiment and returns is sensitive to the proxy used to measure the sentiment.

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

Originality/value – This paper offers some insights into the effect of investor sentiment on the share returns in the context of public family firms, a strand of finance that is scarcely developed. It also contributes to the analysis of a small European country, with a high concentration of equity ownership.

Keywords Investor sentiment, Market return, Family firms, Behavioural finance

Paper type Research paper

Estructurado resumen

Propósito – El propósito de este trabajo es examinar el efecto de la confianza de los inversores en las acciones devoluciones, explorando si este efecto es diferente para las empresas familiares públicas y no familiares.

Diseño/metodología/enfoque – Utilizamos los datos de los indicadores de sentimiento económico de Europa, de la Dirección General de Asuntos Económicos y Financieros (DG ECFIN) como sustituto de la confianza de los inversores y se centran en la cuota de los retornos de las empresas familiares y no familiares, utilizando datos de panel metodología.

JEL Classification — G02, G12, G14

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Conclusiones – El uso de los datos de las empresas que figuran familiares y no familiares para el período entre 1999 y 2011, los resultados indican que no existe una relación entre el sentimiento y la cuota de retorno, que está de acuerdo con la teoría financiera estándar, que predice que los precios de las acciones reflejan el descuento valor de los flujos de caja esperados y que la irracionalidad de los inversores se eliminan por árbitros. Además, no encontramos ninguna diferencia entre las empresas familiares y no familiares en lo que se refiere al efecto de la confianza en las acciones devoluciones. Por último, la evidencia sugiere que las grandes empresas y las empresas que pagan dividendos son los más afectados por el sentimiento.

Limitaciones investigación/implicaciones – Una limitación de este estudio es el pequeño tamaño de la muestra, que se deriva del pequeño tamaño del mercado de valores portugués, la Euronext Lisbon.

Originalidad/valor – Este artículo ofrece algunas ideas sobre el efecto de la confianza de los inversores en la cuota de rentabilidad en el contexto de las empresas familiares públicos, un mechón de financiación que apenas se desarrolla, y contribuye al análisis de un pequeño país europeo, con alta concentración de participación en el capital.

Palabras clave confianza de los inversores, la rentabilidad de mercado, las empresas familiares, Comportamiento finanzas

Tipo de papel Trabajo de investigación

1. Introduction

The standard finance paradigms are derived from investor rationality. Consequently, capital market prices reflect the present values of expected future cash flows, leading to equilibrium in the stock market returns. Potential irrationalities among investors are eliminated by arbitrageurs, meaning that investor sentiment plays no role in classical finance.

However, in the last decades, behavioural finance introduces sentiment into investor decision-making processes, considering that they are subject to sentiment (De Long *et al.*, 1990) and that striking sentiment is risky and costly (Shleifer and Vishny, 1997). In the behavioural finance literature, it is assumed that there are two kinds of investors: the rational investors or arbitrageurs, who form rational expectations about asset returns, and noise traders, who are subject to biases, because they are prone to sentiment (Shleifer and Summers, 1990). Basing the investment decisions on no rational behaviour among market participants explains deviations from rational pricing (Subrahmanyam, 2007). According to Baker and Wurgler (2006, 2007), the main constrains for mispricing are the limitations to arbitrage and the sentimental demand for assets.

Several studies analyse the impact of investor sentiment on share prices (Fisher and Statman, 2000; Baker and Wurgler, 2006, 2007; Lemmon and Portniaguina, 2006; Qiu and Welch, 2006; Schmeling, 2009; Yu and Yuan, 2011), finding that shares became overpriced during periods of high sentiment, and underpriced in periods of low sentiment. This led to a negative relationship between sentiment and future returns, concluding that investor sentiment influences financial market returns. Other studies focus on the market reaction to corporate news, such as earnings and dividends (Vieira, 2011; Mian and Sankaraguruswamy, 2012) concluding that, to some extent, investor sentiment influences the investor reaction to corporate announcements in the direction of sentiment. However, these studies do not explore the impact of investor sentiment on share returns in the context of family firms, which remain unexplored.

There is a large body of evidence pointing to the fact that family firms account for a significant percentage of firms in public traded firms around the world. In Portugal, France, Italy and Germany, more than 60 per cent of the listed firms are family firms (Faccio and Lang, 2002). La Porta *et al.* (1999) found evidence that around 50 per cent of

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firms in their sample of 27 countries are family controlled firms. In the USA, the percentage of family firms is lower, but also significant. For example, Anderson and Reeb (2003) and Villalonga and Amit (2006) found that 35 and 37 per cent of their sample firms are considered family firms, respectively.

In this context, we analyse the influence of investor sentiment on the share returns, assessing whether sentiment effects are different for family and non-family firms, considering data from an unbalanced panel of 58 Portuguese firms listed on Euronext Lisbon for the period between 1999 and 2011. Of the full sample, 35 are family firms (approximately 60 per cent) and the remaining 23 are non-family firms. This is consistent with Faccio and Lang (2002).

In general, in accordance with standard finance theory, our results show that both Portuguese family and non-family firms' share returns are not prone to sentiment. We also found that when sentiment is low, subsequent share returns are relatively high for large shares, medium growth shares and dividend-paying stocks. On the other hand, when sentiment is high, these groups of shares earn relatively low subsequent returns. Thus, the evidence suggests that large and dividend-paying firms are most affected by sentiment.

This study aims to contribute to the existing literature on behavioural finance in three distinct ways. First, it contributes to the research on the role of investor sentiment on the future share returns using data on consumer confidence as a measure of sentiment. Second, it is a pioneer study regarding the effect of investor sentiment on future share returns in family firms. To our knowledge, this is the first study to analyse the impact of investor sentiment on share returns in the context of family firms. Finally, it analyses a small equity European market, with a high concentration of equity ownership, where the relationship between sentiment and market returns is not explored, and where the presence of family firms is significant.

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

2. Literature review and hypotheses

Behavioural finance suggests that the expectations of optimistic and pessimistic investors affect asset prices. The noise traders who experience irrational sentiment and a limit to arbitrage can induce persistent mispricing (Baker and Wurgler, 2006). This field of finance contrasts with standard finance, which states that arbitrageurs are sentiment free, evaluating assets correctly, so that share prices reflect the discounted value of expected cash flows. Potential irrationalities among investors are eliminated by rational traders.

If mispricing is corrected, high (low) levels of investor optimism are followed by low (high) returns (Zouaoui *et al.*, 2011). Indeed, Baker and Wurgler (2006, 2007) and Lemmon and Portniaguina (2006) argue that shares become underpriced (overpriced) during periods of low (high) sentiment.

Several studies focus on the measures of investor sentiment (Brown and Cliff, 2004; Qiu and Welch, 2006; Gelper and Croux, 2007). Qiu and Welch (2006) conclude that the relation to investor sentiment is weaker with indirect sentiment indicators than with direct (surveys) measures of sentiment, and Gelper and Croux (2007) state that the European Economic Sentiment Indicator (ESI) can compete with other indicators. However, they conclude that the predictive power of the sentiment indicators is limited.

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Other studies analyse the link between stock market and consumer confidence. For example, Otoo (1999) studies the US market, showing a significant relationship between changes in the consumer confidence index and share returns, and Jansen and Nahuis (2003) study the same type of relationship, considering 11 European countries, including Portugal, based on the consumer confidence indicator. In general, they document that share returns and changes in sentiment are positively correlated for nine countries. However, they find no support for Granger causality between stock market and sentiment for Germany, Greece and Portugal.

The empirical evidence on the impact of sentiment on the market does not provide consensual results.

A vast number of empirical studies analyse the impact of sentiment on market returns using indirect measures for sentiment. Baker and Wurgler (2006) study how investor sentiment affects the share returns on the American market between 1962 and 2001, considering a composite index of sentiment. The authors found that young firms, highly volatile shares, extreme growth shares and distressed shares are more likely to be affected by investor sentiment, concluding that the sentiment effect is stronger for shares that are difficult to arbitrage and whose valuations are more subjective. A year later, Baker and Wurgler (2007) corroborate the previous evidence, concluding that when sentiment is low (high), the average future returns of speculative shares are on average higher (lower) than the returns of safe shares. In the same way, Zhang (2006) argues that shares which are small and have low analyst following, i.e., those with greater information uncertainty, show stronger statistical evidence of mispricing in terms of returns predictability from momentum and book-to-market (BM) ratio. The results found by Mian and Sankaraguruswamy (2012) are generally in accordance with the ones of Baker and Wurgler (2006, 2007) and Zhang (2006). Indeed, analysing the market reaction to earnings news in the US market over the period from 1985 to 2005, and using the investor sentiment measure of Baker and Wurgler (2006, 2007), Mian and Sankaraguruswamy (2012) find that the influence of sentiment on the share price reaction to news is stronger for small firms, young firms, volatile firms and growth and value firms.

Other studies analyse the impact of direct measures for sentiment or indexes of consumer confidence on market returns. Fisher and Statman (2000) analyse the sentiment of three US groups of investors, finding no relationship between the sentiment of newsletter writers and share returns. Using survey data, Brown and Cliff (2005) find evidence that sentiment affects market returns, concluding that optimism leads to market overvaluation and high sentiment is followed by low return.

Using the Index of Consumer Confidence, Lemmon and Portniaguina (2006) provide evidence consistent with the view that investor sentiment has an effect on share prices, which coincides with previous evidence presented by Fisher and Statman (2003). More specifically, they found that investors appear to overvalue (undervalue) small shares rather than large shares during periods when sentiment is high (low). However, they do not find evidence that growth and value shares react differently to changes in investor sentiment. Additionally, Brown and Cliff (2004) find that sentiment has little forecasting power for future returns.

Schmeling (2009) analyses whether consumer confidence affects share returns considering a sample of 18 countries. In agreement with previous evidence, they document a significant impact of investor sentiment on share returns across countries, finding a negative relationship between sentiment and share market returns. Moreover, they provide evidence that this relationship is the same for value, growth and small

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shares, which does not coincide with the results found by Lemmon and Portniaguina (2006) for value and growth shares.

Based on a sample of 15 European countries and the USA, Zouaoui *et al.* (2011) find that when investor sentiment is low (high), subsequent returns are high (low), concluding that when sentiment is low (high), shares are underpriced (overpriced) and will experience an increase (decline) in value. This concurs with the global results of Baker *et al.* (2012) who, constructing indexes for investor sentiment for six major stock markets, find that sentiment negatively forecasts market returns.

Based on the behavioural finance literature and empirical evidence that there is a negative relationship between investor sentiment and future market returns (Lemmon and Portiaguina, 2006; Baker and Wurgler, 2006, 2007; Schmeling, 2009; Mian and Sankaraguruswamy, 2012), we formulate the first hypothesis:

H1. The relationship between investor sentiment and future returns is significantly negative.

To our knowledge, there are no studies exploring the relationship between investor sentiment and the future market returns in the context of family firms. On one hand, family shares might be highly subjective and more difficult to arbitrage than non-family shares. This idea coincides with the behavioural finance literature and empirical evidence that sentiment has stronger effects on shares that are hard to value and hard to arbitrage (Shleifer and Vishny, 1997; Baker and Wurgler, 2006, 2007; Schmeling, 2009; Mian and Sankaraguruswamy, 2012), leading to the hypothesis that the effect of investor sentiment on future returns is stronger for family firms than non-family firms. On the other hand, family firms are more likely to diminish the information asymmetry between managers and shareholders. Consequently, determining their true value becomes simpler, and shares are likely to be less sensitive to sentiment. Based on this last assumption, we formulate the second hypothesis:

H2. The effect of investor sentiment on future returns is not different for family firms and non-family firms.

Several studies corroborate the behavioural finance hypothesis that, as mentioned above, sentiment has stronger effects on shares that are hard to value and hard to arbitrage.

The results found by Baker and Wurgler (2006) report evidence that when sentiment is high, future returns are relatively low for small, young, volatile share returns, unprofitable, non-dividend-paying, high growth, and distressed firms and vice versa. This evidence supports predictions that sentiment has stronger effects on shares that are hard to value and to arbitrage. In line with previous results, Baker and Wurgler (2007) found that when sentiment is low (high), the average future returns of speculative shares go over (are lower) those of bond-like shares. The authors conclude that shares that are difficult to arbitrage or to value are more greatly affected by sentiment.

Consistent with the view that investor sentiment influences share prices, Lemmon and Portiaguina (2006) find evidence that investors appear to overvalue small shares rather than large shares during periods of high sentiment, and vice versa.

The results found by Mian and Sankaraguruswamy (2012) indicate that the influence of sentiment on the share prices reaction is particularly pronounced for small, young, volatile, non-dividend paying and distressed shares.

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Based on the previous empirical evidence, we formulate the last hypothesis:

H3. The effect of investor sentiment on future returns is stronger for shares that are hard to value and to arbitrage.

We consider shares that are hard to value and to arbitrage those belonging to young firms, small firms, highly volatile firms, extreme growth and distressed firms and non-dividend paying firms.

3. Research method

3.1 Identifying family firms

According to Bennedsen and Nielsen (2010), there is a lack of a commonly accepted definition of family firms. Although there are several definitions for family firms in the literature, the main definitions are based on three main dimensions: the percentage of capital ownership, the firms control and family members' involvement in management (Villalonga and Amit, 2006).

Following La Porta *et al.* (2000) and Setia-Atmaja *et al.* (2009), we consider family firms as the ones in which the founding family or a family member controls 20 per cent or more of the equity and is involved in the firm's top management.

3.2 Data

The sample consists of unbalanced panel data from all the Portuguese non-financial family firms and non-family firms listed on the Euronext Lisbon during the period between 1999 and 2011. The sample period results from data availability. Following Anderson and Reeb (2003) and Wang (2006), financial firms were excluded because government regulations might affect firms financial reporting. Data were obtained from SABI (Sistema de Balanços Ibéricos – System Analysis of Iberian Balance Sheets), a private database supplied by Bureau van Dijk, and complemented with additional information collected directly from the company reports.

The full sample consists of 58 firms, corresponding to 633 observations. Family firms comprise 35 firms and 407 observations, and non-family firms consist of 23 firms, corresponding to 226 observations. Family firms constitute approximately 60 per cent of the full sample firms, which does not differ significantly from the percentage found by Faccio and Lang (2002) for the Portuguese firms (60.34 per cent). These values corroborate the evidence that family shareholders are common in publically traded firms worldwide (Claessens *et al.*, 2000; Faccio and Lang, 2002; Anderson and Reeb, 2003; Villalonga and Amit, 2006; Holderness, 2009).

3.3 Variables and research model

We need to choose a proxy for investor sentiment. However, there are no uncontroversial proxies for investor sentiment (Baker and Wurgler, 2006; Schmeling, 2009). Baker and Wurgler (2007, p. 130) affirm, "the question is no longer […] whether investor sentiment affects stock prices, but rather how to measure investor sentiment and quantify its effects".

Based on previous literature of consumer confidence as a proxy for investor sentiment (e.g. Lemmon and Portniaguina, 2006) and on the conclusion reached by Gelper and Croux (2007) that the European ESI – although constructed in a rather ad hoc way – can compete with the indicators constructed according to statistical principles, we consider the ESI, published by the European Commission and obtained from DG ECFIN database[1], a proxy for investor sentiment. The ESI index is based on

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sentiment surveys carried out in all European Union (EU) member states. It is a composite indicator made up of the individual components of the following confidence indicators: industrial, services, consumer, construction and retail trade confidence indicator. It is calculated at country level as well as at aggregate level (EU and Euro area). This index can be regarded a prediction of future economic activity in Europe, and therefore be used as a guide for both policy makers and businesspeople (Gelper and Croux, 2007). According to Shleifer (2000), the consumer confidence index reflects the philosophy of behavioural finance because it captures individual beliefs. The ESI has also been used by Jansen and Nahuis (2003) and Schmeling (2009) for the European markets considered in their samples.

In order to examine whether investor sentiment affects expected share returns, and thus, to test *H1*, we ran the following regression model:

$$\mathrm{RET}_{i,t} = \alpha + \beta_1\,\mathrm{ESI}_{t-1} + \beta_2\,\mathrm{OWN}_{i,t} + \beta_3\,\mathrm{LEV}_{i,t} + \beta_4\,\mathrm{AGE}_{i,t} + \beta_5\,\mathrm{SIZE}_{i,t} + \varepsilon_{i,t} \quad (1)$$

where i indexes firms; t denotes time; RET is the share returns[2]; ESI is the lagged proxy for sentiment, considering the ESI values for Portugal and ε is the error term. The coefficients on ESI allow us to test whether the share returns changes with the investor sentiment. We use the lagged sentiment to avoid a look-ahead bias in our tests.

We considered the ownership concentration (OWN), leverage (LEV), firm age (AGE) and firm size (SIZE) as the control variables.

OWN is computed as the percentage of shares held by the biggest shareholder (Shukeri *et al.*, 2012). Although Volpin (2002) found a negative relationship between family ownership and performance, Anderson and Reeb (2003) and Villalonga and Amit (2006) reported a positive relationship, so we cannot predict whether the variable will be positive or negative a priori. We considered LEV the ratio of total debt to total assets (Chen and Roberts, 2010). According to the free cash flow theory (Jensen, 1986), a positive relationship is expected between debt and share returns, but from the perspective of pecking order theory (Myers, 1984; Myers and Majluf, 1984), a negative relationship is expected between these variables. Thus, once more, we cannot predict whether the variable will be positive or negative a priori. We expected a positive relationship between AGE, calculated as the natural logarithm of the difference between incorporation year and a fiscal year, and firm performance (Bhaird and Lucey, 2009). Consistent with Garcia-Teruel and Martinez-Solano (2007), we expected a positive relationship between SIZE, measured as the natural logarithm of the book value of total assets of a firm, and firms' performance.

We employed the panel data methodology, running the pooled ordinary least squares (OLS), the fixed effects model (FEM), and the random effects model (REM)[3]. Subsequently, we run the *F*-statistic, the Breuch-Pagan statistic and the Hausman (1978) test in order to choose the most appropriate model. We present the standard errors corrected for heteroscedasticity and covariance, based on White's (1980) heteroscedasticity consistent standard errors method.

We then adapted the Equation (1), in order to test *H2*:

$$\mathrm{RET}_{i,t} = \alpha + \beta_1\,\mathrm{FF\_ESI}_{t-1} + \beta_2\,\mathrm{ESI}_{t-1} + \beta_3\,\mathrm{OWN}_{i,t} + \beta_4\,\mathrm{LEV}_{i,t} + \beta_5\,\mathrm{AGE}_{i,t} + \beta_6\,\mathrm{SIZE}_{i,t} + \varepsilon_{i,t} \quad (2)$$

where FF is a dummy variable which is one if a firm is considered a family firm, and zero otherwise. The relationship between family ownership and returns is determined

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by examining the coefficient on FF_ESI (β_1). A positive estimate on β_1 suggests that family firms' sentiment is more likely to affect share returns.

Since the literature on behavioural finance argues that behavioural biases would have a greater impact on shares that are difficult to arbitrage and harder to value (e.g. Shleifer and Vishny, 1997), we test *H3*, following studies by Baker and Wurgler (2006) and Mian and Sankaraguruswamy (2012).

We considered the group characteristics as concerning firm age, size, volatility, growth and/or distressed firms and dividend payers or non-payers. Firm age is computed as the natural logarithm of the difference between incorporation year and a fiscal year; firm size is computed as the natural log of total assets; the volatility of share returns is measured as the standard deviation of prices over the preceding sample years; the growth and/or distress is classified according to the BM ratio, calculated by dividing book value per share by the market price per share. Finally, we distinguish between dividend payers and non-payers.

We rank the firms into quartiles. Firms that fall in the top (bottom) quartiles are those with high (low) values for a particular variable. Insofar as the BM ratio, shares in the lowest quartile are considered growth shares and those in the quartile with the highest values are identified as the distressed shares.

To analyse cross-sectional differences in the impact of investor sentiment, we estimated Equation (2), considering sub-samples, according to the bottom and top quartiles (25 per cent) of the variables, as explained previously. For example, to investigate whether firm age causes cross-sectional differences in the impact of sentiment, we estimated Equation (2) for young firms (bottom 25 per cent) and mature firms (top 25 per cent). If share price sensitivity of young firms is more predisposed to the impact of sentiment, the coefficient on sentiment must be more pronounced for these types of shares. We followed the same procedure for all variables, except for BM and dividend payers. In the case of BM, we compared the extreme quartiles coefficients with those of the middle two quartiles, because extreme quartiles are more likely to be susceptible to the impact of investor sentiment. The extreme quartiles are associated with growth and distressed shares, respectively for the lowest and highest quartiles. For dividends, we split the sample between dividend payers and non-dividend payers.

4. Research results

Figure 1 shows the level of ESI index for the 1999-2011 period.

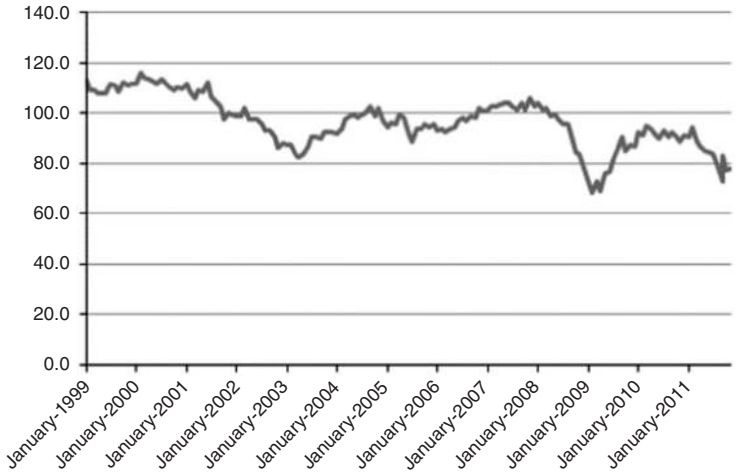
As we can infer from the higher ESI index values, the investor sentiment is high in the boom period of the late 1990s, and in the recovery periods of 2003-2007 and 2009-2010. In contrast, the sentiment is low after the crash of 2000-2001, during the 2008 crisis, and in the last year of the sample, 2011.

Table I shows the descriptive statistics of the variables, considering the sub-samples of FF and NFF, as well as a test for equality of means between FF and NFF.

Although FFs present higher values for PERF than NFFs, the mean differences are not statistically significant, suggesting that FFs do not significantly outperform NFFs. FFs are different from NFFs in terms of AGE and SIZE, being bigger and older than their counterparts.

Table II reports the results of Equation (1) for the full sample. Although we consider the OLS, the FEM and the REM, we only present the best model results for each of the regressions[4], which, in this case, is the FEM.

The independent variables that explain the RET are the ESI, the AGE and the SIZE.



Source: This figure shows the level of ESI index, for the period from 1999 to 2011

Figure 1.
ESI Index for the 1999-2011 period

As expected, the ESI coefficient is negative and statistically significant, showing that one standard deviation change in ESI causes returns to drop by 0.0121. This result suggests that shares become underpriced (overpriced) during periods of low (high) sentiment. Consequently, we found support for the hypothesis that investor sentiment negatively influences share returns (*H1*).

Our results are consistent with those found by Zhang (2006), Lemmon and Portniaguina (2006), Baker and Wurgler (2006, 2007), Schmeling (2009), Zouaoui *et al.* (2011) and Mian and Sankaraguruswamy (2012), who found evidence that sentiment negatively affects share returns.

In what concerns the control variables, and contrary to the expected signals, the AGE and the SIZE coefficients are negative and statistically significant, suggesting that the older and the bigger the companies, the lower the share returns. One standard deviation change in firm age (size) causes returns to drop by 0.3742 (0.0766). One possible reason might be the maturity cycle of firms.

Table III reports the results of Equation (2), considering the relationship between family ownership and returns. Although we consider the OLS, the FEM and the REM, we only present the best model results, which is the FEM.

The coefficient on FF_ESI is negative, suggesting that family firms' sentiment is less likely to affect share returns. However, the coefficient is not statistically significant. Thus, as expected, we found evidence supporting the hypothesis that the effect of investor sentiment on future returns is not different for family firms and non-family counterparts (*H2*).

The other independent variables that explain the RET are the ESI, AGE and SIZE, which is consistent with the results found in regression (1) (Table II).

4.1 Robustness checks

For robustness reasons, we tested the hypothesis that the effect of investor sentiment on future returns is stronger for shares that are hard to value and to arbitrage. We then considered another proxy to measure for investor sentiments.

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Table I.
Descriptive statistics

	FF					NFF						
	Mean	Median	Minimum	Maximum	SD	Mean	Median	Minimum	Maximum	SD	Mean differences	*t*
RET	0.008	0.000	−0.960	1.275	0.356	0.003	0.000	−0.906	1.466	0.372	0.004	0.144
ESI	97.302	97.100	77.800	111.300	9.320	97.114	97.100	77.800	111.300	8.845	0.188	0.252
OWN	0.443	0.382	0.200	1.676	0.206	0.427	0.400	0.057	0.998	0.254	0.016	0.743
LEV	0.710	0.728	0.007	1.443	0.208	0.682	0.704	0.046	1.463	0.265	0.028	1.354
AGE	3.377	3.497	0.000	5.094	0.817	2.955	3.198	0.000	4.263	0.927	0.421	5.711***
SIZE	19.655	19.737	12.506	22.837	1.977	19.119	18.818	15.490	22.837	2.021	0.536	3.224***

Notes: This table provides the means, median, minimums, maximums and the standard deviations (SD) of the variables for the FF and the 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. ***Significantly different from zero at the 1 per cent level

	FEM Coefficient	t
Constant	3.9234	4.497***
ESI	−0.0121	−4.688***
OWN	0.0615	0.388
LEV	−0.1155	−0.769
AGE	−0.3742	−3.755***
SIZE	−0.0766	−1.894*
n	496	
Adjusted R^2	0.191	
F-test	1.436	**
LM	0.459	
Hausmann test	37.237	***

Notes: This table reports the following regression:

$$\mathrm{RET}_{i,t} = \alpha + \beta_1\ \mathrm{ESI}_{t-1} + \beta_2\ \mathrm{OWN}_{i,t} + \beta_3\ \mathrm{LEV}_{i,t} + \beta_4\ \mathrm{AGE}_{i,t} + \beta_5\ \mathrm{SIZE}_{i,t} + \varepsilon_{i,t}$$

$\mathrm{RET}_{i,t}$ is the share return of firm i for year t; ESI_{t-1} is the proxy for sentiment; $\mathrm{OWN}_{i,t}$ is the ownership concentration for share i in year t, calculated as the percentage of shares held by the biggest shareholder; $\mathrm{LEV}_{i,t}$ is leverage ratio for share i in year t, considered as the ratio of total debt to total assets; $\mathrm{AGE}_{i,t}$ is the age for share i in year t, calculated as the natural logarithm of the difference between incorporation year and a fiscal year and $\mathrm{SIZE}_{i,t}$ is the size for share i in year t, computed as the natural log of total assets. The table presents the best model among pooled OLS, FEM and REM. In order to choose the most appropriate model for each particular sample, we run the F-test, a test for the equality of sets of coefficients, the Breush-Pagan statistic (LM), with *H0*: pooled estimation is consistent and efficient, vs *H1*: random effects are inconsistent and the Hausman (1978) test, a test with *H0*: random effects are consistent and efficient, vs *H1*: random effects are inconsistent. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method. *,**,***Significantly different from zero at the 10, 5 and 1 per cent level, respectively

Table II.
Regression of shares return to sentiment

To test the hypothesis that the effect of investor sentiment on future returns is stronger for shares that are hard to value and to arbitrage, we estimated Equation (2) separately for sub-samples of shares sorted in terms of these characteristics, reporting the results in Table IV. In Panel A, we report the results for two sub-samples sorted in terms of firm age. Panels B through E report similar results for the sub-samples sorted in terms of size, volatility, BM and dividend payers/non-payers, respectively.

For each of the sub-samples, we did not find evidence that family firms are distinct from non-family firms in terms of the impact of sentiment on the share returns, since the FF_ESI coefficient is not statistically significant for all the regressions, with the exception of the coefficient for the sub-sample of volatile firms (Panel C), which is statistically significant at the 5 per cent level. Overall, the results coincide with the ones shown in Table III, supporting *H2*.

Insofar as the differential impact of sentiment according the volatility (Panel C) and the dividend policy (Panel E), we found no difference between stable and volatile firms, and between dividend payers and non-payers, respectively. Consequently, we found no support for the hypotheses that the effect of investor sentiment on future returns is stronger for highly volatile firms and for non-dividend payers.

Comparing the results for the sub-samples of young and mature firms (Panel A), the coefficient on ESI is negative for both the sub-samples, but only statistically significant for young firms, where one standard deviation change in ESI causes returns to drop by

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	FEM Coefficient	*t*
Constant	3.9308	4.502***
FF_ESI	−0.0034	−0.633
ESI	−0.0099	−2.268**
OWN	0.0586	0.369
LEV	−0.1082	−0.717
AGE	−0.3719	−3.727***
SIZE	−0.0780	−1.925*
n	496	
Adjusted R^2	0.191	
F-test	1.441	**
LM	0.455	
Hausmann test	37.698	***

Notes: This table reports the following regression:

$$\mathrm{RET}_{i,t} = \alpha + \beta_1\ \mathrm{FF\_ESI}_{t-1} + \beta_2\ \mathrm{ESI}_{t-1} + \beta_3\ \mathrm{OWN}_{i,t} + \beta_4\ \mathrm{LEV}_{i,t} + \beta_5\ \mathrm{AGE}_{i,t} + \beta_6\ \mathrm{SIZE}_{i,t} + \varepsilon_{i,t}$$

$\mathrm{RET}_{i,t}$ is the share return of firm *i* for year *t*; ESI_{t-1} is the proxy for sentiment; FF is a dummy variable which is one if a firm is considered a family firm, and zero otherwise; $\mathrm{OWN}_{i,t}$ is the ownership concentration for share *i* in year *t*, calculated as the percentage of shares held by the biggest shareholder; $\mathrm{LEV}_{i,t}$ is leverage ratio for share *i* in year *t*, considered as the ratio of total debt to total assets; $\mathrm{AGE}_{i,t}$ is the age for share *i* in year *t*, calculated as the natural logarithm of the difference between incorporation year and a fiscal year and $\mathrm{SIZE}_{i,t}$ is the size for share *i* in year *t*, computed as the natural log of total assets. The table presents the best model among pooled OLS, FEM and REM. In order to choose the most appropriate model for each particular sample, we run the *F*-test, a test for the equality of sets of coefficients, the Breush-Pagan statistic (LM), with *H0*: pooled estimation is consistent and efficient, vs *H1*: random effects are inconsistent and the Hausman (1978) test, a test with *H0*: random effects are consistent and efficient, vs *H1*: random effects are inconsistent. The numbers in parentheses are the *t*-statistics corrected for heteroscedasticity using the White (1980) method. *,**,***Significantly different from zero at the 10, 5 and 1 per cent level, respectively

Table III.
Regression of shares return to sentiment, considering FF

0.012. These results are consistent with those found by Baker and Wurgler (2006) and Mian and Sankaraguruswamy (2012), suggesting that sentiment has stronger effects on shares that are hard to value, supporting *H3*.

Concerning size (Panel B), the coefficient on ESI is not statistically significant for small shares. However, it is negative and statistically significant for large firms. These results suggest that, in contrast to what was expected, the effect of investor sentiment on future returns is stronger for larger firms. According to Nagel (2005), one reason why small shares are more likely to be affected by sentiment is that they are owned predominantly by individual investors, while large shares tend to be held primarily by institutions. However, in the Portuguese stock market, the high concentration of equity can diverge from this reality, leading to different results. One possible reason why large shares are more prone to be affected by sentiment than small shares in Portugal is that they do not have such a great concentration of equity, as they are owned by individual and dispersed investors.

Panel D shows the results for the separation of firms according to the BM ratio, comparing the distressed and growth firms with the medium firms, in order to test the hypothesis that the effect of investor sentiment on future returns is stronger for extreme growth and distressed firms than for medium firms. However, the results show that sentiment plays a significant role for medium firms, disappearing for growth and distressed firms, which does not coincide with the hypothesis prediction.

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Panel A: young vs mature firms

Pooled OLS	Young firms		Mature firms	
	Coefficient	*t*	Coefficient	*t*
Constant	1.8898	1.958*	0.6269	0.422
FF_ESI	−0.0007	−0.746	0.0016	0.924
ESI	−0.0120	−2.013**	−0.0033	−0.531
OWN	0.2563	1.079	0.1977	1.003
LEV	−0.3577	−1.636	−0.2233	−0.946
AGE	−0.1742	−1.774*	−0.0653	−0.304
SIZE	−0.0096	−0.374	−0.0023	−0.073
n	124		124	
Adjusted R^2	0.098		0.037	

Panel B: small vs large firms

	Small firms		Large firms	
	Coefficient	*t*	Coefficient	*t*
Constant	−0.2620	−0.263	2.0872	1.091
FF_ESI	−0.0011	−1.246	−0.0011	−1.076
ESI	0.0039	0.535	−0.0174	−3.936***
OWN	0.0249	0.158	0.0239	0.134
LEV	−0.2542	−1.973*	−0.6013	−1.969*
AGE	−0.0073	−0.126	0.0661	1.353
SIZE	0.0114	0.288	−0.0065	−0.075
n	124		124	
Adjusted R^2	0.062		0.169	

Panel C: stable vs volatile firms

	Stable firms		Volatile firms	
	Coefficient	*t*	Coefficient	*t*
Constant	−0.0456	−0.175	1.0922	1.130
FF_ESI	0.0002	0.756	−0.0033	−2.576**
ESI	−0.0009	−0.452	−0.0056	−0.786
OWN	−0.0441	−0.801	−0.2165	−0.831
LEV	−0.1294	−2.460**	−0.0087	−0.037
AGE	−0.0078	−0.538	0.0182	0.237
SIZE	0.0123	1.701*	−0.0096	−0.344
n	124		124	
Adjusted R^2	0.082		0.068	

Panel D: medium vs distressed/growth firms

	Medium firms		Distressed/growth firms	
	Coefficient	*t*	Coefficient	*t*
Constant	1.3954	2.862***	0.8459	1.675*
FF_ESI	0.0003	0.448	−0.0003	−0.488
ESI	−0.0113	−3.372***	−0.0059	−1.496
OWN	0.0221	0.209	−0.0994	−0.795
LEV	−0.0764	−0.491	−0.2383	−2.481**
AGE	0.0404	1.250	−0.0212	−0.616
SIZE	−0.0193	−1.281	−0.0016	−0.118
n	247		249	
Adjusted R^2	0.062		0.039	

(*continued*)

Table IV.
Regression of shares return to sentiment, considering firm specific characteristics

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Panel E: dividend payers vs no-payers firms

	Dividend payers firms		No-payers firms	
	Coefficient	t	Coefficient	t
Constant	1.3947	2.392**	0.9547	2.060**
FF_ESI	0.0009	1.417	−0.0006	−1.072
ESI	−0.0091	−2.430**	−0.0083	−2.360**
OWN	−0.0586	−0.518	0.0684	0.553
LEV	−0.3049	−1.458	−0.2156	−2.378**
AGE	−0.0247	−0.713	0.0301	0.949
SIZE	−0.0116	−0.639	−0.0069	−0.491
n	199		297	
Adjusted R^2	0.043		0.048	

Notes: This table reports the following regression:

$$\mathrm{RET}_{i,t} = \alpha + \beta_1\,\mathrm{FF\_ESI}_{t-1} + \beta_2\,\mathrm{ESI}_{t-1} + \beta_3\,\mathrm{OWN}_{i,t} + \beta_4\,\mathrm{LEV}_{i,t} + \beta_5\,\mathrm{AGE}_{i,t} + \beta_6\,\mathrm{SIZE}_{i,t} + \varepsilon_{i,t}$$

$\mathrm{RET}_{i,t}$ is the share return of firm i for year t; ESI_{t-1} is the proxy for sentiment; FF is a dummy variable which is one if a firm is considered a family firm, and zero otherwise; $\mathrm{OWN}_{i,t}$ is the ownership concentration for share i in year t, calculated as the percentage of shares held by the biggest shareholder; $\mathrm{LEV}_{i,t}$ is leverage ratio for share i in year t, considered as the ratio of total debt to total assets; $\mathrm{AGE}_{i,t}$ is the age for share i in year t, calculated as the natural logarithm of the difference between incorporation year and a fiscal year and $\mathrm{SIZE}_{i,t}$ is the size for share i in year t, computed as the natural log of total assets. Panel A through Panel E present the regression results for sub-samples sorted on firm age, size, volatility, growth and/or distressed firms and dividends, respectively. Age is computed as the natural logarithm of the difference between incorporation year and a fiscal year; the firm size is computed as the natural log of total assets; volatility is the share return volatility, measured as the standard deviation of prices over the preceding year; the growth and/or distressed firms are classified according to the book-to-market ratio (BM), calculated by dividing book value per share by the market price per share. Finally, we distinguish between dividend payers and non-payers. The table presents the pooled OLS results. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method. *,**,***Significantly different from zero at the 10, 5 and 1 per cent level, respectively

Table IV.

In sum, we found that when sentiment is low, subsequent share returns are relatively high for young firms, large shares and medium growth shares. On the other hand, when sentiment is high, these groups of shares earn relatively low subsequent returns. Thus, the evidence suggests that young, large and medium growth firms are those most affected by sentiment.

Overall, the results do not support the hypothesis that sentiment has stronger effects on shares that are hard to value and hard to arbitrage, which does not coincide with the evidence in the US market (Baker and Wurgler, 2006, 2007; Mian and Sankaraguruswamy, 2012), with the exception of young vs mature firms. One possible reason could be the high concentration of equity in the Portuguese stock market, which diminishes the information asymmetry between managers and shareholders, and, consequently, determining their true values becomes simpler. Thus, shares are likely to be less sensitive to sentiment.

Insofar as growth shares, our results are consistent with findings from Lemmon and Portniaguina (2006) and Schmeling (2009), who found that sentiment does not significantly affect value shares for this group of shares.

Finally, we consider another proxy to measure for investor sentiments. We considered a proxy for investor sentiment (ISENT), regressing the ESI indicator on a

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set of macroeconomic variables, in order to separate the rational and sentimental components of the ESI[5] and to obtain a variable that is unrelated to fundamental risk factors, considering the residual from this regression as our sentiment measure unwarranted by fundamentals (Lemmon and Portniaguina, 2006). Decomposing the consumer confidence index into a component related to macroeconomic "fundamentals" and a residual component, we interpreted the residual component as a purer measure of sentiment (Zouaoui *et al.*, 2011). Qiu and Welch (2006) documented that investors are excessively optimistic or pessimistic because of good or bad news, returns or macro developments; thus, sentiment should be related to returns and macro variables.

We then ran regression (2), substituting the ESI index by the ISENT proxy. The results are shown in Table V.

Controlling for macroeconomic factors and considering a purer measure of sentiment (Zouaoui *et al.*, 2011), we found a positive and significant relationship between sentiment and share returns, which contradicts the previous results (Table III). Comparing the R^2 of the regression results shown in Table III (0.191) and Table V (0.052), we can see that the best explanatory model for the relationship between the independent variables and the returns is the one in which the ESI is used as proxy for sentiment. Insofar as the control variables, the results show evidence that leverage

	Pooled OLS Coefficient	*t*
Constant	−0.0310	−0.142
FF_ISENT	0.0004	0.247
ISENT	0.0080	3.509***
OWN	0.0264	0.331
LEV	−0.2252	−2.869***
AGE	0.0086	0.369
SIZE	−0.0004	−0.042
n	496	
Adjusted R^2	0.052	
F-test	1.259	
LM	0.540	
Hausmann test	23.222	***

Notes: This table reports the following regression:

$$\mathrm{RET}_{i,t} = \alpha + \beta_1 \mathrm{FF\_ISENT}_{t-1} + \beta_2 \mathrm{ISENT}_{t-1} + \beta_3 \mathrm{OWN}_{i,t} + \beta_4 \mathrm{LEV}_{i,t} + \beta_5 \mathrm{AGE}_{i,t} + \beta_6 \mathrm{SIZE}_{i,t} + \varepsilon_{i,t}$$

$\mathrm{RET}_{i,t}$ is the share return of firm i for year t; ISENT_{t-1} is the proxy for sentiment; FF is a dummy variable which is one if a firm is considered a family firm, and zero otherwise; $\mathrm{OWN}_{i,t}$ is the ownership concentration for share i in year t, calculated as the percentage of shares held by the biggest shareholder; $\mathrm{LEV}_{i,t}$ is leverage ratio for share i in year t, considered as the ratio of total debt to total assets; $\mathrm{AGE}_{i,t}$ is the age for share i in year t, calculated as the natural logarithm of the difference between incorporation year and a fiscal year and $\mathrm{SIZE}_{i,t}$ is the size for share i in year t, computed as the natural log of total assets. The table presents the best model among pooled OLS, FEM and REM. In order to choose the most appropriate model for each particular sample, we run the *F*-test, a test for the equality of sets of coefficients, the Breush-Pagan statistic (LM), with *H0*: pooled estimation is consistent and efficient, vs *H1*: random effects are inconsistent and the Hausman (1978) test, a test with *H0*: random effects are consistent and efficient, vs *H1*: random effects are inconsistent. The numbers in parentheses are the *t*-statistics corrected for heteroscedasticity using the White (1980) method. ***Significantly different from zero at the 1 per cent level

Table V.
Regression of shares return to sentiment, considering FF

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negatively influences returns, and this is consistent with the pecking order theory (Myers, 1984; Myers and Majluf, 1984).

We conclude that the evidence concerning the relationship between sentiment and share returns is sensitive to the different sentiment measures used, which motivates further research.

5. Conclusion

The purpose of this paper is to examine the effect of investor sentiment on share returns, exploring whether this effect is different for public family and non-family firms, as well as for firms that are hard to value.

Using data from non-financial Portuguese firms during the 1999-2011 period, we found evidence that investor sentiment negatively influences share returns. This coincides with Lemmon and Portniaguina (2006), Baker and Wurgler (2006, 2007), Schmeling (2009) and Mian and Sankaraguruswamy (2012).

This result suggests that shares become underpriced (overpriced) during periods of low (high) sentiment, supporting the hypothesis that investor sentiment negatively influences the share returns. This contradicts the standard finance theory which predicts that share prices reflect the discounted value of expected cash flows and that irrationality among investors is removed by arbitrageurs; and previous empirical studies (Jansen and Nahuis, 2003; Brown and Cliff, 2004).

In addition, we support the hypothesis that family and non-family firms do not differ in terms of the influence of investor sentiment on share returns.

We found some evidence that investor sentiment is more pronounced for young firms, large firms and BM medium firms. Overall, the results do not support the hypothesis that sentiment has stronger effects on shares that are hard to value and hard to arbitrage (Baker and Wurgler, 2006, 2007; Mian and Sankaraguruswamy, 2012), with the exception of young vs mature firms.

Finally, we found evidence suggesting that the relationship between sentiment and share returns is sensitive to the different sentiment measures used.

One limitation of our study is the small size of the sample, which is due to the small size of the Portuguese stock market, the Euronext Lisbon. Consequently, in future research, it will be interesting to broaden the sample period, study the impact of rational and irrational ISE components on the market profitability, or to separate sentiment indicators into its negative (pessimism) and positive (optimism) components in order to determine whether the effect of sentiment on returns is asymmetric. Finally, we would like to analyse whether institutional quality and cultural factors are strong determinants of the relationship between sentiment and returns.

Notes

1. The DG ECFIN conducts regular harmonised surveys for different sectors of the economies in the EU to provide information for economic surveillance, short-term forecasting and economic research. The surveys provide information on a wide range of variables (for example, production, business activity, consumer financial situation, unemployment, savings, among others) that are useful to monitor cyclical developments. The ESI is made with a range of individual industry components, services, consumers, and construction and retail trade confidence indicators. For a detailed explanation of ESI, see Gelper and Croux (2007). The economic sentiment data was taken from DG ECFIN website: http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/index_en.htm

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2. Like Hong *et al.* (2007) and Schmeling (2009), we used raw returns since reliable data on risk-free rates is hard to obtain, mainly after the sovereign debt crisis.
3. We would like to run dynamic panel regressions. However, to do so, a minimum of six consecutive years is required for a company to be included (Gaud *et al.*, 2005). This was not possible for all the firms included in our sample.
4. For the sake of simplicity, we only report the results for the best model. However, the other outputs are available from authors upon request.
5. Our variable set includes short and long-term interest rates, consumption, inflation, imports and exports.

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