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Determinants of Cash Holdings in the Accommodation Industry

Flávio Morais

Departamento de Gestão e Economia – Universidade da Beira Interior

Pedro Silva

Departamento de Gestão e Economia – Universidade da Beira Interior & NECE – Núcleo de Estudos em Ciências Empresariais

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Abstract

This study analyzes the determinants of cash holdings for the accommodation industry in South European countries (Spain, Greece, Italy and Portugal) using a sample of 5964 firms during the period 2003-2011. A fixed-effects panel data model revealed that larger companies, higher leveraged, where most debt is short-term and that maintain better relationships with financial institutions exhibit lower cash to assets ratios. Liquid assets substitutes, capital expenditures and asset tangibility also have a negative effect on cash levels. As expected, cash holdings are positively influenced by cash-flow and cash-flow volatility. The results reveal the negative and significant impact of the 2008 financial crisis on cash holdings in the sector, which at the end of 2011 had not yet returned to pre-crisis levels. Empirical results reject the generalized argument put forward, over more than a decade, to explain high cash holdings and its tendency to rise until the crisis, emphasizing the little importance of the precautionary motive as an incentive to accumulate cash.

Keywords: cash holdings, cash ratio, financial crisis, accommodation industry

1. Introduction

The study of the determinants of cash holdings has been given great importance in the literature, especially in the last decade. Research in this area has been motivated by the finding that firms have systematically increased their level of cash holdings as a percentage of assets. Dittmar & Mahrt-Smith (2007) find a constant increase in the Cash/Assets[1] ratio which stretches, according to Bates, Kahle & Stulz (2009), over the last three decades. These authors report that the average value more than doubled between 1980 and 2006 in listed industrial firms in the USA, rising from 10.5% to 23.2% of assets. High levels of cash ratio are also reported by Gao, Harford, & Li (2013) indicating an average value of 20.45% of assets in 2011 in listed firms in the USA. Iskandar-Datta & Jia (2012) revealed that the tendency was not confined to the USA, being identical in a set of industrialized countries[2]. The study by Ferreira & Vilela (2004), which uses a sample of Eurozone[3] countries, reveals that non-financial European firms have on average around 15% of assets in cash holdings[4]. Such significant values would allow for the amortization of a considerable proportion of these firms' liabilities (Bates et al., 2009). Interestingly, this phenomenon coincides with the internationally increase of the zero leverage phenomenon (Bessler et al., 2012). McLean (2011) estimates that share issues mostly end up increasing cash levels. Specifically in 1970, $1 issued resulted in $0.23 of cash retention, whereas in the decade of 2000 $1 issued resulted in $0.60 for increased cash holdings.

[1] Hereafter referred to as cash ratio or cash-to-assets ratio.

[2] US, Canada, UK, Germany, France, Japan and Australia.

[3] Germany, France, the Netherlands, Italy, Spain, Finland, Belgium, Austria, Ireland, Luxembourg, Greece and Portugal.

[4] Ratio of cash and cash equivalents to net assets for 400 listed firms in 12 Eurozone countries.

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In this context, authors such as Zhou (2009) draw attention to the different evolution of cash holdings among sectors. The author concludes that high-technology firms increased their cash holdings more significantly, but from 2000 the increase in cash holdings has come to be generalized, as a response to adverse macroeconomic shocks (Ehling & Haushalter, 2013).

In any case, with cash holdings being the most liquid asset held by firms and at the same time apparently the least productive and the one guaranteeing least return, why do firms maintain such high levels of cash? In a perfect capital market firms would not need to accumulate cash reserves to be able to carry out their investment plans since they could easily resort to external financing at a fair price whenever internal funds were insufficient. However, the existing market imperfections induce firms to have a level of cash holdings which allows them to continue to finance investments with a positive net present value (NPV) when other financing sources are not available. Having cash holdings is particularly beneficial for firms with financing restrictions allowing them to make investments which otherwise would have to be abandoned (Denis & Sibilkov, 2010).

Fresard (2010) emphasizes the strategic dimension of the cash holding policy stating that firms with high levels of cash have systematic gains in market share over industry rivals, a result that is more evident in industries where competition is considerable.

Naturally, due to this major increase in cash holdings over the last decades, attempts have been made to find explanations for the phenomenon, researching the determinants that lead firms to keep high levels of cash holdings. However, only a limited number of studies try to understand why certain sectors have consistently low

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levels of cash. For example, despite this general tendency to increase cash holding levels, the hotel sector remains one of the least intensive in reserves of cash holdings (Kusnadi, 2005; Gao et al., 2013)[5]. Although some studies report the reduced level of cash in the accommodation sector, as far as we know, only Woods, Kim & Kim (2011) and Koh & Jang (2011) researched deeper into its determinants, both using samples of listed lodging firms in the USA. These authors find cash levels of 8.8% and 8.6% of assets, respectively. Our own exploratory analysis for the period of 2003 to 2011 shows that in all the countries analyzed, the cash level in lodging firms is under the average for all industries.

Some characteristics of lodging firms could lead to unique cash holding policies. In the first place, a great proportion of their assets is in the form of fixed assets (buildings and equipment) which financed through debt guaranteed by those assets implies they are highly leveraged (Jang, Tang, & Chen, 2008)[6]. On the other hand, operational risks associated with the seasonal nature of tourism increase the volatility of operational cash-flow (Jang et al., 2008). Therefore, the industry is characterized by high financial and operational risks in a competitive and saturated market, and so it is particularly interesting to investigate what determines over time the maintenance of low levels of cash holding. We do so in this study, using a sample of 5964 South European firms located in Spain, Greece, Italy and Portugal. Besides the homogeneous characteristics of tourism, particularly in the accommodation sector, these

[5] Kusnadi (2005) reports a ratio of cash to net assets of around 23% in 230 firms listed on the Singapore Stock Exchange, but for a sub-sample of 11 hotel firms the figure is approximately 6%. Gao et al. (2013) find a cash-to-assets ratio of 6.2% in a sub-sample of hotel firms from the total sample of private firms. Finally, the report by Standard & Poor's (2012) indicates a ratio of around 5% for leisure firms.

[6] Sale and leaseback operations whereby firms sell their property to outsiders and then sign a leasing contract on that property are often used in the sector.

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countries are also among those to suffer most from the financial crisis of 2008-2009 and from the current sovereign debt crisis, creating an atmosphere of extreme uncertainty and challenge in tourism activity in general. The financial crisis of 2008-2009 put a temporary end to the boom registered in tourism in these countries (Eurostat, 2008). The sample and time period studied allows us to give some insights on the influence of the 2008 financial crisis and the following sovereign debt crisis that affected these countries, a factor that should lead to increases in cash holdings attributable to precautionary reasons.

Using a fixed effects panel data model and contrary to studies in general, our results emphasize the little importance of precautionary reasons in determining cash holdings in the accommodation sector, rejecting the generalized argument put forward, over the last years, to explain high cash holdings and its tendency to rise until the crisis. Our results reveal the negative and significant impact of the crisis on cash holdings in the sector, which at the end of 2011 had not yet returned to pre-crisis levels.

2. Theoretical framework and literature review

2.1. Theoretical framework

The academic literature on reserves of cash and cash equivalents was first developed in the early work of Keynes (1936). There, Keynes discusses the preference for liquidity, indicating three reasons for holding currency: (i) transaction motives, (ii) precautionary motives and (iii) speculation motives. The first arises from the need for cash for current business transactions due to time lags between fund inflows and outflows. For Keynes, precautionary motives arise from the desire for security with regard to uncertainties and the desire to take advantage of unforeseen opportunities. Finally, Keynes interprets money as a way of preserving wealth as an alternative to investing in risky assets (speculation motive).

It is in recognizing the benefits and costs of cash holdings that the Trade-Off Theory, originally proposed by Baumol (1952) and Tobin (1956), seeks an optimal level of cash holdings. Later, Miller & Orr (1966) developed an extension of the Trade-Off model which also considers the volatility of cash-flow, emphasizing precautionary reasons. Minimizing the transaction costs (of having to resort to external finance or liquidate existing assets), carrying out investment policies when other sources of finance are not available or too expensive (Opler et al., 1999) and reducing the risk of financial difficulties (Ferreira & Vilela, 2004) are presented as the benefits of cash reserves. As for the costs, if we consider that the manager maximizes shareholder wealth, the only cost of keeping cash holdings is the reduced return obtained in relation to other riskier investments (Kim, Mauer, & Sherman, 1998).

However, some factors make cash holdings deviate from their optimal level. Myers & Majluf (1984) suggest that asymmetric information between managers and investors make external finance too expensive and, to avoid it, firms should create financial slack accumulating cash holdings (Myers, 1984). These implications are at the basis of the Pecking Order Theory by Myers & Majluf (1984). The theory argues that to reduce information asymmetries and financing costs, a firm should finance itself firstly through retained profits, then low-risk debt and high-risk debt and only as a last resort should it turn to share issue. We can therefore expect that liquidity reserves are used as a “buffer between retained earnings and investment needs” (Ferreira & Vilela, 2004).

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Agency costs are another factor determining a deviation from the optimal level of cash holdings. According to Jensen & Meckling (1976) the agency costs of debt appear when there is a conflict of interest between shareholders and creditors or when the conflict arises between various categories of creditors making more difficult and costly to resort to external finance. A way to prevent them and lessen the probability of financial distress is by keeping a low level of leverage or keeping high levels of cash holdings. On the other hand, Free Cash-Flow Theory by Jensen (1986) states that conflicts between managers and shareholders are more serious in the presence of high free cash-flows that give the manager greater discretionary power in the firm's decisions. Indeed, managers who pursue their own interests prefer to increase cash and cash equivalents rather than make payments to shareholders. A way to reduce the agency costs of managerial discretion could be simply to reduce firms' levels of cash holdings.

The recent literature on cash holdings tends to emphasize a new motive, of a fiscal nature, which leads to deviations from the optimal level of cash holdings. The taxing of foreign profits at the time of their repatriation can motivate firms with profitable subsidiaries to retain profits abroad, accumulating cash, if there are no attractive investment opportunities (Foley et al., 2007).

2.2. Empirical evidence

The main line of research on cash holdings tries to uncover which firms' characteristics determine the level of cash holdings. Pioneering studies were developed by Kim et al. (1998) and Opler et al. (1999). Using a sample of 915 industrial firms in the USA, between 1975 and 1994, Kim et al. (1998) showed evidence that firms tend to have an optimal cash level which increases with the cost of external financing and with the variability of future cash-flow. On the contrary, the differential of return between physical assets and liquid assets leads to decreased cash holdings, confirming the significance of the opportunity cost of investing in cash holdings. Again with a sample of US firms Opler et al. (1999) find that firms with greater growth opportunities and activities of greater risk retain high cash levels. On the other hand, firms with easy access to the capital market tend to have lower cash holdings. In their sample of US industrial firms, Bates et al. (2009) identified increased cash ratios and explain it as the result of holding lower working capital, having less capital expenditure and greater R&D expenses. However, the authors present cash-flow volatility as the main determinant of this increase since greater increases occur in industries where cash-flow volatility is higher. The three studies carried out in the USA provide strong evidence supporting Trade-Off Theory, giving a prominent role to the precautionary motive for increased cash holdings (Bates et al., 2009), since they all highlight cash-flow volatility as one of the determinants with the most positive influence on cash levels. Opler et al. (1999) also find partial support for Pecking Order Theory, showing the positive impact of cash-flow on cash ratios. These studies do not find evidence to support the role of agency costs in the level of cash and cash equivalents[7].

The work by Powell & Baker (2010) presents similar results but differs from previous studies and the literature as a

[7] The literature on this subject today includes studies focused on other countries and business environments such as Belgium (Deloof, 2001), the Netherlands (Bruinshoofd & Kool, 2004), the United Kingdom (Ozkan & Ozkan, 2004; Al-Najjar & Belghitar, 2011), Switzerland (Drobetz & Grüninger, 2007), private Italian firms (Bigelli & Sánchez-Vidal, 2012), Private vs. Public companies (Gao et al., 2013), SMEs (García-Teruel & Martínez-Solano, 2008), listed spin-offs (D’Mello, Krishnaswami, & Larkin, 2008), Real Estate Investment Trusts (Hardin et al., 2009), listed US casinos (Dalbor & Oak, 2011) and listed US restaurants (Kim, Kim & Woods, 2011).

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whole, in that it gathers data through surveys of the CFOs of the 1000 largest listed non-financial firms in the USA in 2008.

Pinkowitz & Williamson (2001) also promoted comparisons between various countries using a sample of industrial firms in the USA, Germany and Japan, aiming to identify what determinants explain the differences in cash holding levels between countries. The study shows that Japanese firms retain more liquid assets than their counterparts in the USA and Germany, which could be justified by the great power of Japanese banks and the absence of other monitoring forces. This result arouses interest because when banks are responsible for disciplining firms, agency costs and information asymmetries should be reduced (facilitating access to external finance). Nevertheless, according to the authors, Japanese banks encourage firms to keep high liquid reserves, aiming to extract income from them or reduce monitoring costs.

Considering that firms' cash levels vary from one country to another mostly because of the characteristics of the country rather than those of the firm, cross-country studies focus the analysis on the subject of corporate governance, studying topics such as the role of the level of investor and creditor protection, the development of financial markets, ownership concentration and managerial ownership over cash holdings[8].

Foley et al. (2007) used a sample of multinational firms in the USA to test the importance of the fiscal context in cash holdings. The findings sustain that the fiscal motive can explain increased cash holdings, by revealing that firms facing greater tax costs with the repatriation of gains retain more cash reserves in their subsidiaries. This tendency is less pronounced in the case of firms with financing difficulties in

[8] The studies by Dittmar, Mahrt-Smith, & Servaes (2003), Ferreira & Vilela (2004), Ozkan & Ozkan (2004), Drobetz & Grüninger (2007) and Chen & Chuang (2009), stand out.

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their country of origin. The conclusions of Foley et al. (2007) tie in with the report by Standard & Poor's (2012) *"The credit overhang: Follow the Money - Where's all the cash on US corporate balance sheets?"*, by stating that the ten firms with greatest cash holdings in the USA retain 77% of cash holding reserves abroad. The report highlights that the tax rate on repatriated income can reach 35%. In Europe, countries generally have a system of tax exemption for foreign income, which cancels out this motive.

Some studies go further and investigate topics such as the impact of national culture on cash holdings (Chang & Noorbakhsh, 2009; Ramírez & Tadesse, 2009) or the possibility of firms gradually adjusting their level of cash holdings over time (Bruinshoofd & Kool, 2004) in the attempt to reach an optimal cash ratio. The study by Opler et al. (1999) tested the hypothesis of cash holdings converging on a target level, checking whether the variation in cash level reverts to the average. In subsequent studies, this hypothesis is tested including the lagged dependent variable in the set of explanatory variables of the equation to estimate. In this regard, Ozkan & Ozkan (2004) provide evidence that firms have target cash levels, adjusting gradually towards them whenever there are deviations in previous periods[9].

An alternative line of investigation seeks to quantify the impact of cash holdings on firms' market value, estimating the value of an additional dollar retained in cash. Bates, Chang & Chi (2011) specify that in the decade of the 1980s that figure was $0.61, in 1990 it was $1.04 and in the decade of the 2000s it rose to $1.12[10].

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[9] Other studies developing this topic were those of Bruinshoofd & Kool (2004), García-Teruel & Martínez-Solano (2008) for the case of SMEs, Dittmar & Duchin (2010) and Venkiteshwaran (2011).

[10] This topic is also discussed in the work of Pinkowitz & Williamson (2002, 2007), Faulkender & Wang (2006), Pinkowitz, Stulz & Williamson (2006), Dittmar & Mahrt-Smith (2007), Kalcheva & Lins (2007), Denis & Sibilkov (2010), Drobetz, Grüninger & Hirschvogl (2010), Tong (2011), Huang et al.

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A considerable number of authors examine the association between cash holdings and company performance without reaching consensus. Harford (1999) explains the decline in operational performance in firms with greater cash holdings by their precipitated strategy of mergers and acquisitions, contrary evidence to that of Mikkelson & Partch (2003) who studied the performance of firms with more than 25% of cash ratio[11].

Only recently have some studies concentrated on the tourism industry. Woods et al. (2011) researched the determinants of cash holdings in 67 listed hotel firms in the USA between 1997 and 2008. They conclude that firms with better access to the capital market (proxied by company size) and with higher operational cash-flow present lower levels of cash holdings. On the contrary, hotel firms with greater investment opportunities, more capital expenditure and more leverage tend to have more cash and cash equivalents.

Koh & Jang (2011) analyze a sample of 47 US hotel firms between 1988 and 2008, studying the variables determining cash levels, separated in two samples of firms with and without financing restrictions. The authors find that irrespective of financing conditions, cash holdings are negatively related to leverage, a result that supports Pecking Order Theory. The authors show that firms in the accommodation sector could be accessing the debt market relatively easily with their assets serving as collateral, diminishing the incentive to increase levels of cash holdings as a precaution. They find, however, that restricted firms retain more cash holdings from their cash-flow, not finding any systematic

(2012), , Martínez-Sola, García-Teruel & Martínez-Solano (2013) which attempts to explain what influences the market value of cash holdings.

[11] On this topic, of particular note are the studies by Opler et al. (1999), Schwetzler & Reimund (2004), Dittmar & Mahrt-Smith (2007), Harford et al. (2008), Oler & Picconi (2009), Powell & Baker (2010), Pinkowitz, Sturgess & Williamson (2011), Bigelli & Sánchez-Vidal (2012) and Ehling & Haushalter (2013).

relationship in firms without restrictions, a result that supports the precautionary motive.

2.3. Hypotheses and Variables

Cash ratio: In our study we will use the cash-to-assets ratio ($CASH_1$), the most common approach in the literature, and as a robustness test the cash to net assets ($CASH_2$) first used by Opler et al. (1999).

Size: The existence of less information asymmetries facilitating the access to financing and the greater diversification of activities of larger companies (Rajan & Zingales, 1995) suggest a negative relationship between cash reserves and size. According to the theory and the empirical evidence we hypothesize a negative relation between the cash ratio and size. Company size (SIZE) will be proxied by the natural logarithm of total assets.

Growth opportunities: Information asymmetries should be more important for companies with high growth opportunities (Myers & Majluf, 1984). Bankruptcy costs should be higher, as well, due to the greater intangibility of the value of the company. Therefore, it is suggested that companies with high growth opportunities should keep larger cash reserves. Then, following García-Teruel & Martínez-Solano (2008), we used the GROWOP variable computed as the percentage increase in turnover from last year as the proxy for future growth opportunities assuming past growth is correlated with growth opportunities[12].

Cash-flow: Empirically and theoretically the relation between cash and cash-flow is ambiguous. According to the Pecking Order Theory firms prefer internal financing which justifies a positive relation between cash holdings and cash-flow and, according

[12] We were unable to proxy growth opportunities with the market-to-book ratio as market values are not available to most of the companies. Another alternative, the intangible assets to total assets ratio would be biased due to the nature of the Accommodation industry where intangible assets are residual.

to the Trade-Off Theory, precautionary motives should make credit constrained companies retain more cash from cash-flow (Almeida, Campello, & Weisbach, 2004). However, cash-flow generation could be seen as a substitute for cash reserves implying a contrary relationship. The CFLOW variable was calculated as the ratio between cash-flow (net profit plus depreciations and amortizations) and total assets and as a robustness test we used the EBITDA to total assets ratio.

Cash-flow volatility: The Trade-Off Theory and particularly the precautionary motive states that companies with more volatile cash-flows should maintain higher cash levels (Miller & Orr, 1966). Accordingly, and in coherence with the empirical evidence, we hypothesize a positive relation between this variable and the cash ratio. This variable (VOLCFLOW) was computed as the standard deviation of the cash-flows divided by mean total assets as in Ozkan & Ozkan (2004) and Bigelli & Sánchez-Vidal (2012).

Leverage: The association between leverage and cash ratios is ambiguous, as well. The Pecking Order Theory assumes that when investment exceeds retained earnings, debt increases and cash is reduced. However, if companies try to avoid bankruptcy and agency costs associated with high leverage it could be possible to find a positive relation between leverage and cash. Our hypothesis according to the majority of empirical evidence is that a negative relation exists between both variables. The LEV variable proxying for leverage is measured as the ratio between total debt and total assets.

Debt structure: Precautionary motives should also lead companies with predominance of short-term debt to retain higher cash levels as a measure to reduce refinancing risks. Then, a positive relation is expected between the cash ratio and debt structure measured as the ratio between short term debt and total debt (STDEBT).

Relationships with banks: The existence of a close relationship between firms and financial institutions ensures easier access to financing and refinancing, lowering the level of cash needed for precautionary reasons (Ferreira & Vilela, 2004; Ozkan & Ozkan, 2004). Therefore we expect a negative association between the variables. As a proxy for the Relationships with banks our variable BANKR was computed as the ratio between total bank debt and total debt.

Net Working Capital: As non-cash liquid assets are cash substitutes the empirical evidence supports a negative relation between net working capital and the cash ratio which we expect to find, too, for lodging firms. Our variable NWC was calculated as the ratio between net working capital (current assets net of cash and equivalents minus current liabilities) and total assets.

Capital Expenditure: According to the Pecking Order Theory a negative relation between cash and capital expenditure should be expected since firms prefer internal sources to finance investments. In our study the CAPEX variable will reflect last year capital expenditure and, therefore, we anticipate a negative relation between CAPEX and the cash ratio. The CAPEX estimate was computed as the annual variation in tangible and intangible assets plus depreciations and amortizations divided by total assets.

Asset tangibility: The availability of tangible assets that can be liquidated to avoid cash shortages decreases the need for cash. Furthermore, tangible assets can perform an important role as collateral for debt financing (Titman & Wessels, 1988). Consequently, we hypothesize a negative association between both variables. Asset tangibility (TANG) was measured as the ratio between tangible assets and total assets.

Crisis dummy: The observation of the impact of the financial crisis seems to justify the introduction of a dummy in the main regression model assuming the value of 1 for the period 2008-2011 and 0 otherwise. The aim of using this dummy is to capture the macroeconomic effect of the financial crisis on sample firms' cash levels, considering that the countries studied are still suffering the effects of the crisis.

3. Data and Methodology

To test the hypotheses empirically we collected accounting and financial information on firms belonging to NACE 55 (Accommodation) with headquarters in Spain, Greece, Italy and Portugal for the period 2003-2011 from the Amadeus database supplied by Bureau van Dijk. We obtained a total of 32479 firms, corresponding to 292311 firm-year observations. Subsequently, microenterprises[13] were taken out of the sample so as to minimize missing values and accounting errors. Firm-year observations with obvious accounting errors were also eliminated. The variable GROWOP which is computed as the growth in turnover was truncated at 1% and 99% aiming to exclude from the sample years in which firms begin or cease activity, and consequently, detain abnormal cash holdings. Finally, for each year, complete information relating to the variables studied was required and at least three consecutive years of complete data was required for each firm. Therefore, the sample includes surviving and non-surviving firms that have appeared in Amadeus at any time during the sample period. The criteria yield an unbalanced panel of 40129 firm-year observations for 5964

[13] According to the definition of microenterprise of the European Commission (Recommendation 2003/361).

firms, of which 2318 are Spanish, 831 Greek, 2188 Italian and 627 Portuguese.

In this study, we will use panel data methodology. Compared to purely time-series or cross-section methods, this technique allows more precise inferences by dealing with a greater number of observations and degrees of freedom; and using multiple observations for the same firm allows better control of their non-observed characteristics (Baltagi, 2005). This model can be represented as follows:

$$y_{it} = a + X_{it} \times b + u_{it}, \quad i = 1, \ldots, N; \; t = 1, \ldots, T \qquad (1)$$

where y_{it} is the dependent variable, i represents firms (cross-section dimension) and t represents time (time-series dimension); a is the constant term, b represents the regression coefficient and X_{it} represents the explanatory variables. It is assumed that:

$$u_{it} = \mu_i + v_{it} \qquad (2)$$

where μ_i indicates the firm's non-observable individual effects and v_{it} the remaining disturbance.

In our case, the base model to estimate will be:

$$CASH_{it} = a + b_1\, LEV_{it} + b_2\, NWC_{it} + b_3\, SIZE_{it} + b_4\, GROWOP_{it} + b_5\, BANKR_{it} + b_6\, STDEBT_{it} + b_7\, CAPEX_{it} + b_8\, TANG_{it} + b_9\, CFLOW_{it} + b_{10}\, VOLCFLOW_{it} + b_{11}\, CRISIS_{it} + \mu_i + v_{it} \qquad (3)$$

A fixed effect (FE) model assumes that μ_i is correlated with the independent variables contrary to a random effect (RE) model. The choice between these models will depend on the results of the Hausman test (Hausman, 1978) which evaluates the null hypothesis of absence of correlation between the firm's non-observable individual effects and the determinants of cash holding level, against the alternative hypothesis of existence of correlation.

4. Results

The descriptive statistics for the main variables used in the analysis are presented in table 1. It can be seen that for the period 2003-2011, on average (median), firms have a cash ratio of 7.91% (2.71%), a lower value than that generally reported in the literature[14].

The average value of total assets is around €12.8 million and the debt ratio (LEV) shows that, on average, sample firms present high levels of leverage (63%), above those reported in the literature[15], a fact that seems to highlight their capacity to access external financing. Around 55% of total debt is short-term and 46%, on average, is from banks. The mean of the TANG variable shows that approximately 61% of total assets is made up of tangible fixed assets, a high figure considering what is reported in the literature[16]. On average, and as in the research by Woods et al. (2011), we find that the value of net working capital as a percentage of total assets is negative, something that can be explained by the low average collection period practiced in the sector. Annual investment in capital (CAPEX) represent on average 7.2% of assets, a figure higher than the average of the CFLOW variable (5.6% of total assets). Volatility of cash-flow is approximately 4.9% whereas the GROWOP variable has an average value of 5.3%. Table 2 shows the mean of the variables studied by country, revealing statistically significant differences between them in terms of average cash ratio[17]. Greece (9.62%) presents the highest value with Italy

[14] 8.1% US industrial firms (Kim et al., 1998), 17% US listed firms (Opler et al., 1999), 14.8% Eurozone listed firms (Ferreira & Vilela, 2004), 9.9% UK listed firms (Ozkan & Ozkan, 2004), 14.8% Swiss listed firms (Drobetz & Grüninger, 2007), 8.39% US listed restaurant firms (Kim et al., 2011). In the case of US listed hotel firms Woods et al. (2011) and Koh & Jang (2011) reported average cash holdings of 8.83% and 8.6% respectively.

[15] See for exemple Ferreira & Vilela (2004) - 24.8%, Kim et al. (1998) - 51.8% and Kim et al. (2011) - 55%.

[16] Kusnadi (2005) found a ratio of 36%, Drobetz & Grüninger (2007) indicated an average ratio of 36.46% and Koh & Jang (2011) found a ratio of 63.7% for hotel firms in the USA.

[17] A t-test was carried out to check if there were differences between the country averages. The averages were compared in pairs and all differences are significant at a level of 0.01.

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presenting the lowest (6.52%), less than what was found by Bigelli & Sánchez-Vidal (2012) for private Italian firms (10%). Portugal and Spain present intermediate cash levels (7.07% and 8.91%, respectively).

Table 1: Descriptive statistics

Variable	Obs.	Mean	St. Dev.	p25	p50	p75	Min	Max
$CASH_1$	40129	0.0791	0.1226	0.0063	0.0271	0.0976	0	0.9675
LEV	40129	0.6333	0.3556	0.3885	0.6466	0.8593	0.0001	11.6738
NWC	40129	-0.1283	0.2806	-0.2371	-0.0949	0.0003	-10.7373	0.9532
ASSETS	40129	12829.07	70739.99	1516.05	3705.384	8995.05	10.446	3535943
SIZE	40129	8.2425	1.4157	7.3239	8.2175	9.1044	2.3462	15.0785
GROWOP	31429	0.0533	0.2507	-0.0563	0.0230	0.1032	-0.5202	2.6180
BANKR	40129	0.4617	0.3383	0.0817	0.5172	0.7731	0	1
STDEBT	40129	0.5462	0.3078	0.2758	0.5155	0.8428	0	1
CAPEX	31429	0.0723	0.2009	0.0100	0.0353	0.1003	-11.9928	1.5222
TANG	40129	0.6102	0.2848	0.3848	0.6860	0.8574	0	0.9984
CFLOW	40129	0.0560	0.1282	0.0177	0.0529	0.0976	-6.4381	1.5902
VOLCFLOW	40129	0.0494	0.0591	0.0187	0.0315	0.0557	0.0007	1.1529

Table 2: Country averages

Country	$CASH_1$	LEV	NWC	SIZE	GROWOP	BANKR	STDEBT	CAPEX	TANG	CFLOW	VOLCFLOW
ES	0.0891	0.5938	-0.1006	8.4267	0.0411	0.5230	0.5143	0.0529	0.6002	0.0599	0.0509
GR	0.0962	0.4529	-0.0825	8.4419	0.0570	0.5675	0.5898	0.0923	0.7080	0.0571	0.0419
IT	0.0652	0.7334	-0.1769	8.0233	0.0622	0.3361	0.5549	0.0840	0.5788	0.0545	0.0505
PT	0.0707	0.6718	-0.1109	8.1185	0.0495	0.5622	0.5575	0.0524	0.6128	0.0467	0.0521
Total	0.0791	0.6333	-0.1283	8.2425	0.0533	0.4617	0.5462	0.0723	0.6102	0.0560	0.0494

Table 3 reports the Pearson correlation coefficients between the sample variables. The correlations between explanatory variables are not very high, always under 0.5, except for the correlation between the BANKR and STDEBT variables which show a coefficient of -0.6439. To exclude the

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hypothesis of the presence of multi-collinearity, the variance inflation factors (VIF) are calculated. As shown in table 3 the level of tolerance associated with the explanatory variables is always above 0.10, suggesting that multi-collinearity is not a problem[18].

[18] Menard (1995:66) states “a tolerance of less than 0.20 is cause for concern; a tolerance of less than 0.10 almost certainly indicates a serious collinearity problem”. Kennedy (1992:183) states that “for standardized data VIF>10 indicates harmful collinearity”.

Table 3: Pearson correlations and Variance Inflation Factors

**Significant at the 0.01 level. *Significant at the 0.05 level. VIF tolerance is the inverse of VIF.

	CASH1	LEV	NWC	SIZE	GROWOP	BANKR	STDEBT	CAPEX	TANG	CFLOW	VOLCFLOW	CRISIS	VIF
CASH1	1												-
LEV	-0.1357**	1											2.36
NWC	-0.0301**	-0.4891**	1										2.44
SIZE	-0.3013**	-0.1172**	0.1542**	1									1.32
GROWOP	0.0094	0.0545**	-0.0324**	0.0247**	1								1.04
BANKR	-0.2403**	0.0758**	0.1749**	0.3606**	0.0049	1							1.8
STDEBT	0.2205**	-0.1420**	-0.3735**	-0.3295**	-0.0066	-0.6439**	1						2.73
CAPEX	-0.0397**	-0.0167**	-0.0486**	-0.0267**	0.0564**	-0.0011	-0.0077	1					1.02
TANG	-0.3726**	-0.1641**	-0.1399**	0.2520**	-0.0024	0.3133**	-0.3022**	0.0968**	1				1.71
CFLOW	0.1600**	-0.4253**	0.2624**	-0.0805**	0.0624**	-0.0781**	0.0663**	0.0603**	0.0053	1			1.32
VOLCFLOW	0.1881**	0.2576**	-0.1937**	-0.3355**	0.0206**	-0.2249**	0.2395**	-0.0004	-0.3264**	-0.1718**	1		1.32
CRISIS	-0.0815**	-0.0004	0.0534**	0.0489**	-0.1623**	0.0811**	-0.0783**	-0.0268* *	0.0165**	-0.1017**	0.0158**	1	1.05
												Mean VIF	1.65

Table 4 shows the temporal evolution of average cash ratio for the sample firms. In general, a negative tendency in the level of cash holdings stands out in the period under study. Regressions of the mean and median of CASH over time were estimated showing that the average (median) cash ratio presents a reduction of 0.36% (0.25%) each year, this result being significant at a level of 0.01. The associated R^2 is approximately 78% (83%). This tendency is contrary to the regular growth found by Bates et al. (2009) for US industrial firm over a period ending in 2006.

The highest level of cash ratio was reached in 2006 (9.22%) after which it was seen to fall in 2007 and 2008, the year recording the lowest average value (6.67%) in the period studied. Following that sudden fall, levels have remained close to the 2008 minimums. Analysis of table 4 can apparently help to explain that tendency. In fact, in the midst of the financial crisis in 2008, the growth in turnover slows down, the CFLOW variable decreases and, simultaneously, the highest figure for capital expenditure as a percentage of assets occurs[19]. For hotel firms, Woods et al. (2011) also reported a noticeable fall in cash ratios in 2007 and 2008, preceded in 2006 by the maximum value recorded in their period of study (1997-2008).

[19] The tendency of CFLOW is similar in all the countries in the sample. The peak found in CAPEX is stimulated by increased capital expenditure in Greece and Italy. The GROWOP variable, a proxy for growth opportunities, shows similar behaviour in the countries, diminishing considerably in 2008. Another fall is recorded in 2009 in all countries except Italy.

Table 4: Averages by year

Year	$CASH_1$	LEV	NWC	SIZE	GROWOP	BANKR	STDEBT	CAPEX	TANG	CFLOW	VOLCFLOW
2003	0.0894	0.6100	-0.1424	8.1699		0.4051	0.5686		0.6215	0.0736	0.0462
2004	0.0875	0.6213	-0.1414	8.1258	0.0662	0.3813	0.5603	0.0901	0.6181	0.0677	0.0472
2005	0.0901	0.6321	-0.1425	8.1465	0.0819	0.4593	0.5635	0.0701	0.6072	0.0651	0.0485
2006	0.0922	0.6396	-0.1368	8.1883	0.1186	0.4673	0.5643	0.0711	0.5953	0.0698	0.0497
2007	0.0793	0.6628	-0.1456	8.2868	0.0986	0.4657	0.5838	0.0816	0.5901	0.0619	0.0511
2008	0.0667	0.6264	-0.1157	8.2983	0.0476	0.4791	0.5425	0.1351	0.6146	0.0490	0.0504
2009	0.0701	0.6390	-0.1106	8.3327	-0.0403	0.5023	0.5087	0.0482	0.6118	0.0345	0.0508
2010	0.0668	0.6396	-0.1079	8.3366	0.0155	0.5018	0.5020	0.0480	0.6123	0.0374	0.0504
2011	0.0676	0.6214	-0.1106	8.3098	0.0507	0.4822	0.5257	0.0336	0.6321	0.0475	0.0501
Total	0.0791	0.6333	-0.1283	8.2425	0.0533	0.4617	0.5462	0.0723	0.6102	0.0560	0.0494

Table 5 shows the mean and median of firms' characteristics by quartile of $CASH_1$. As in Opler et al. (1999), the quartiles were created annually, which justifies overlapping of quartiles. The aim was to observe whether the characteristics of firms with lower cash holdings (1st quartile) differ from the characteristics of those with more cash holdings (4th quartile). Resorting to a t-test for the differences in means reported in the last two columns of the table, we find a negative relationship between cash ratio and the variables of LEV, SIZE, BANKR and TANG, all of them showing monotonous behaviour over the quartiles. The variables of STDEBT, CFLOW and VOLCFLOW present a positive relationship with cash ratio, the relationship being steady over the quartiles. CASH also presents a positive relationship with the NWC variable and a negative one with the CAPEX variable, although evolution is not regular.

Table 5: Firm characteristics by cash/assets quartiles

$CASH_1$	First Quartile 0 to .0091		Second Quartile .0043 to .0378		Third Quartile .0201 to .1204		Fourth Quartile .0762 to .9675		t-statistic	p-value
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**		
$CASH_1$	0.0026	0.0022	0.0154	0.0139	0.0556	0.0513	0.2430	0.1947	161.5763	0.0000
LEV	0.6920	0.7202	0.6671	0.6837	0.6195	0.6242	0.5544	0.5258	-27.3123	0.0000
NWC	-0.1468	-0.1191	-0.1284	-0.0999	-0.1102	-0.0783	-0.1277	-0.0817	4.7631	0.0000
SIZE	8.8044	8.7170	8.4935	8.4338	8.1200	8.0804	7.5518	7.5315	-67.2273	0.0000
GROWOP	0.0494	0.0180	0.0577	0.0238	0.0550	0.0244	0.0509	0.0252	0.3700	0.7114
BANKR	0.5370	0.6259	0.5086	0.5833	0.4654	0.5156	0.3357	0.2552	-43.4846	0.0000
STDEBT	0.4770	0.4190	0.5148	0.4651	0.5448	0.5146	0.6483	0.6824	40.9104	0.0000
CAPEX	0.0741	0.0266	0.0726	0.0337	0.0778	0.0394	0.0644	0.0425	-2.8850	0.0039
TANG	0.7049	0.8240	0.6597	0.7662	0.6180	0.7050	0.4582	0.4835	-66.1969	0.0000
CFLOW	0.0351	0.0330	0.0421	0.0440	0.0578	0.0593	0.0891	0.0857	29.8192	0.0000
VOLCFLOW	0.0367	0.0244	0.0442	0.0292	0.0507	0.0338	0.0662	0.0428	34.0702	0.0000

After carrying out the tests[20] which confirm the unsuitability of the Pooled OLS model, the Hausman test concluded that there was evidence of correlation between individual effects and explanatory variables (chi^2= 572.33, p-value=0) therefore rejecting the random effects model. A within-groups estimator was be used to estimate the fixed effects model by applying the Ordinary Least Squares technique on the transformed model after subtracting the individual averages from all the variables. As the fixed effect model using the *within* estimation excludes the time-invariant variables, alternatively the *between* estimator will be used to show the explanatory capacity of the VOLCFLOW variable. This estimator runs an OLS regression on the mean values of each firm. In

[20] An F-test and the analysis of the estimate of Rho in the FE model rejected the Pooled OLS against the FE model. The LM (Lagrange Multiplier) test of Breusch & Pagan (1980) rejected the Pooled OLS against the RE model. For brevity, results are not reported.

subsequent analyses and tests only the *within* estimator will be used.

The results for the models are presented in table 6. As observed, both estimations produce homogeneous results, showing similar levels of significance, signs and coefficients. The exception is the SIZE variable, which shows a level of significance of 0.05 in the *within* estimator and 0.01 with the *between* estimator. In a general analysis of the models, we observe that firms that are larger, more leveraged, where the greater proportion of debt is short-term and closer relationships are maintained with financing institutions, show lower cash holdings. It is also seen that firms with more liquid assets substituting cash holdings, greater capital expenditure and greater tangibility of assets present lower cash ratios. It also stands out that higher levels of cash-flow and its volatility are associated with higher levels of cash holdings. The models are clear in attributing a negative impact of the financial crisis on cash ratios, showing that the years of financial crisis, which still leave marks in the economies of the countries studied, are reflected in a reduced level of cash in the sample firms. Both models concur in not considering growth opportunities as a determinant of cash ratio.

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Table 6: Regression results

Models 1 and 2 estimate "Within" and "Between" regressions respectively; Model 3 adds the quadratic term to the LEV variable; Model 4 includes interactions between independent variables and the CRISIS dummy; Model 5 removes the LEV and CAPEX variables; Model 6 excludes the observations with highest cash ratios (top decile); Model 7 used as the dependent variable $CASH_2$, that is, the ratio of cash plus cash equivalents to total assets minus cash and cash equivalents; Model 8 replaces CFLOW for EBITDA; Model 9 replaces the CRISIS dummy with year dummies. *P*-values are based on clustered robust standard errors (by firm) to control for heteroskedasticity and autocorrelation, and are reported in parentheses. We report within R^2 for all models.

Independent Variable	1 FE	2 BE	3- FE LEV^2	4- FE Interactions	5- FE Reduced-form	6- FE Decil	7- FE CASH2	8- FE EBITDA	9- FE Dummy YEAR
CONSTANT	0.4021	0.4774	0.4379	0.4525	0.2595	0.2187	0.7243	0.3859	0.3975
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEV	-0.1011	-0.1463	-0.1629	-0.1327		-0.0376	-0.2328	-0.1041	-0.1007
	(0.001)	(0.000)	(0.000)	(0.000)		(0.000)	(0.001)	(0.001)	(0.001)
NWC	-0.1969	-0.1361	-0.2076	-0.2122	-0.1358	-0.0636	-0.4603	-0.1944	-0.1965
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIZE	-0.0059	-0.0181	-0.0054	-0.0076	-0.0008	-0.0077	0.0001	-0.0040	-0.0056
	(0.037)	(0.000)	(0.051)	(0.007)	(0.792)	(0.000)	(0.992)	(0.159)	(0.054)
GROWOP	0.0011	0.0154	0.0011	0.0030	-0.0018	0.0010	-0.0003	0.0004	0.0008
	(0.563)	(0.050)	(0.574)	(0.081)	(0.328)	(0.338)	(0.940)	(0.810)	(0.671)
BANKR	-0.0254	-0.0291	-0.0210	-0.0229	-0.0302	-0.0124	-0.0460	-0.0258	-0.0253
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
STDEBT	-0.1259	-0.0887	-0.1354	-0.1291	-0.0812	-0.0491	-0.2780	-0.1245	-0.1259
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAPEX	-0.0137	-0.0358	-0.0151	-0.0340		-0.0032	-0.0357	-0.0154	-0.0141
	(0.004)	(0.000)	(0.001)	(0.000)		(0.079)	(0.002)	(0.003)	(0.004)
TANG	-0.2562	-0.1833	-0.2641	-0.2826	-0.2289	-0.0923	-0.5655	-0.2562	-0.2559
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CFLOW	0.1039	0.1081	0.1181	0.0919	0.1557	0.0457	0.2183		0.1035
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)
VOLCFLOW		0.1761							
		(0.000)							
CRISIS	-0.0093	-0.0254	-0.0107	-0.0629	-0.0069	-0.0094	-0.0144	-0.0094	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
LEV_CRISIS				0.0442					
				(0.000)					
CAPEX_CRISIS				0.0316					
				(0.000)					

TANG_CRISIS				0.0422					
				(0.000)					
NWC_CRISIS				0.0219					
				(0.018)					
YEAR_DUMMY05									0.0033
									(0.006)
YEAR_DUMMY06									0.0044
									(0.003)
YEAR_DUMMY07									-0.0032
									(0.069)
YEAR_DUMMY08									-0.0066
									(0.003)
YEAR_DUMMY09									-0.0070
									(0.002)
YEAR_DUMMY10									-0.0106
									(0.000)
YEAR_DUMMY11									-0.0084
									(0.001)
LEV^2			0.0107						
			(0.006)						
EBITDA								0.0941	
								(0.000)	
R^2	0.2049	0.1405	0.2195	0.2179	0.1696	0.1068	0.1242	0.2044	0.2063
N	31429	31429	31429	31429	31429	28360	31429	31429	31429

The results obtained in Model 1 show that an increase of, for example, 0.10 in the LEV variable, ceteris paribus, determines a decrease of 1.01 percentage points in cash ratio[21]. Interpretation of this result has not been consensual. Inasmuch as leverage can serve as a proxy for access to debt, its substitute role is confirmed. An alternative explanation is put forward by Baskin (1987), who explains that the cost of opportunity of investing in liquidity increases for higher levels of leverage. A simpler explanation is

[21] For Model 2, the addition of 0.10 to the LEV variable, ceteris paribus, produces a decrease of 1.46 percentage points in cash ratio.

supported by Pecking Order Theory which interprets diminishing cash ratios as a sign of internal sources of finance being exhausted, forcing the firm to turn to debt. From an agency cost perspective, it could also be added that this result would be expected inasmuch as more leveraged firms have more monitoring, avoiding the undesirable consequences of management's discretionary power. In general, the literature reports a relationship consistent with the one shown in this study[22].

Applying a quadratic term to the debt ratio (model 3) reveals that the relationship between cash holdings and leverage is not linear. The coefficient of the LEV^2 variable is positive and significant, confirming the results of Guney, Ozkan, & Ozkan (2007) and Drobetz & Grüninger (2007). We conclude that the negative effect on cash ratio becomes less pronounced as the firm becomes increasingly leveraged.

The results of Models 1 and 2 show a negative relationship between substitute liquid assets and cash holdings, considering the negative and highly significant coefficient of the NWC variable, which shows that firms with greater net working capital present lower cash ratios[23]. Presenting, on average, negative values for net working capital, our results show that the greater the imbalance between current assets net of cash and current liabilities, the greater the cash holdings of lodging firms.

The negative and significant coefficient for the SIZE variable in Model 1 at 0.05 levels of significance

[22] On the contrary, García-Teruel & Martínez-Solano (2008) showed an opposite relationship for SMEs, as did Woods et al. (2011) for hotel firms in the US. The explanation for their result was based on the precautionary motive for having cash holdings, i.e., higher levels of debt increasing the likelihood of financial distress.

[23] The literature tends to support this result (Opler et al., 1999; Ozkan & Ozkan, 2004; García-Teruel & Martínez-Solano, 2008) but the opposite relationship was shown by Guney et al. (2007). Woods et al. (2011) did not find a statistically significant association between the variables.

and in Model 2 at 0.01 levels indicates some evidence of a negative influence of company size on cash holdings. As is found in the literature as a whole, the result supports the idea that large firms find it easier to obtain external finance (Whited, 1992; Fazzari & Petersen, 1993) or tend to be more diversified (Rajan & Zingales, 1995), which is reflected in less treasury risk[24] (Titman & Wessels, 1988). Indeed, if large lodging firms have properties that are geographically dispersed, they will be less likely to experience financing difficulties.

Models 1 and 2 show positive but not significant coefficients for the GROWOP variable. This result, contrary to most of the literature that reveal a positive and significant relationship between the variables[25] can be explained by the use of a proxy which, instead of controlling for future growth opportunities, captures current opportunities (D'Mello et al., 2008), these not influencing cash holdings.

The BANKR variable, negative and significant at 0.01 level, suggests that firms with more bank debt show lower cash ratios. The evidence is consistent with the idea that forming close relationships with financing institutions reinforces the firm's capacity to access debt (Ozkan & Ozkan, 2004) through reduced information asymmetry (Ferreira & Vilela, 2004). In addition, this may transmit positive information to the market regarding the firm's solvency (Ozkan & Ozkan, 2004). Free Cash-Flow Theory also supports the evidence obtained in that the greater monitoring carried out by financing institutions reduces management's discretionary power and the tendency to accumulate excessive cash holdings[26].

[24] A similar result was presented by Bates et al. (2009), Woods et al. (2011) and Bigelli & Sánchez-Vidal (2012).

[25] See for instance Ferreira & Vilela (2004), Kim, Kim & Woods, (2011) and Woods et al. (2011).

[26] Our results are in agreement with Ferreira & Vilela (2004), Ozkan & Ozkan (2004), García-Teruel & Martínez-Solano (2008) and Bigelli & Sánchez-Vidal

The most unexpected result emerges with the STDEBT variable. The models show a strong negative relationship between short-term debt and cash ratio, through a negative and significant coefficient of the STDEBT variable, at a level of 0.01. The evidence reveals that lodging firms with a greater predominance of short-term debt maintain lower levels of cash. On the contrary, Trade-Off Theory forecasts a positive relationship because the predominance of debt of less than one year's maturity forces the firm, periodically, to renew existing lines of credit. The evidence does not corroborate the results of Bruinshoofd & Kool (2004), who obtained a positive relationship between the variables, nor those of García-Teruel & Martínez-Solano (2008), who found a negative relationship between long-term debt and cash holdings. The result obtained is unusual and reveals the nature of business in lodging firms. Unlike firms in other sectors, these will find it easier to renegotiate the maturity of short-term debt, perhaps because they are able to provide good collateral, avoiding investment in cash holdings as a precautionary motive.

The negative and significant coefficient associated with the CAPEX variable, at a level of 0.01, reflects a negative relationship between capital expenditure and level of cash holdings. This relationship, for which empirically there are differing results[27], is supported by Pecking Order Theory, considering that firms prefer to use internal funds for financing.

Concerning the TANG variable, which shows a negative and highly significant coefficient, we find, for example, that an additional 0.10 in the TANG variable in Model 1, ceteris

(2012) but contrary to those of Pinkowitz & Williamson (2001) for Japan.

[27] Dittmar et al. (2003) and Guney et al. (2007) finds a negative relation while Woods et al. (2011) show a positive relationship between the variables.

paribus, determines a reduction in cash ratio of 2.56 percentage points. The evidence, as in Drobetz & Grüninger (2007), supports Trade-Off Theory, since it favours the notion that firms with a great amount of tangibles could convert them into cash holdings when faced with serious financial difficulties. Furthermore, more tangible assets provide collateral which facilitates access to debt (Titman & Wessels, 1988). Unlike firms in other sectors, lodging firms have more collateral for access to external finance, diminishing the incentive to have cash holdings and increasing the incentive for debt, which explains why these firms will be more leveraged.

As expected, according to the Pecking Order Theory, the result for the CFLOW variable is positive and significant[28] at a level of 0.01.

The result relating to the VOLCFLOW variable is also in agreement with what is forecasted, being positive and highly significant[29]. It is confirmed that greater volatility associated with firms' cash-flow leads to higher levels of cash and cash equivalents also in the accommodation sector.

An important and revealing result of the behaviour of the level of cash holdings in lodging firms was obtained through the negative relationship between the CRISIS variable and cash ratio. Both models clearly show this relationship to be negative, with a negative and highly significant coefficient, indicating that the years of financial crisis determined a reduction in cash levels. Theoretically, the opposite relationship between the variables would be foreseeable, since increased macroeconomic risk (Baum et

[28] Empirically, the result is supported by Opler et al. (1999) and Ozkan & Ozkan (2004) but is contrary to that found by Woods et al. (2011).

[29] The same result was obtained by Kim et al. (1998), Opler et al. (1999) and Bates et al. (2009).

al., 2006) should be an incentive to accumulate cash holdings. The empirical studies of Lian, Sepehri, & Foley (2011) with Chinese firms and Arslan, Florackis, & Ozkan (2006) with Turkish firms revealed that at times of crisis, namely the global financial crisis in the case of the former study, firms' cash level increases due to precautionary motives. We therefore register that both theoretically and empirically, the negative result obtained does not have great support, although it does not surprise us. During the financial crisis, firms face more credit restrictions (Ivashina & Scharfstein, 2010), including the refinancing of existing debt, which puts considerable pressure on the firm's finances.

Further analysis of the impact of crisis was attempted with Model 4 which incorporates interaction variables between the CRISIS variable and those of LEV, CAPEX, TANG and NWC[30].

The results show that the coefficient of the LEV_CRISIS variable is positive and highly significant indicating an equal increase in leverage has a more negative impact outside the crisis period than during the crisis.

The coefficient of the TANG_CRISIS variable is positive and significant at a level of 0.01, which demonstrates that the overall effect of the TANG variable on the dependent variable, remaining clearly negative during the crisis, is now a determinant with less impact on cash ratio, but still exerting a strong influence on it. This change may be explained by the credit restrictions imposed even on firms with more tangibles.

The results show a positive and significant coefficient for the CAPEX_CRISIS variable. We can only

[30] The interactions of the other variables with the CRISIS variable were not reported as their coefficients were insignificant.

hypothesize that firms wishing to keep their investment plans and anticipating difficulties in financing, increase cash levels, according to the precautionary motive. These results have strong implications since their initial negative economic impact is almost completely cancelled out by the positive relationship between capital expenditure and cash holdings during the crisis. This being so, the economic effect of capital expenditure on cash and cash equivalents during the crisis is close to zero.

In the case of the NWC_CRISIS variable, we estimated a positive and significant coefficient at a level of 0.05. Overall, the general effect of the NWC variable on the dependent variable remains negative and significant. However, the net working capital loses slightly the economic impact on the cash holdings. As in the accommodation sector firms keep few substitute liquid assets of cash holdings it is short-term debt that plays an important role in determining the value of the net working capital. Therefore, the explanation for the change in the relationship seems to be the greater impact of current debt rather than current assets (other than cash).

The model estimated with all the interaction variables simultaneously maintains the signs and significance of the variables used in Model 1.

5. Robustness tests

According to Opler et al. (1999) the simultaneous determination of decisions related to capital structure, investment and cash holding policy can make the estimation inconsistent. So we will test the robustness of the model omitting the LEV and CAPEX variables of Model 1, as they are proxies for leverage and investment. The results reported in Model 5 show that the signs and significance of the variables are maintained, except for the SIZE variable which is no longer significant. In Model 1 SIZE was seen to be one of the weakest variables in determining cash ratio, and so we conclude that the problem of joint determination of leverage, investment and cash holdings does not affect our results.

Another problem that can make estimation inconsistent is raised by the univariate analysis. As can be observed, firms in the 4th quartile of cash ratio have different characteristics from those in the 1st quartile and some variables do not have a linear behaviour between quartiles. If the results were being influenced by firms with high cash ratios, a new test of robustness can be carried out estimating the regression of Model 1 after excluding the observations that in each year were in the highest decile of cash ratio (Opler et al., 1999). The results of Model 6 show no significant changes. The SIZE variable becomes significant at a level of 0.01 and the CAPEX variable loses significance slightly, no longer being significant at a level of 0.05. The results, overall, appear to be robust.

Additional robustness tests were carried out by using alternative proxies for both the dependent variable and some independent variables, such as CFLOW and CRISIS. Model 7 uses the $CASH_2$ proxy, Model 8 the EBITDA proxy and Model 9, to control for the temporal effects, uses year dummies rather than the CRISIS dummy. The results obtained for the new proxy used as dependent variable are consistent with our initial findings. Only the significance of the SIZE variable changes and, as in the other additional tests, it is no longer significant. The signs and significance related to the other variables are maintained, which allows us to conclude that using an alternative proxy for the dependent variable does not alter the main conclusions. In the same way, use of the EBITDA variable or the year dummies does little to change the initial conclusions, indicating the model's good level of consistency. Once again, the SIZE variable ceases to be significant and the other variables keep their significance and signs. The year dummies inserted corroborate the effect, already highlighted, of the financial crisis on cash ratio. From 2008, macroeconomic effects are seen to have a negative and significant impact (0.01) on cash level. The years of 2005 and 2006 had a positive and significant (0.01) effect on cash ratio.

In general, the robustness tests support the conclusions drawn from the initial models, despite emphasizing some weakness in the SIZE variable, which sometimes loses significance.

6. Conclusions

This study analyzed the determinants of cash holdings for the accommodation industry in Southern European countries (Spain, Greece, Italy and Portugal) using a sample of 5964 firms during the period 2003-2011.

We documented a significant fall in cash holdings in 2007 and 2008 when the lowest cash ratios were recorded in our sample period. In the following years, cash ratios remained close to these minimum levels, which would anticipate a negative effect of the financial crisis on cash levels in accommodation firms.

The results of a fixed effects panel data model and subsequent robustness tests suggest that larger, more leveraged companies, where most debt is short-term and better relationships are formed with financial institutions, present lower cash to assets ratios. Liquid asset substitutes, capital expenditure and asset tangibility (the most statistically significant variable) also have a negative effect on cash levels.

As expected, cash holdings are positively influenced by cash-flow and cash-flow volatility. These results are mostly in support of the transaction motive for holding cash and are in accordance with Pecking Order Theory.

We show a negative impact of the financial crisis on cash holdings and therefore do not identify a precautionary motive. Obviously, this evidence is somewhat expected as a consequence of the significant impact of the 2008 crisis on industry cash-flows, which decreased from 7.3% of total assets in 2003 to 3.45% in 2009. A distinctive feature of the accommodation industry seems to be the little importance of the precautionary motive as an incentive to accumulate cash. This is also visible in the negative relationship we find between leverage and short-term debt and cash and cash equivalents. The non-significant relationship between growth opportunities and cash holdings points to the same conclusion.

The model estimated with interaction variables shows a diminishing impact of some variables (leverage, tangibility, capital expenditure and net working capital) after 2008.

A motive of concern that our study revealed is the increased fragility of lodging firms in these countries, a joint effect of the economic and financial crisis and the traditional high leverage and low cash levels of the industry. Precautionary reasons seem to advice for higher cash holdings in this industry but as the impact of cash on performance is not consensual this would be a matter for future research.

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