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Working capital requirement financing and Spanish SMEs performance*

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WORKING CAPITAL REQUIREMENT FINANCING AND SPANISH SMES PERFORMANCE

ABSTRACT

Our study investigates the relation between working capital requirement (WCR) financing strategies and firm performance for a sample of small and medium-sized firms. A risky financing strategy (a large proportion of WCR financed with short-term funds) can have a positive influence on firm's performance because it has lower interest costs, can mitigate agency costs, it allows firms to signal their positive prospects and facilitates bank relations. However, it can also have a negative influence on firm's performance because of higher refinancing and interest rate risks. Our results indicate that how SMEs finance their WCR affects their performance. Moreover, we find that this relationship depends on a firm's ability to generate internal funds.

1. INTRODUCTION

Since Smith (1980) suggested that working capital management is important because of its effects on a firm's profitability and risk, and consequently on its value, the literature on investment in working capital has been extended. In particular, Chiou, Cheng and Wu (2006), Baños, García and Martínez (2010), and Hill, Kelly and Highfield (2010) analyze the determinants of working capital investment for firms. The influence of investment in working capital on firm performance has also been demonstrated by a number of publications (Jose, Lancaster and Stevens, 1996; Shin and Soenen, 1998; Wang, 2002; Deloof, 2003; García and Martínez, 2007; and Baños, García and Martínez (2011); among others).

Investment in working capital, however, might not be the only important concern for firms when they make their working capital decisions, because the way in which it is

financed might also affect their performance. Indeed, the literature on corporate finance shows that a firm's value depends on its financing decisions. Although a lot of literature demonstrates the influence of investment in working capital on firms' performance, there is no empirical evidence that also analyzes the possible influence of working capital requirement (WCR) financing on their performance. Hence, this paper examines whether the kind of financing used by firms to finance their WCR affects their performance, where WCR is defined as current assets net of accounts payable. Since a positive WCR needs to be financed, it indicates a need for funds that firms have to finance internally, using free cash flow, or externally, via long-term or short-term debt. Firms can finance a high proportion of their WCR with long-term sources of funds, that is, they can use a less risky WCR financing strategy, which allows them to reduce both refinancing and interest risk. Alternatively, firms that use a risky WCR financing strategy, one that finances a high proportion of their WCR with short-term funds, might reduce their financing costs, obtain credit condition benefits, mitigate agency costs and signal their positive prospects to market. We also investigate whether this relation between WCR financing and firm performance is influenced by a firm's ability to generate internal funds.

We use a sample of non-financial Spanish SMEs for two reasons. First, Peel and Wilson (1996) and Peel, Wilson and Howorth (2000) suggest that an efficient working capital management is particularly important for small and medium-sized firms due to the greater difficulties they have in obtaining funding on the long-term capital markets (Petersen and Rajan, 1997) and, hence, the great importance of bank financing (Berger and Udell, 1998; and De la Torre, Martínez and Schmukler, 2010) and trade credit as sources of debt, particularly for them. Second, Spain, as occurs in most European countries, has a banking-oriented financial system, where capital markets are less developed and banks play an important role (Schmidt and Tyrell 1997). Thus, in the Spanish case, there is a large fraction of bank-dependent SMEs (Carbó, Rodríguez and Udell, 2009). Our results may also be of interest for other SMEs established in countries with similar financial systems.

To our knowledge, this is the first paper to analyze how the WCR financing strategy selected by firms affects their performance. The findings confirm the importance of the way in which a firm finances its WCR due to its influence on its performance. Hence, according to our results, investment in working capital should not be the only important concern for firms when they make their working capital decisions; the way in which this investment is financed should also be considered. In addition, analyses reveal that a firm's cash flow and market power affects the WCR financing-performance relation.

The rest of this paper is organized as follows. Section 2 links WCR financing and performance. Section 3 describes the empirical model and data. The results are presented in Section 4. Section 5 analyzes how the ability to generate internal funds of a firm affects the WCR financing-performance relation. Section 6 concludes the paper.

2. WORKING CAPITAL REQUIREMENT FINANCING AND FIRM PERFORMANCE

Since Modigliani and Miller (1958) proved that, under perfect and frictionless capital markets, the choice between debt and equity financing has no effects on a firm's value or on the cost or availability of capital, much research effort has been directed at understanding firms' capital structure decisions and the corresponding effects on firm value. More recently, since Stiglitz (1974) suggested that the terms of debt were also irrelevant under perfect capital markets, researchers have also tried to explain the debt maturity structure (see, for instance, Stohs and Mauer, 1996; Ozkan, 2000; Antoniou, Guney and Paudyal, 2006; among others).

A positive WCR needs to be financed and, hence, a greater WCR indicates a need for additional capital that firms can finance internally, using free cash flow, or externally, via long-term or short-term debt. Given the differences in costs and risks between the various sources of finance available to firms, the way in which a firm finances its WCR might affect its performance.

Our study indicates that Spanish SMEs use a high proportion of total short-term debt over their total debt (83.82%). This is consistent with the small-business finance literature, which shows that SMEs rely heavily on short-term financing. According to Walker (1989), since small firms rarely obtain long term debt or equity in traditional financial markets, they rely on trade credit and bank credit as major sources of debt. In this line, Hughes (1997) indicates that small firms have a much greater reliance on short-term bank loans in financing their assets than large companies. In the Spanish case, moreover, the financial system is dominated by credit institutions, where banks play an important role (Schmidt and Tyrell, 1997) and there is a large fraction of bank-dependent SMEs (Carbó, Rodríguez and Udell, 2009).

Although short-term bank debt enjoys several advantages, it also brings with it significant risks. Thus, the influence of a higher percentage of WCR financed with short-term bank debt on firm's performance may be positive or negative.

Greater short-term debt might positively influence a firm's performance for several reasons. First, as Jun and Jen (2003) indicate, the nominal rate of short-term debt is lower than that of long-term debt, due to default and inflation premiums, which tend to increase as debt maturity lengthens. Second, Jun and Jen (2003) also suggest that short-term debt adapts more easily to a firm's financial needs. Third, Petersen and Rajan (1994) indicate that short-term debt facilitates bank relations between the firm and the lender due to frequent renewals and, hence, firms might obtain credit condition benefits. In this line, Cole (1998) shows that potential lenders are more likely to extend credit to SMEs in the presence of pre-existing transactions. This might be because previous banking relations help convey private information about SMEs' near-term financial performance (Vos, Yeh, Carter and Tagg, 2007). Fourth, short-term debt can mitigate agency conflicts between shareholders and debtholders. Empirical evidence confirms that firms can use short-term loans to solve the problem of underinvestment because management is more frequently monitored due to periodic credit renewal (see, for example, Myers, 1977; Barclay and Smith, 1995; and Ozkan, 2000). In the case of SMEs, the problem of underinvestment could be a particularly severe problem (MacMahon, 2003). Finally, as Flannery (1986) and Kale and Noe (1990) note, firms with high-quality investment projects use short-term loans to transmit their positive prospects to the market.

However, more short-term bank debt could also negatively affect firm performance due to an increase in both refinancing and interest risk. Firms might face difficulties in renewing their short-term loans or they might have to pay higher interest rates on new loans, which would negatively affect their performance.

Given these positive and negative effects of short-term bank debt, a greater use of short-term bank debt to finance a firm's WCR might positively or negatively affect its performance. When a low percentage of WCR is financed with short-term bank debt, riskier WCR financing may increase firm's performance because the positive influence of short-term bank debt is expected to outweigh the negative influence. In particular, firms might reduce their interest costs, obtain credit condition benefits, mitigate agency costs and signal their positive prospects to suppliers of funds. In contrast, when firms finance a high percentage of their WCR with short-term bank debt, risky WCR financing might negatively affect firm's performance due to interest and refinancing risk. Thus, at sufficiently high percentages of WCR financed with short-term bank debt, the negative influence of short-term bank debt is expected to be the dominant factor.

Therefore, we expect a positive relation between the proportion of short-term bank debt used to finance a firm's WCR and its performance when a low percentage of WCR is

financed with short-term bank debt. However, we expect this relation to be negative when firms finance a high percentage of their WCR with short-term bank debt.

3. MODEL AND DATA

3.1. Model and methodology

To analyze the relation between WCR financing and a firm's performance we use the variable WCF as a measure of the WCR financing. This is calculated by the following ratio: short-term bank debt / WCR; where WCR is defined as current assets minus accounts payable. A greater WCF means riskier WCR financing, since it measures the percentage of WCR that is financed with short-term bank debt.

Thus, to test both the possible positive and negative effects of WCF on performance, we regress the firm's performance against WCF variable and its square. Additional variables are also included in the performance regression model to control for other potential influences on the performance of the firm. In particular, we include the firm size, sales growth, leverage and return on assets. Thus, we estimate the relation between WCR financing and firm's performance using the following regression:

$$ROE_{i,t} = \beta_0 + \beta_1 WCF_{i,t} + \beta_2 WCF^2{}_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 LEV_{i,t} + \beta_6 ROA + \lambda_t + \eta_i + \varepsilon_{i,t} \quad (1)$$

where $ROE_{i,t}$ is the return on equity, which is defined as net profit / equity; $WCF_{i,t}$ is the WCR financing; and $WCF^2_{i,t}$ its square. The inclusion of these two variables allows us to test both the positive and negative effects commented above. $SIZE_{i,t}$ is measured by the natural logarithm of sales; $GROWTH_{i,t}$ is calculated by the ratio $(sales_{i,t} - sales_{i,t-1})/sales_{i,t-1}$; $LEV_{i,t}$ is defined as the ratio of total (long-term+short-term) debt to total assets; and $ROA_{i,t}$ is measured by the ratio earnings before interest and taxes over total assets. Parameter λ_t is a time dummy variable that changes in time but is equal for all firms in each of the time periods considered. This parameter is designed to capture the influence of economic factors that may also affect firm performance, but which firms cannot control. η_i is the unobservable heterogeneity or the firm's unobservable individual effects, so we can control for the particular characteristics of each firm. Finally, $\varepsilon_{i,t}$ is the random disturbance. We also control for industry effects by introducing industry dummy variables.

Since our aim is to analyze the effect of WCR financing on firms' performance, we only include in our analyses those observations which have a positive WCR and, hence, the need to be financed. The coefficients on WCF and WCF^2 variables obtained from equation (1) allow us to determine the breakpoint in the WCR financing-firm performance relation, which can be calculated by: $-\beta_1 / 2\beta_2$. Given the positive and negative effects of short-term bank debt mentioned in the previous section, we expect a concave relation between WCF and return on equity. To verify our hypothesis, this inflection point should be a maximum and, hence, β_1 is hypothesised to be positive and β_2 negative.

We use the panel data methodology to estimate our model because of the benefits it provides. First, it allows us to control for unobservable heterogeneity and, therefore, eliminate the risk of obtaining biased results arising from the same (Hsiao 1985). Firms are heterogeneous and there are always characteristics that might influence their performance that are difficult to measure or hard to obtain, and which are not in our model (Himmelberg, Hubbard, and Palia, 1999). Second, panel data also allows us to avoid the problem of possible endogeneity. We estimated our models using the two-step generalized method of moments (GMM) estimator based on Arellano and Bond (1991), which allows us to control for endogeneity by using instruments.

3.2. Data and summary statistics

The study uses a data panel of non-financial Spanish SMEs. The data were obtained from the SABI (Iberian Balance Sheets Analysis System) database, which was developed by Bureau Van Dijk and contains accounting and financial information for Spanish firms.

The sample comprises small and medium-sized firms from Spain for the period 1997-2007. The selection of SMEs was carried out according to the requirements established by European Commission recommendation 2003/361/EC of 6 May, 2003, i.e. they had fewer than 250 employees, turned over less than 50 million euros a year and possessed less than 43 million euros worth of total assets. The information obtained was refined. Specifically, we eliminated firms with lost values, cases with errors in the accounting data and extreme values presented by all variables. In addition, we also required firms to have presented data for at least five consecutive years. Finally, we obtained an unbalanced panel of 1,062 firms (7,557 observations).

Table 1 reports descriptive statistics on return on equity, WCF and the control variables. Table 2 provides Pearson correlations for variables in equation (1). Moreover, to ensure

that the multicollinearity problem is not present in our analysis, we calculated the Variance Inflation Factor (VIF) for each independent variable included in our model (results not presented but available from the authors upon request). Since the largest VIF value is far from 5, it can be concluded that multicollinearity is not a concern in the present sample (Studenmund, 1997).

TABLE 1
SUMMARY STATISTICS

	Mean	Standard deviation	10th	Median	90th
ROE	0.0821	0.1241	-0.0275	0.0777	0.2124
WCF	0.4766	0.3773	0.050	0.4323	0.8958
SIZE	9.3068	0.6012	8.6021	9.2841	10.1023
GROWTH	0.0798	0.1710	-0.0948	0.0626	0.2695
LEV	0.6243	0.1890	0.3478	0.6513	0.8509
ROA	0.0578	0.0515	0.0038	0.0524	0.1235

ROE represents the return on equity; WCF is the ratio short-term bank debt / WCR; SIZE is the size; GROWTH the sales growth; LEV the leverage; and ROA the return on assets.

TABLE 2
CORRELATION MATRIX

	ROE	WCF	SIZE	GROWTH	LEV	ROA
ROE	1.0000					
WCF	-0.0308***	1.0000				
SIZE	0.0950***	0.0305***	1.0000			
GROWTH	0.2259***	0.0739***	0.1239***	1.0000		
LEV	0.0641***	0.5393***	0.1672***	0.1597***	1.0000	
ROA	0.7589***	-0.1313***	0.0448***	0.1804***	-0.1809***	1.0000

ROE represents the return on equity; WCF is the ratio short-term bank debt / WCR; SIZE is the size; GROWTH the sales growth; LEV the leverage; and ROA the return on assets.
***indicates significance at 1% level.

4. EMPIRICAL EVIDENCE

4.1. Univariate analyses

Table 3 provides preliminary insights into the relation between WCR financing and return on equity. The sample is sorted annually into quartiles based on the WCR financing. Specifically, WCF_1 consists of firms with the lowest level of WCF ratio, while WCF_4 includes firms with the highest WCF ratio. Thus, Table 3 reports mean and median values for return on equity across WCF quartiles.

Consistent with our hypothesis, the results suggest a non-monotonic relation between WCR financing and return on equity. We find that the mean and medium return on equity first increase and then decline with the WCF ratio. The mean ROE increases from 0.066 in WCF_1 to 0.097 in WCF_3. However, for the highest level of *WCF*, we find a reversal in pattern for return on equity, since the mean decreases to 0.070 for the last quartile. The median ROE has a similar pattern.

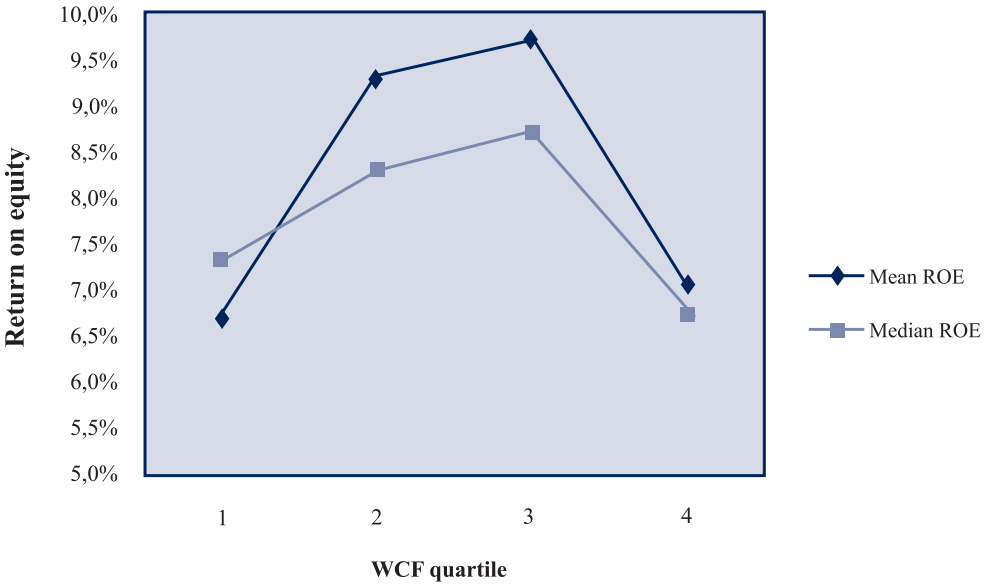
TABLE 3
WORKING CAPITAL REQUIREMENT FINANCING AND RETURN ON EQUITY

	ROE mean	ROE median
WCF_1	0.0669	0.0731
WCF_2	0.0934	0.0833
WCF_3	0.0971	0.0871
WCF_4	0.0706	0.0669

This table reports mean and median values for return on equity across WCF quartiles. The sample is sorted annually into quartiles based on their WCF ratio. Specifically, WCF_1 consists of firms with the lowest level of WCF ratio, while WCF_4 includes firms with the highest WCF ratio.

We illustrate this non-monotonic relation between WCR financing and return on equity in Figure 1, which shows the mean and median ROE across the WCF quartiles. Quartiles are represented on the horizontal axis. The vertical axis represents the mean and median ROE. The results seem to indicate that the use of short-term bank debt to finance a firm's WCR positively affects its performance. However, at sufficiently high percentages of WCR financed with short-term bank debt, the negative influence of short-term bank debt outweighs the positive influence and, hence, riskier WCR financing negatively affects a firm's performance.

FIGURE 1
WORKING CAPITAL REQUIREMENT FINANCING AND RETURN ON EQUITY



This figure reports the mean and median return on equity across WCF quartiles. The sample is sorted annually into quartiles based on the WCF ratio. WCF is the ratio short-term bank debt/WCR.

This figure reports the mean and median return on equity across WCF quartiles. The sample is sorted annually into quartiles based on the WCF ratio. WCF is the ratio short-term bank debt/WCR.

4.2. Multivariate analyses

Whereas the conclusions in the above section are based on a univariate analysis, we now explore the effect of the WCR financing on firms' performance by estimating the model (1) proposed in Section 3. The results obtained are presented in Column (1) of Table 4. Our findings indicate that β_1 is positive and β_2 is negative, and both coefficients are significant, which confirms that there is a concave relation between WCF and firm's performance. When a low percentage of WCR is financed with short-term bank debt, firms may increase their performance with riskier WCR financing due to the advantages associated with short-term bank debt. Specifically, firms might reduce their interest costs, obtain credit condition benefits, mitigate agency costs and signal their positive prospects to suppliers of funds.

In contrast, when firms finance a high percentage of their WCR with short-term bank debt, riskier WCR financing negatively affects a firm's performance because the negative influence of short-term bank debt outweighs the positive influence. Although firms enjoy several advantages with short-term debt, it also introduces interest and refinancing risk, which can in turn cause high financial distress costs (Jun and Jen, 2003). Thus, at sufficiently high WCF levels, the negative influence of riskier WCR financing is the dominant factor[1]. Our results suggest that, for our sample, the WCF-firm performance relation has a breakpoint of around 1.29.

In Column (2), following Ghosh and Moon (2010), we use an alternative research design based on spline regressions to give robustness to the results obtained from equation (1). Specifically, we estimate the following model:

$$ROE_{i,t} = \beta_0 + \beta_1 WCF_{(0,\,1.29)_{i,t}} + \beta_2 WCF_{(1.29,\,Max)_{i,t}} + \beta_3 SIZE_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 LEV_{i,t} + \beta_6 ROA + \lambda_t + \eta_i + \varepsilon_{i,t} \quad (2)$$

where we replace the *WCF* variable and its square (WCF^2) with $WCF_{(0,\,1.29)}$ and $WCF_{(1.29,\,Max)}$. We use the breakpoint obtained from equation (1) to divide *WCF* into low and high range categories. In particular, $WCF_{(0,\,1.29)}$ equals *WCF* if *WCF* lies between 0 and 1.29; and 1.29 otherwise. $WCF_{(1.29\,,Max)}$ equals *WCF* minus 1.29 if *WCF* is greater than 1.29, and 0 otherwise. All the other variables are the same as those specified in equation (1).

Consistent with the findings obtained in Column (1), the results obtained from equation (2) indicate that there is a concave relation between the variable WCF and a firm's performance, since the coefficient on $WCF_{(0,\,1.29)}$ is positive and significant, but that on $WCF_{(1.29\,,\,Max)}$ is negative and significant. These indicate that a riskier WCR financing strategy has a positive influence on performance at low levels of the WCF ratio, but that this effect becomes negative at high levels.

Additionally, to give greater robustness to our results, and since the WCR financing strategy selected by firms might differ across industries, we have also re-estimated the quadratic model by taking sub-samples by industry in order to check whether the con-

[*] We also obtain this concave relation between WCF and firm's performance if we measure the WCF variable by the ratio short-term bank debt/(accounts receivable + inventories - accounts payable).

cave relation between WCF and firm's performance is maintained. In particular, we have re-estimated the quadratic relation for the following five sub-samples: Agriculture and Mining; Manufacturing; Construction; Wholesale and Retail trade; and Service and Transport. The results obtained are presented in Table 5. They confirm this concave relation between WCF and performance for all sub-samples, except for the Agriculture and Mining sector, where the coefficients are not significant. However, this non significant result might be due to the small number of firms in this sub-sample.

TABLE 4
ESTIMATION RESULTS OF WORKING CAPITAL REQUIREMENT FINANCING-PERFORMANCE RELATION

	Eq. (1)	Eq. (2)
$WCF_{i,t}$	0.0448***	
	(10.95)	
$WCF^2_{i,t}$	-0.0173***	
	(-21.58)	
$WCF_{(0, 1.29)}$		0.0254***
		(9.36)
$WCF_{(1.29, Max)}$		-0.0469***
		(-60.24)
SIZE	-0.0298***	-0.0363***
	(-4.37)	(-5.81)
GROWTH	0.0172***	0.0199***
	(5.88)	(7.93)
LEV	0.2721***	0.2780***
	(12.75)	(19.14)
ROA	2.0384***	2.0880***
	(73.93)	(110.39)
m_2	-1.12	-1.12
Hansen Test	344.33(324)	348.40(324)
Observations	7557	7557

The dependent variable is the firm performance; WCF is measured by the ratio short -term bank debt / WCR ; SIZE the size; GROWTH the sales growth; LEV the leverage; and ROA the return on assets. $WCF_{(0, 1.29)}$ equals *WCF* if *WCF* lies between 0 and 1.29; and 1.29 otherwise. $WCF_{(1.29, Max)}$ equals *WCF* minus 1.29 if *WCF* is greater than 1.29, and 0 otherwise.
Time and industry dummies are included in the estimations, but not reported.
Z statistic in brackets. m_2 is a serial correlation test of second-order using residuals of first differences, asymptotically distributed as N(0,1) under the null hypothesis of no serial correlation. Hansen test is a test for over-identifying restrictions distributed asymptotically under the null hypothesis of validity of instruments as Chi-squared. Degrees of freedom in brackets.
*indicates significance at 10% level.
**indicates significance at 5%level.
***indicates significance at 1% level.

TABLE 5
SUB-SAMPLES BY INDUSTRY ESTIMATION RESULTS OF WORKING CAPITAL REQUIREMENT FINANCING-PERFORMANCE RELATION

	Agriculture and Mining sectors	Manufacturing sector	Construction sector	Wholesale and Retail trade sectors	Service and Transport sectors
$AGRES_{i,t}$	0.1157	0.0614***	0.0480***	0.0428***	0.0230***
	(0.60)	(20.74)	(3.37)	(18.56)	(6.49)
$AGRES^2_{i,t}$	-0.0230	-0.0356***	-0.0072***	-0.0088***	-0.0094***
	(-0.53)	(-38.24)	(-2.76)	(-10.26)	(-8.80)
SIZE	-0.0922	-0.0306***	0.0443***	-0.0320***	0.0019
	(-0.38)	(-8.85)	(3.59)	(-14.78)	(0.17)
GROWTH	0.0892	0.0052**	-0.0045	0.0483***	0.0376***
	(1.03)	(2.25)	(-1.03)	(34.78)	(5.46)
LEV	-0.2190	0.2497***	0.1715***	0.1529***	0.2352***
	(-0.42)	(26.08)	(3.76)	(28.32)	(9.11)
ROA	1.7897	1.9397***	2.3312***	2.3811***	2.1427***
	(1.57)	(129.09)	(19.37)	(207.52)	(82.89)
m_2	1.20	-1.76	-0.13	-0.86	0.22
Hansen Test	3.79(127)	344.11(324)	50.45(321)	321.13(324)	70.92(321)
Observations	144	3735	503	2569	606

The dependent variable is the firm performance; WCF is measured by the ratio short-term bank debt / WCR; SIZE the size; GROWTH the sales growth; LEV the leverage; and ROA the return on assets. Time and industry dummies are included in the estimations, but not reported.
Z statistic in brackets. m_2 is a serial correlation test of second-order using residuals of first differences, asymptotically distributed as N(0,1) under the null hypothesis of no serial correlation. Hansen test is a test for over-identifying restrictions distributed asymptotically under the null hypothesis of validity of instruments as Chi-squared. Degrees of freedom in brackets.
*indicates significance at 10% level.
**indicates significance at 5%level.
***indicates significance at 1% level.

5. WORKING CAPITAL REQUIREMENT FINANCING AND ABILITY TO GENERATE INTERNAL FUNDS

Having found that there is a percentage of WCR financed with short-term bank debt beyond which the relation between WCF and performance becomes negative, this section explores whether the breakpoint of this WCF-performance relation depends on a firm's ability to generate internal funds. Indeed, Rahaman (2011) indicates that internal funds may have collateral value for banks loans in environments with asymmetric information because this is a proxy for a firm's internal financial capacity and provides a signal about the quality of future growth opportunities. Firms with a greater ability to generate internal finance may meet their payment obligations more easily and, consequently, they might obtain more short-term bank loans and better credit conditions, that is, they would have a lower refinancing and interest risk. Thus, one could expect that these firms can finance a greater portion of their WCR with short-term bank debt (without harming their performance).

In order to test our new hypothesis, we classify firms on the basis of their ability to generate internal funds and we estimate the breakpoint of the WCF-performance relation for these sub-samples. We use two proxies for the ability to generate internal funds. First, we use the cash flow variable, measured by the ratio net profit plus depreciation to total assets, with a higher ratio meaning a greater ability to generate internal funds. Second, following Demirguc-Kunt and Maksimovic (1998), we have also categorized firms according to their market power. They indicate that firms that have sufficient market power or that face high demand could generate sufficient cash flow. Following Hill et al., (2010), we measure the market power (MP) as the lagged ratio of a firm's annual sales to the total annual sum of sales in a given industry. This is a proxy for a firm's ability to negotiate bilaterally as both customer and supplier, with a higher ratio indicating a greater bargaining power and, hence, a greater ability to generate internal funds.

In order to test whether or not the breakpoint of the WCR financing-performance relation varies according to the ability to generate internal funds, equation (1) is extended by incorporating a dummy variable that distinguishes between firms with more and less ability to generate internal financing. Specifically, DUM is a dummy variable that takes a value of 1 for firms with a greater ability to generate internal funds than the sample median, and 0 otherwise. Thus, we estimate the following model:

$$ROE_{i,t} = \beta_0 + (\beta_1 + \delta_1 DUM_{i,t})WCF_{i,t} + (\beta_2 + \delta_2 DUM_{i,t})WCF^2{}_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 LEV_{i,t} + \beta_6 ROA + \lambda_t + \eta_i + \varepsilon_{i,t} \quad (3)$$

All dependent and independent variables are as previously defined. By construction, the expression $-\beta_1 / 2\beta_2$ measures the breakpoint of the WCF-performance relation for firms with a lower ability to generate internal funds. The breakpoint of this relation for firms with a greater ability is captured by $-(\beta_1 + \delta_1) / 2 (\beta_2 + \delta_2)$.

The results, which are presented in Table 6, confirm again our hypothesis that the relation between WCF and performance is concave. In addition, we find that, for the firms with a greater ability to generate internal funds, the percentage of WCR financed with short-term bank debt beyond which riskier WCR financing starts to affect a firm's performance negatively is greater. That is, our findings indicate that these firms can finance a greater percentage of their WCR with short-term bank debt without harming their performance, which may be due to their lower refinancing and interest risk, given that they are expected to obtain short-term bank debt more easily and better credit conditions.

6. CONCLUSIONS

This paper analyzes the relation between WCR financing and firms' performance for a sample of small and medium-sized firms. Although there is a large amount of literature that studies the effect of the investment in working capital on firm's performance, the possible influence of WCR financing on performance is a topic that has not yet been explored. Hence, this paper examines whether the way in which a firm finances its WCR also influences its performance. To control for unobservable heterogeneity and for possible endogeneity problems, we use a panel data model and employ the two-step generalized method of moments (GMM) estimator.

Our findings indicate that investment in working capital should not be the only important concern for firms when they make their working capital decisions, but that WCR financing should also be considered. In particular, our results show that a suitable WCR financing strategy can help firms to increase their performance. For low percentages of WCR financed with short-term bank debt, riskier WCR financing might increase a firm's performance due to the advantages associated with short-term bank debt. Specifically, firms might reduce their interest costs, obtain credit condition benefits, mitigate agency costs and signal their positive prospects to suppliers of funds.

TABLE 6
WORKING CAPITAL REQUIREMENT FINANCING AND ABILITY TO GENERATE INTERNAL FUNDS

	Cash Flow	Market Power
WCF	0.0100***	0.0331***
	(3.33)	(9.23)
WCF*DUM	0.0268***	-0.0054
	(12.97)	(-1.58)
WCF^2	-0.0123***	-0.0161***
	(-20.89)	(-14.50)
WCF^2*DUM	0.0025***	0.0022**
	(4.18)	(2.01)
SIZE	-0.0267***	-0.0028
	(-6.01)	(-0.71)
GROWTH	0.0186***	0.0192***
	(8.41)	(8.22)
LEV	0.2823***	0.2802***
	(24.94)	(26.11)
ROA	2.0488***	2.0821***
	(124.08)	(145.49)
F_1	124.81	99.12
F_2	205.35	627.74
m_2	-0.87	-1.23
Hansen Test	482.98(432)	492.31(432)
Observations	7557	7557

The dependent variable is the firm performance; WCF is measured by the ratio short-term bank debt / WCR; SIZE the size; GROWTH the sales growth; LEV the leverage; and ROA the return on assets. DUM is a dummy variable equals 1 for firms with a greater ability to generate internal funds. Time and industry dummies are included in the estimations, but not reported. Z statistic in brackets. F_1 is a F-test for the linear restriction test under the following null hypothesis: H_0: $(\beta_1 + \delta_1) = 0$. F_2 is a F-test for the linear restriction test under the following null hypothesis: H_0: $(\beta_2 + \delta_2) = 0$. m_2 is a serial correlation test of second-order using residuals of first differences, asymptotically distributed as N(0,1) under null hypothesis of no serial correlation. Hansen test is a test for over-identifying restrictions distributed asymptotically under the null hypothesis of validity of instruments as Chi-squared. Degrees of freedom in brackets.
*indicates significance at 10% level.
**indicates significance at 5%level.
***indicates significance at 1% level.

However, for high percentages of WCR financed with short-term bank debt, riskier WCR financing might negatively affect firm's performance because of greater interest and refinancing risk. Moreover, additional analyses reveal that this WCR financing-performance relation depends on a firm's ability to generate internal funds.

Since financing options and methods are quite different between small and large firms, due to their differences in ownership structure, flexibility and taxes (Heyman, Deloof, and Ooghe, 2003), further research focused on quoted companies or different financial systems could be interesting.

REFERENCES

Antoniou, A., Guney, Y., Paudyal, K., 2006. The determinants of debt maturity structure: Evidence from France, Germany and the UK. European Financial Management 12, 161-194.

Arellano, M., Bond, S., 1991. Some test of specification for panel data: Monte Carlo evidence and an application to employment equations. Review of Economics Studies 58, 277-297.

Baños, S., García, P. J., Martínez, P., 2010. Working capital management in SMEs. Accounting and Finance 50, 511-527.

Baños, S., García, P. J., Martínez, P., 2011. How does working capital management affect Spanish SMEs profitability?. Small Business Economics, forthcoming.

Barclay, M.J., Smith, C.W., 1995. The maturity structure of corporate debt. Journal of Finance 50, 609-631.

Berger, A., Udell, G., 1998. The economics of small business finance: the roles of private equity and debt markets in the financial growth cycle. Journal of Banking and Finance 22, 613-673.

Carbó, S., Rodríguez, F., Udell, G., 2009. Bank market power and SME financing constraints. Review of Finance 13, 309-340.

Chiou, J. R., Cheng, L., Wu, H.W., 2006. The determinants of working capital management. Journal of American Academy of Business 10, 149-155.

Cole, R. A., 1998. The importance of relationships to the availability of credit. Journal of Banking and Finance 22, 959-977.

De la Torre, A., Martínez, M., Schmukler, S., 2010. Bank involvement with SMEs: beyond relationship lending. Journal of Banking and Finance 34, 2280-2293.

Deloof, M., 2003. Does working capital management affect profitability of Belgian firms?. Journal of Business Finance & Accounting 30, 573-587.

Demirguc-Kunt, A., Maksimovic, V., 1998. Law, finance, and firm growth. Journal of Finance 53, 2107-2137.

Flannery, M.J., 1986. Asymmetric information and risky debt maturity choice. Journal of Finance 41, 19-37.

García, P. J., Martínez, P., 2007. Effects of working capital management on SME profitability. International Journal of Managerial Finance 3, 164-177.

Ghosh, A., Moon, D., 2010. Corporate debt financing and earnings quality, Journal of Business Finance & Accounting 37, 538-559.

Heyman, D., Deloof, M., Ooghe, H., 2003. The debt maturity structure of small firms in a creditor oriented environment. Working Paper, Universiteit Gent.

Hill, M.D., Kelly, G., Highfield, M.J., 2010. Net operating working capital behaviour: a first look. Financial Management 39, 783-805.

Himmelberg, C., Hubbard, R., Palia, D., 1999. Understanding the determinants of managerial ownership and the link between ownership and performance. Journal of Financial Economics 53, 353-384.

Hsiao, C., 1985. Benefits and limitations of panel data. Econometrics Review 4, 121-174.

Hughes, A., 1997. Finance for SMEs: a UK perspective. Small Business Economics 9, 151-166.

Jose, M. L., Lancaster, C., Stevens, J.L., 1996. Corporate return and cash conversion cycle. Journal of Economics and Finance 20, 33-46.

Jun, S. G., Jen, F. C., 2003. Trade-off model on debt maturity structure. Review of Quantitative Finance and Accounting 20, 5–34.

Kale, J.R., Noe, T.H., 1990. Risky debt maturity choice in a sequential game equilibrium. Journal of Financial Research 13, 155-165.

MacMahon, R., 2003. An exploratory study of under and over investment amongst manufacturing SMEs from Australia's business longitudinal survey. International Small Business Journal 21, 29–53.

Modigliani, F., Miller, M.H., 1958. The cost of capital, corporation finance and the theory of investment. American Economic Review 48, 261-297.

Myers, S.C., 1977. Determinants of corporate borrowing. Journal of Financial Economics 5, 147-175.

Ozkan, A., 2000. An empirical analysis of corporate debt maturity structure. European Financial Management 6, 197-212.

Peel, M., Wilson, N., 1996. Working capital and financial management practices in the small firm sector. International Small Business Journal 14, 52-68.

Peel, M. J., Wilson, N., Howorth, C., 2000. Late payment and credit management in the small firm sector: Some empirical evidence. International Small Business Journal 18, 17-37.

Petersen, M. A., Rajan, R. G., 1994. The benefits of lending relationships: Evidence from small business data. Journal of Finance 43, 9-26.

Petersen, M., Rajan, R., 1997. Trade credit: theories and evidence. Review of Financial Studies 10, 661-691.

Rahaman, M., 2011. Access to financing and firm growth. Journal of Banking and Finance 35, 709-723.

Schmidt, R., Tyrell, M., 1997. Financial systems, corporate finance and corporate governance. European Financial Management 3, 333-361.

Shin, H. H., Soenen, L., 1998. Efficiency of working capital and corporate profitability. Financial Practice and Education 8, 37-45.

Smith, K., 1980. Profitability versus liquidity tradeoffs in working capital management. In: Smith, K. V. (Eds.), Readings on the Management of Working Capital. St Paul,MN.

Stiglitz, J., 1974. On the irrelevance of corporate financial policy. American Economic Review 64, 851–866.

Stohs, M. H., Mauer, D.C., 1996. The determinants of corporate debt maturity structure. Journal of Business 69, 279–312.

Studenmund, A. H., 1997. Using econometrics: A practical guide. New York, Addison-Wesley.

Vos, E., Yeh, A., Carter, S., Tagg, S., 2007. The happy story of small business financing. Journal of Banking and Finance 31, 2648-2672.

Walker, D., 1989. Financing the small firm. Small Business Economics 1, 285-296.

Wang, Y. J., 2002. Liquidity management, operating performance, and corporate value: evidence from Japan and Taiwan. Journal of Multinational Financial Management 12, 159-169.

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