CASH HOLDINGS, WORKING CAPITAL AND FIRM VALUE: EVIDENCE FROM FRANCE

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Abstract:
Although companies deal with day-to-day short term financial decisions, in corporate finance the emphasis is being put on long term financial issues when talking about company’s value. In this paper a sample of French listed companies was chosen to assess the importance of short term financial decisions to company’s value by testing the following hypotheses: an extra euro invested in cash or net working capital is valued less than one euro. Running a panel data analysis, evidences prove that shareholders undervalue cash holdings and net working capital. The results of this paper alert management not to underestimate importance of cash holdings and working capital management; moreover, the results encourage investors to follow company’s actions in this area to maximise their return on investment.

Keywords: cash holdings, profitability, stock return, working capital.

JEL Code: G30 (Corporate Finance and Governance)
INTRODUCTION

In academic literature, the firm’s total market value is described as the value of all its assets, namely, long term debt and equity. In 1958, Modigliani and Miller showed that in a perfect market capital structure does not matter, that it does not matter how much debt a company carries as long as the business generates sufficient cash flow to make it likely that it will meet its interest obligations. However, in reality firms operate in imperfect capital markets where there are transaction costs, taxes, bankruptcy and agency costs; all these factors make determination of optimal capital structure an important question firms need to solve in order to maximise their value. So the level of long term debt a firm has and the level of shareholders’ equity that is used to finance non-current assets matter, but what about the short term obligations and current assets? Might the level of working capital have an effect on firm’s value, in other words, do investors punish companies if too much money is invested in working capital?

If one thinks well, by managing working capital effectively companies can reduce their dependence on outside funding, and use the released cash for further investments; this will then lead to more financial flexibility. Moreover, by managing working capital, a firm can lower their financing costs as less funds from outside will be needed. In addition, effective management of working capital contributes to the reduced riskiness of a company; consequently, a cheaper financing both from shareholders and lenders can be expected, resulting in lower weighted average cost of capital.

Even though Ernst & Young’s working capital report (2009) indicates that companies still have plentiful opportunities to release liquidity from working capital — an aggregate total of up to US$1 trillion for the leading 2,000 corporations in the US and Europe, during the recent challenging economic and financial conditions, companies have been focusing more and more on effective working capital management, that allows them to free the money and at least partially collect funds they need. This practically shows the importance of working capital management nowadays. So both the weak emphasis in the academic literature and the current situation of firms gave a stimulus to go deeper into this topic and analyze the importance of working capital management to firms.
The objective of this paper is to add to the existing literature by finding the relationship between cash holdings, working capital management and firm value of a sample of French companies. One hypothesis in this paper is that cash holdings are valued less than their present value by shareholders. Cash holdings do not explicitly create value for shareholders and thus are undervalued. Another hypothesis is that since extensive working capital means money that is tied up and that does not generate returns, an extra euro invested in net working capital is valued less than one euro. This paper focuses on a performance of a sample of companies listed at Paris Stock Exchange (excluding those in financial sectors) during 2003-2009.

Findings of this paper would benefit both company’s management and investors. Management would better see how much for them high cash holdings and inefficient working capital level might cost; investors having the results on hand might be willing to pay more attention on how company’s cash and working capital is being managed in order to choose the best investment options.

The paper will be organized as follows. It will start with a literature review discussing the importance of cash holdings and working capital management to firm’s profitability and value. Secondly, the data used for this study will be presented, and the methodology will be described, while in the fourth part all hypotheses will be formulated and the rationale behind them explained. Later the empirical results will be presented, showing the influence of cash holdings and working capital to the firm value.

1. LITERATURE REVIEW

1.1. Firm Value
Historical data shows that the average firm has 40% of its assets employed in current assets, and a financial manager spends 80% of the time in managing day-to-day short term financial resources [see Dandapani et al. (1993)]; however, focus in corporate finance was on the long-term financial decisions, such as optimal capital structure or dividends.

The Modigliani and Miller’s theorem says that the market value of the firm does not depend on its financing structure: “... with well-functioning markets (and neutral taxes) and rational investors, who can ‘undo’ the corporate financial structure by holding positive or negative
amounts of debt, the market value of the firm – debt plus equity – depends only on the income stream generated by its assets. It follows, in particular, that the value of the firm should not be affected by the share of debt in its financial structure or by what will be done with the returns – paid out as dividends or reinvested (profitably).”¹ So according this theorem, only income generated by the company determines its value in perfect markets.

However, in reality companies operate in imperfect markets, where other variables change firm’s value. Corporate finance literature composes numerous methods for company valuation. In order to see what determines company’s value a few ways of determining it are presented below. One of the most common ways to evaluate the company is to find its fundamental value, i.e. the value the market believes company's ongoing operations are worth. One way to do that is to calculate the value by using Discounted Cash Flow method:

\[
PV = \sum_{p=1}^{n} \frac{FCF_p (1 + WACC)^{-p}}{WACC} + TV (1 + WACC)^{-n}
\]

with, PV, present value; TV, terminal value = FCF(1+g) / (WACC – g); FCF, free cash flow; WACC, weighted-average cost of capital = [D/V x (1-TC) r_debt] + [E/V x r_equity]; D, debt; E, equity; V, value; TC, tax rate; r_debt, cost of debt; r_equity, cost of equity and g, growth.

Free cash flow is calculated as FCF=EBIT x (1-Taxes) + Depreciation and Amortisation - Increase in NWC – Capital expenditure. Net working capital here plays a part: working capital is accounted for when projecting free cash flows used while evaluating a company. An increase in current assets of a company represents a use of funds while increase in current liabilities is a source of funds that reduces the needed funds. So theoretically the projected level of working capital and assessment of its management effectiveness will influence the value of the firm when using such valuation methods as Discounted Cash Flow or Adjusted Present Value both because of changes in cash flows and different WACC (the effective working capital management could contribute to lower financial costs as well). However, the emphasis in these valuation methods are but on long term financial decisions.

Other valuation methods such as Dividend Discount Model (DDM) also put the emphasis on a long term financial decisions. Multiples valuation method also could be used when valuing a company. To do that the comparable companies need to be found, information of comparable

firms need to be collected, and adjustments in order to improve comparability have to be made. Different multiples could be used, including revenues, EBIT, and EBITDA. However, these valuation models neglect to address short term financial decisions properly as well as to address other business and strategic factors which might to turn to be vitally important in determining a firm’s value [Magni (2004)] and, therefore, should not be considered on a standalone basis.

1.2. Cash Holdings and Firm Value
Few studies focus on the value given by shareholders to firm's cash holdings. On one hand, corporate liquidity can be used to finance investments without raising costly external resources because of their transaction and information costs. On the other hand, these cash holdings reduce the likelihood of financial distress costs when the company is not able to generate sufficient operating cash flows. However, the increase in free cash flows generates agency costs for shareholders. Firms should trade off the benefits and costs of holding cash to determine the optimal level.

For Jensen and Meckling (1976), risky debt may lead to conflicts between stockholders and bondholders. Since equity is a call option on the value of the firm's assets, shareholders prefer riskier investments. Cash holdings which are risk-free may be undervalued by shareholders, particularly in firms where the risk of financial distress is high since the benefits of the cash may accrue mainly to bondholders.

For Myers and Majluf (1984), asymmetric information between investors and management makes external financing costly and explain why firms maintain financial flexibility which implies a positive value to financial slack. Without this financial flexibility, firms may forego positive NPV projects, leading to underinvestment. Therefore, firms may desire to hold large cash balances to maximizing shareholder value. If cash holdings enable firms to undertake projects which increase their value, then investors could place a greater value than one on each dollar of cash.

If excess cash holdings may lead managers to invest in negative NPV projects [Jensen (1986)], they should pay out dividends and use debt to finance investments. In this case, going frequently to the capital markets helps to discipline managers and to control managerial opportunism [Easterbrook (1984)]. Harford (1999) shows that firms holding more cash tend
to make value decreasing acquisitions, and also documents a negative investors’ reaction to
cash stockpiling. Blanchard, Lopez-de-Salinas, and Shleifer (1994) find that firms receiving
cash windfalls spend it inefficiently.

Opler et al. (1999) describe the transaction and precautionary motives. The transaction motive
is that firms hold cash simply for daily transactions [Miller and Orr (1966)]. For Mulligan
(1997) firms’ cash holdings are based on its activity, technological sophistication, and
opportunity costs. In the case of precautionary motive, during periods when external finance
is costly, firms hold cash to continue to invest in positive NPV projects. This is particularly
important when firms with positive NPV investment opportunities are unable to generate
enough internal cash to finance them. Thus, cash holdings have a positive NPV for financially
constrained firms.

Some studies analyze the relationship between the level of cash and such implicit or explicit
costs [Opler et al. (1999) and Harford (1999)]. They show that companies with the largest
cash holdings offer growth opportunities and higher cash flow to riskier and limited access to
financing on capital markets. Mikkelsen and Partch (2002) examine the operating
performance and other characteristics of firms that held more than one-fourth of their assets in
cash. They show that operating performance of these high cash firms is greater than for firms
matched on size and industry. For Pinkowitz and Williamson (2004), shareholders of firms
with more volatile investment opportunities and better growth options place higher values on
firms’ cash than for firms with fewer, more stable growth opportunities.

By relating cash holdings to the corporate governance literature, Dittmar and Mahrt-Smith
(2007) provide an explanation for this low value of cash holdings. They show that the value
of cash, and thus firm value, is determined partially by investors’ expectations about how cash
to be used in the presence of unchecked managerial agency problems. Consistent with the
presence of agency problems, Pinkowitz, Stulz, and Williamson (2006) find that cash
holdings are less valued by investors in countries with low governance scores than in
countries with high governance scores.

Faulkender and Wang (2006) point out that even though there is an extensive literature
estimating the value of adding debt to a firm's capital structure, estimations of the value of
additional cash have been largely absent; therefore, they raise the question what value the
market places on the cash holdings of firms. They found that an extra dollar of cash is only valued by shareholders at $0.79. Later they show that the marginal value of cash is sensitive to both the amount of cash the firm already had on hand and to the leverage of the firm. After expanding the model, the estimated marginal value of cash for a company with no cash and no leverage is $1.52. This could be explained by the following: 1) since firms that have enough cash on hand are likely to distribute an additional cash instalment for shareholders through dividends and/or stock repurchases and since there are usually taxes on that, such as dividend tax, only a part of all money ends up in the hands of shareholders; consequently, the marginal value if less that $1; 2) on the contrary, for those companies that have low cash position and need money from external markets, the marginal value of cash should be higher than $1, because transactions costs incurred by accessing the capital markets could be avoided. Faulkender and Wang (2006) also raise the hypothesis that an extra dollar of cash holdings is more valuable for shareholders in financially constrained firms, considering their dividend payout ratio, size, accessibility to public debt markets in terms of short and long term ratios, and proved it. So companies that do not have constrains in raising funds whenever they might need should not carry a lot of cash; shareholders do not place a high value on that cash, because of the costs associated with holding cash, including agency costs.

The previous studies indicates that firms should hold cash, but holding too much cash could be costly to shareholders, and raises the question of which value do investors place on cash holdings?

1.3. Working Capital and Firm Value
Usually net working capital is described as a difference between company’s current assets and its current liabilities. However, non-cash net working capital is used as well: non-cash current assets – current liabilities. The rationale behind this is that in investment analysis, increases in working capital are viewed as cash outflows, because cash tied up in working capital cannot be used elsewhere in the business and does not earn returns, while companies can earn market returns on their cash.

Working capital is meant to provide liquidity, which is essential for a company to operate on a day-to-day basis. Moreover, there can be other reasons why the company prefers to hold liquidity. Michalski (2007) points out that another reason to hold liquidity is management anxieties: managers fear the negative part of the risk and hold liquidity to hedge against it;
however, liquidity balances are held to use chances that are created by the positive part of the risk equation as well.

There are different ways to assess how effectively the management deals with working capital. The traditional way to do that is to calculate the liquidity ratio called current ratio (current assets/current liabilities). The drawback of this ratio is that it is very general, not giving detailed enough information. Therefore, other liquidity ratios such as quick ratio (cash and cash equivalents and accounts receivable / current liabilities) or cash ratio (cash and cash equivalents / current liabilities) are used together with the current ratio to see where the issues that need to be addressed exactly lie.

Another way to evaluate working capital management is to calculate cash conversion cycle. The cash conversion cycle (Receivable collection period + Inventory conversion period - Payable deferral period) introduced by Richards and Laughlin (1980) is probably the best measure to assess how well a company manages its working capital, because one can clearly see how the key components of working capital are related. Cash cycle shows a number of days it takes from the day the company pays to its suppliers to the day it is paid by its customers. Management should ensure that this number is as low as possible, compared to that of competitors and industry average.

In addition, there are other means to calculate the working capital management proposed. Nobanee, H., Al Shattarat, W.K. and Haddad, A. E., (2009) suggest measures of the efficiency of working capital management where optimal levels of inventory, receivables, and payables are identified, and total holding and opportunities cost are minimized and recalculating the operating cycle\(^2\), the cash conversion cycle\(^3\), and the net trade cycle\(^4\) according to these optimal points. They claim that this optimal cash conversion cycle is a more accurate and comprehensive measure of working capital management that maximizes sales, profitability and market value of firms.

Management has to manage the working capital as efficiently as possible: too little may result in the company’s inability to meet its obligations, while if a company ties up too much of its

\(^2\) Optimal operating Cycle = Optimal Inventory Conversion Period + Optimal Receivable Collection Period.
\(^4\) Optimal Net Trade Cycle = [(Optimal Inventory + Optimal Receivables - Optimal Payables)*365]/Sales.
resources in working capital, the return on capital employed will not be maximized. By the optimised levels of working capital companies can minimise risk, effectively prepare for uncertainty, create a ready cash reserve that will assist during difficult times, and improve overall performance.

To guarantee an optimal level of working capital the following should be considered:

- **Inventory Management.** Inventories are essential for many companies to operate and require a lot of investment. Too many inventories can result in increased storage, security costs, as well as losses due to theft, obsolescence, and goods perishing, while a lack of inventories can make a company lose its potential revenues. It is essential to determine the optimal level of stock; this could be done by using Minimum Re-Order Levels, Just-in-Time Inventories, Floor Plan Financing, etc.

- **Credit Control.** Usually a company sets specific terms for their customers to pay for goods or services; however, often customers tend to delay payments as long as possible. Effective control of this credit and giving early settlement discounts allow companies to collect cash faster.

- **Factoring Accounts Receivable.** Providing banks are willing to factor company's accounts receivable, a company can receive cash faster, but with a discount. However, this could be considered if company has a liquidity problem.

- **Funding with Accounts Payable.** As accounts payable is a free debt, a company can take advantage of it. Often suppliers also offer a quick settlement discount, so each company has to measure what is more beneficial: a free debt or discounts offered. Managers have to be aware of the importance of good relations with suppliers, who can support in case of difficult times.

As it was already mentioned, for a long time working capital management was not the main issue when talking about company’s value. However, now more and more emphasis has been put on it. Good evidence how important working capital management is for a company has been provided by Shin and Soenen (1998). They show that although Wal-Mart and Kmart had comparable capital structures in 1994, Kmart went bankrupt mainly because of poor working capital management. Kmart had a cash conversion cycle of about 61 days whereas Wal-Mart had a shorter conversion cycle of 40 days; consequently, Kmart faced an extra $193.3 million per year financing costs arising from longer cash conversion cycle that was difficult to handle.
There are a few published empirical studies analysing relationship between working capital management and firm profitability. In their study, Shin and Soenen (1998) presented a strong negative relationship between the cash conversion cycle and companies’ profitability for the US firms for the 1975-1994. Deloof (2003) found a significant negative relation between gross operating income and the number of days accounts receivable, inventories and accounts payable of Belgian firms for 1992-1996. In addition, the results of a study of Japanese firms during 1990-2004 prepared by Nobanee and AlHajjara (2009) suggest that managers can increase profitability of their firms by shortening the cash conversion cycle, the receivable collection period and the inventory conversion period, while lengthening the payable deferral period. To supplement all this, Padachi (2006) analyzed the trends in working capital management and its impact on firms’ performance of a sample of Mauritian small manufacturing firms; an analysis shows again that high investment in inventories and receivables is associated with lower profitability, besides out of five industries covered, best practices were found in the paper industry, consequently, this has contributed to best performance.

A recent working paper of Chatterjee (2010) analyses the impact of working capital management on the profitability of the listed companies in the London Stock Exchange (a sample of 30 UK companies for a period of 3 years from 2006-2008). The findings are in line with those of previously mentioned studies: as the cash conversion cycle increases it will lead to decreasing profitability of the firm, and managers can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level. The researcher also found that, there is a significant negative relationship between the liquidity and the profitability of the UK firms and that there exists a positive relationship between size of the firm and its profitability. Furthermore, there is also a significant negative relationship between debt used by the firm and its profitability. The results suggest that, the managers can increase corporate profitability by reducing the number of day’s accounts receivable and inventories and less profitable firms wait longer to pay their bills.

Taking the study of Faulkender and Wang (2006) as a core model and adding variables to assess the working capital management, Kieschnick, LaPlante, and Moussawi (2009) show the relationship between corporate working capital management and firm value, as well as, like they claim, they became the first ones to examine how financing influences this
relationship. They study the US corporations from different industries from 1990 to 2004 and came up with the following conclusions:

1. A dollar invested in net operating capital is worth less on average than a dollar held in cash.
2. On average, an additional dollar of investment in net operating working capital at current levels of such investment reduces firm value.
3. The evidence that a dollar invested in net operating working capital is worth less than a dollar is primarily driven by its financing.
4. Firms with better access to public capital market, and particularly commercial paper markets, face a lower reduction in value from financing investment in working capital.

2. METHODOLOGY

The model of Faulkender and Wang (2006) is a basis for this study. This model was also used in the working paper of Kieschnick, LaPlante, and Moussawi (2009); they slightly changed the model adding variables associated with the working capital to the model in order to evaluate the effect of working capital to firm value. Due to the fact that the purpose of this paper is similar to the purpose of these two previous articles, the two types of models will be used. The detailed methodology is presented below.

**Model 1a – baseline valuation model; it helps to estimate the value of holding cash**

\[ r_{it} - R_{it}^B = \beta_0 + \beta_1 \Delta C_{it} + \beta_2 C_{i,t-1} + \beta_3 \Delta E_{it} + \beta_4 \Delta NA_{it} + \beta_5 \Delta I_{it} + \beta_6 \Delta D_{it} + \beta_7 L_{it} + \beta_8 NF_{it} + \epsilon_t \]

**Model 1b – captures the valuation effects of an additional euro invested in cash at the current levels of cash holdings**

\[ r_{it} - R_{it}^B = \beta_0 + \beta_1 \Delta C_{it} + \beta_2 C_{i,t-1} + \beta_3 \Delta E_{it} + \beta_4 \Delta NA_{it} + \beta_5 \Delta I_{it} + \beta_6 \Delta D_{it} + \beta_7 L_{it} + \beta_8 NF_{it} + \beta_9 \Delta C_{it} \times C_{i,t-1} + \epsilon_t \]

**Model 1c - shows how financing influences relationship between cash holdings and valuation, by examining the interaction between change in cash holdings and firm leverage**

\[ r_{it} - R_{it}^B = \beta_0 + \beta_1 \Delta C_{it} + \beta_2 C_{i,t-1} + \beta_3 \Delta E_{it} + \beta_4 \Delta NA_{it} + \beta_5 \Delta I_{it} + \beta_6 \Delta D_{it} + \beta_7 L_{it} + \beta_8 NF_{it} + \beta_9 \Delta C_{it} \times L_{i,t} + \epsilon_{it} \]

11
Model 2a – captures the effect of net operating working capital investment on firm value

\[
    r_{it} - R^B_{it} = \beta_0 + \beta_3 \Delta C_{it} + \beta_2 C_{it,t-1} + \beta_3 \Delta E_{it} + \beta_4 \Delta NNA_{it} + \beta_5 \Delta I_{it} + \beta_6 \Delta D_{it} + \beta_7 L_{it} \\
    + \beta_8 NF_{it} + \beta_9 \Delta NWC_{it} + \beta_{10} NWC_{it,t-1} + \epsilon_{it}
\]

Model 2b – captures the valuation effects of an additional euro invested in net operating working capital at the current levels of investment in net operating working capital

\[
    r_{it} - R^B_{it} = \beta_0 + \beta_3 \Delta C_{it} + \beta_2 C_{it,t-1} + \beta_3 \Delta E_{it} + \beta_4 \Delta NNA_{it} + \beta_5 \Delta I_{it} + \beta_6 \Delta D_{it} + \beta_7 L_{it} \\
    + \beta_8 NF_{it} + \beta_9 \Delta NWC_{it} + \beta_{10} NWC_{it,t-1} + \beta_{11} \Delta NWC_{it} * NWC_{it,t-1} + \epsilon_{it}
\]

Model 2c - shows how financing influences relationship between net working capital and valuation, by examining the interaction between change in net operating working capital and firm leverage

\[
    r_{it} - R^B_{it} = \beta_0 + \beta_3 \Delta C_{it} + \beta_2 C_{it,t-1} + \beta_3 \Delta E_{it} + \beta_4 \Delta NNA_{it} + \beta_5 \Delta I_{it} + \beta_6 \Delta D_{it} + \beta_7 L_{it} \\
    + \beta_8 NF_{it} + \beta_9 \Delta NWC_{it} + \beta_{10} NWC_{it,t-1} + \beta_{11} \Delta NWC_{it} * L_{it} + \epsilon_{it}
\]

Where:

- The dependent variable, \( r_{it} - R^B_{it} \), represents a stock’s excess return, where \( r_{it} \) is the realized return on the firm’s stock during the fiscal year \( t \) and \( R^B_{it} \) is the benchmark return for the stock.
- \( C_{it} \) represents the firm’s cash.
- \( I_{it} \) represents the firm’s interest expense.
- \( D_{it} \) represents the firm’s total dividends paid.
- \( L_{it} \) represents the firm’s market leverage (total debt over total debt plus the market value of equity).
- \( NF_{it} \) represents the firm’s net financing during the fiscal year (total equity issuance minus repurchases plus debt issuance minus debt redemption).
- \( E_{it} \) represents the firm’s earnings before interest and taxes (EBIT).
- \( NA_{it} \) represents the firm’s total assets net of cash.
- \( NNA_{it} \) is total assets minus cash holdings and net operating working capital.
- \( NWC_{it} \) is accounts receivable plus inventory minus accounts payable.
- \( \epsilon_{it} \) is used for unexpected changes.
To estimate excess returns, 25 portfolios formed on book-to-market and size are used as benchmark portfolios. Each year, firms are assigned to one of 5 size portfolios and one of 5 BE/ME and 25 portfolios are built on the intersection between these size and book-to-market sorts. According to Fama and French (1993), size and book-to-market ratio proxy for sensitivity to common risk factors in stock returns, and expected returns are supposed to be different for each of these 25 size and book-to-market portfolios. Therefore, for each stock, its benchmark return is the return of the portfolio to which the stock belongs. The excess return for any stock results in subtracting the return of the portfolio to which the stock belongs from its realized return.

Kieschnick, LaPlante, and Moussawi (2009) also incorporate the firm’s R&D expenditures (0 if missing) into the model. However, R&D expenditures are not singled out in the Diane database; therefore, they are assumed to be zero for all the analyzed companies in this study. So to some up, the independent variables are company specific factors that measure characteristics of the company that may impact company’s value. To avoid having the largest firms dominate the results, all variables, except for the leverage, are deflated by lagged market value of equity.

3. DATA
As it was mentioned already, in this paper the performance of a sample of Paris Stock Exchange companies is analyzed during the 2003-2009 period. This sample was chosen because of the following reasons:

– Financial statements of listed companies forming are considered to be reliable compared to non-listed companies;
– This paper is based on a research done on the sample of the US companies; therefore, choosing a sample of French companies and applying a similar methodology will let, at least partially, compare the results and see the similarities as well as differences between the investors investing into companies of these two countries.

However, not all companies listed at the Paris Stock Exchange were taken for the analysis. Starting with an initial sample of 701 firms in Diana database, all firms in financial service industries are excluded since working capital has a different purpose for these firms. Then, the companies for which all data required to perform this study was not available were eliminated. The insufficient data was mainly because of one of following reasons: the
company was listed later than the analysed period started or it did not reveal the information as detailed as it was required for the study. After the elimination of these companies, the final sample of 267 companies. For each of the selected firms, both stock return data and financial accounting information were collected from Diane Database.

Turning on to the analysed period, the years 2003-2009 were selected, since it was the longest period possible accounting for the availability of information from Diane database. The annual data was collected since more companies had such data available (compared to e.g. quarterly data) and the seasonality problem was avoided.

Table 1: Descriptive analysis. 267 non financial firms listed at Euronext Paris during 2003-2009. \( r_{it} - R^B_t \): excess return of stock return, \( r_{it} \), over its benchmark portfolio return, \( R^B_t \); \( C_{it} \): cash holdings; \( I_{it} \): interest expense; \( D_{it} \): dividends paid; \( L_{it} \): market leverage (total debt over total debt plus the market value of equity); \( NF_{it} \): net financing (total equity issuance minus repurchases plus debt issuance minus debt redemption); \( E_{it} \): earnings before interest and taxes (EBIT); \( NA_{it} \): total assets net of cash; \( NNA_{it} \): total assets minus cash holdings and net operating working capital; \( NWC_{it} \): accounts receivable plus inventory minus accounts payable. All variables except company's market leverage, \( L_{it} \), and excess stock return, \( r_{it} - R^B_t \), are deflated by the lagged market value of equity.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>( r_{it} - R^B_t )</td>
<td>1.11(10^{-7})</td>
<td>0.00</td>
<td>1.42</td>
</tr>
<tr>
<td>( \Delta C_{it} )</td>
<td>0.09</td>
<td>6.43(10^{-5})</td>
<td>3.59</td>
</tr>
<tr>
<td>( C_{i,t-1} )</td>
<td>0.06</td>
<td>0.01</td>
<td>0.16</td>
</tr>
<tr>
<td>( \Delta E_{it} )</td>
<td>-0.09</td>
<td>-1.12(10^{-5})</td>
<td>2.81</td>
</tr>
<tr>
<td>( \Delta NA_{it} )</td>
<td>6.63</td>
<td>0.03</td>
<td>249.6</td>
</tr>
<tr>
<td>( \Delta NNA_{it} )</td>
<td>7.09</td>
<td>0.03</td>
<td>261.4</td>
</tr>
<tr>
<td>( \Delta I_{it} )</td>
<td>0.02</td>
<td>7.90(10^{-5})</td>
<td>0.50</td>
</tr>
<tr>
<td>( \Delta D_{it} )</td>
<td>0.07</td>
<td>3.28(10^{-4})</td>
<td>1.82</td>
</tr>
<tr>
<td>( L_{it} )</td>
<td>0.21</td>
<td>0.16</td>
<td>0.19</td>
</tr>
<tr>
<td>( NF_{it} )</td>
<td>0.23</td>
<td>0.01</td>
<td>5.51</td>
</tr>
<tr>
<td>( \Delta NWC_{it} )</td>
<td>-0.07</td>
<td>6.77(10^{-4})</td>
<td>21.5</td>
</tr>
<tr>
<td>( NWC_{i,t-1} )</td>
<td>0.42</td>
<td>-2(10^{-3})</td>
<td>16.70</td>
</tr>
</tbody>
</table>

Descriptive analysis (Table 1) shows average, median and standard deviation of the different variables of interest in the study. In comparison with the study on US firms [Kieschnick,
LaPlante, and Moussawi (2009)), differences can be highlighted. The average level of cash holdings \((C_{i,t-1})\) is lower in France (0.06) than in the USA (0.171). Likewise the average net working capital \((NWC_{i,t-1})\) is higher in the US (0.594) than in France (0.42). In contrast, change in dividends \((\Delta D_{i,t})\) and change in interest expenses \((\Delta I_{i,t})\) are lower in the US study with 0.0006 and 0.001 respectively. The market leverage \((L_{i,t})\) for French firms (0.21) is very close to the one for US firms (0.219). The excess return \((r_{it} - R^B_{it})\) is close to zero \([1.11(10^{-7})]\) but not negative as in the USA (-0.048).

4. EMPIRICAL PREDICTIONS

Since this paper is based on the previously performed studies, one could expect the results similar to ones in these studies. Following them and economic logic, the following hypotheses are formulated:

**Hypothesis 1a: an extra euro of cash is valued less than one euro by investors.**

A company that has a low cash position is likely to access capital markets to raise money to fund its short-term liabilities and investments. This access of course has its costs; therefore, the value of an additional euro of cash that investors give is greater than 1. However, when a company is matured and has a stable cash position, the situation is different: it is likely that the company does not use this cash to generate value and, therefore, for investors every euro of cash is worth less than one euro. For listed companies cash should not be a problem, therefore, the extra euro of cash should be valued less than one euro by investors.

**Hypothesis 1b: an extra euro of cash at the current levels of cash is valued less than one euro.**

Since the company is well performing at the current level of cash holdings, an additional euro might be perceived as not necessary at all, only an additional buffer that does not generate any value.

**Hypothesis 1c: an extra euro of cash is less valuable for shareholders in highly levered companies than in companies with a low leverage.**

For a low levered firm, an increase in cash holdings has very little impact on the probability of the debt holders being paid in full. As leverage increases, additional cash benefits the debt holders and is less valued by shareholders.
Hypothesis 2a: one euro invested in net operating working capital is worth less than one euro.

Since extensive working capital means money that is tied up and that does not generate returns, an additional euro invested in net operating working capital (usual level) increases firm value by less than one euro.

Hypothesis 2b: an additional euro invested in net operating working capital at the current levels of investment in net operating working capital reduces firm valuation.

As for cash holdings, at the current level of investment in net operating working capital, an addition investment might be perceived as not necessary.

Hypothesis 2c: An extra euro in net working capital is less valuable for shareholders in highly levered companies than in companies with a low leverage.

A positive net working capital is an asset that is shared between equity and debt holders. When it increases, the company’s value increases, and this again is shared between debt and equity holders. For firms with low leverage, and consequently less risky debt, the increase in net working capital has very little impact on the debt holders being paid in full. When leverage increases, more of the value generated by additional net working capital benefits the debt holders. To sum, while an increase in net working capital increases the value of the company, thereby increasing the value of both the debt and the equity, more of the value associated with the increase will accrue to the equity holders as the company has less leverage and vice versa.

5. EMPIRICAL RESULTS

Panel data analysis is used in this paper. Panel data (longitudinal or cross-sectional time-series data) is a data set in which the behavior of companies (or other entities) is observed across time. Panel data allows controlling for variables one cannot observe or measure like difference in business practices across companies. Panel data also help to control for unobservable variables that change over time but not across companies. Because panel data have both cross-sectional and time series dimensions, the application of regression models to fit econometric models are more complex than those for simple cross-sectional data sets. Nevertheless, they are increasingly being used in applied work. Estimation methodology uses
5.1. Cash and Firm Value

Hypothesis 1a: an extra euro of cash is valued less than one euro by investors.

The results of baseline valuation model (Model 1a) are presented in column 2 of Table 1. Like in Kieschnick, LaPlante, and Moussawi (2009) and in Faulkender and Wang (2006), all the variables are found to be significant here at the 5% level. Kieschnick, LaPlante, and Moussawi (2009) estimate the cash holdings coefficient to be 1.297, meaning that the investors value an extra dollar of cash at $1.297 while Faulkender and Wang (2006) find 0.751 when interactions between change in cash holdings and leverage or previous level of cash. Here, we find 0.108, which means that for French firms, investors value each euro of cash less than one euro. Therefore, it can be concluded that investors in French companies are less concerned by the value of an extra euro of cash. Nevertheless, the first hypothesis appeared to be relevant. Cash held at the end of the previous year (C_{i,t-1}) is also positively priced, 1.076 euro for 1 euro, indicating investors appreciate more liquid firms.

Except for net asset minus cash, NA, the signs of other variables are the same as in Kieschnick, LaPlante, and Moussawi (2009) or Faulkender and Wang (2006). Net financing, earnings and dividends are positively valued in excess return while interest and leverage are negatively related to excess return. The change in earnings from one year to another increases firm’s value by only 0.092 in this study; on the contrary, Kieschnick, LaPlante, and Moussawi (2009) and Faulkender and Wang (2006) report this number to be higher (0.581 and 0.529 respectively). So the extra monetary unit of earnings that a company generates is more valued by the investors in the US companies than in the French ones. More value is given to the change in dividends paid in this study, 0.400 here against 0.227 in the US analysis. Another interesting variable to look at is leverage: the higher the leverage, the lower the excess return is; again, this finding is in line with the finding of the previous studies.

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5 There was no information regarding the estimation methodology used in the paper of Kieschnick, LaPlante, and Moussawi (2009), three methods were used in this study to begin with: Ordinary Least Squares (OLS), Generalized Least Squares (GLS) with Fixed Effects (FE) and GLS with Random Effects (RE). To choose the most suitable model, traditional tests were performed. In order to see whether OLS or FE model is a better model for the data, Pooling and F tests were run, and FE model appeared to be more suitable. To choose between FE and RE, the Hausman test was used where the null hypothesis was that preferred model was RE versus the alternative the FE. P-values were significant in favour of FE model for all models 1 and 4.
Table 2: The Effect of Cash on Firm Value – Fixed Effects Panel Data Model. 267 non financial firms listed at Euronext Paris during 2003-2009. \( r_{it} - R^{B}_{it} \): excess return of stock return, \( r_{it} \), over its benchmark portfolio return, \( R^{B}_{it} \); \( C_{it} \): cash holdings; \( I_{it} \): interest expense; \( D_{it} \): dividends paid; \( L_{it} \): market leverage (total debt over total debt plus the market value of equity); \( NF_{it} \): net financing (total equity issuance minus repurchases plus debt issuance minus debt redemption); \( E_{it} \): earnings before interest and taxes (EBIT); \( NA_{it} \): total assets net of cash. All variables except company’s market leverage, \( L_{it} \), and excess stock return, \( r_{it} - R^{B}_{it} \), are deflated by the lagged market value of equity.

<table>
<thead>
<tr>
<th></th>
<th>Model 1a</th>
<th>Model 1b</th>
<th>Model 1c</th>
<th>Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta_0 )</td>
<td>-0.044 (1.24)</td>
<td>-0.052 (1.50)</td>
<td>-0.057 (1.60)</td>
<td>-0.071*** (2.01)</td>
</tr>
<tr>
<td>( \beta_1 (\Delta C_{it}) )</td>
<td>0.108*** (5.63)</td>
<td>0.835*** (4.74)</td>
<td>0.064** (2.49)</td>
<td>0.86*** (4.90)</td>
</tr>
<tr>
<td>( \beta_2 (C_{it-1}) )</td>
<td>1.076*** (3.80)</td>
<td>1.046*** (5.48)</td>
<td>1.355*** (5.86)</td>
<td>1.419*** (6.18)</td>
</tr>
<tr>
<td>( \beta_3 (\Delta E_{it}) )</td>
<td>0.092*** (4.81)</td>
<td>0.090*** (4.64)</td>
<td>0.094*** (4.83)</td>
<td>0.093*** (4.80)</td>
</tr>
<tr>
<td>( \beta_4 (\Delta NA_{it}) )</td>
<td>-0.001*** (2.51)</td>
<td>-0.001*** (6.12)</td>
<td>-0.001*** (6.16)</td>
<td>-0.001*** (6.14)</td>
</tr>
<tr>
<td>( \beta_5 (\Delta I_{it}) )</td>
<td>-0.692*** (6.17)</td>
<td>-0.697*** (9.97)</td>
<td>-0.678*** (9.60)</td>
<td>-0.678*** (9.69)</td>
</tr>
<tr>
<td>( \beta_6 (\Delta D_{it}) )</td>
<td>0.400*** (7.09)</td>
<td>0.398*** (12.67)</td>
<td>0.397*** (12.56)</td>
<td>0.393*** (12.54)</td>
</tr>
<tr>
<td>( \beta_7 (L_{it}) )</td>
<td>-0.345** (2.25)</td>
<td>-0.330** (2.27)</td>
<td>-0.353** (2.42)</td>
<td>-0.340** (2.35)</td>
</tr>
<tr>
<td>( \beta_8 (NF_{it}) )</td>
<td>0.032*** (5.67)</td>
<td>0.032*** (12.10)</td>
<td>0.032*** (11.99)</td>
<td>0.032*** (11.99)</td>
</tr>
<tr>
<td>( \beta_9 (\Delta C_{it} \times C_{it-1}) )</td>
<td>-0.728*** (4.15)</td>
<td>-0.728*** (4.15)</td>
<td>-0.728*** (4.15)</td>
<td>-0.812*** (4.58)</td>
</tr>
<tr>
<td>( \beta_{10} (\Delta C_{it} \times L_{it}) )</td>
<td>-0.728*** (4.15)</td>
<td>1.057** (2.16)</td>
<td>1.424*** (2.90)</td>
<td></td>
</tr>
<tr>
<td>( \text{adj. } R^2 )</td>
<td>0.878</td>
<td>0.880</td>
<td>0.878</td>
<td>0.880</td>
</tr>
<tr>
<td>( F )-statistics</td>
<td>35.96***</td>
<td>36.44***</td>
<td>35.97***</td>
<td>36.59***</td>
</tr>
</tbody>
</table>

Variables significant at 10% (*), 5% (**) and 1% (**).

Hypothesis 1b: an extra euro of cash at the current levels of cash is valued less than one euro. Faulkender and Wang (2006) allow the change in cash to interact both with the level of cash \( (C_{it-1} \times \Delta C_{it}) \) and with leverage \( (L_{it} \times \Delta C_{it}) \) but they do not distinguish between the interactions of cash holdings with the two explanatory variables. In this study, we try to distinguish between these two interactions. The interaction with the previous level of cash holdings (-0.728) is very close to the one observed in the US study (-0.738). An increase in the amount of cash held is less valued if there was previously a high level of cash. In this case,
an extra euro of cash is valued 0.835 euro. Therefore, the hypothesis that an extra euro is valued less than one euro is confirmed.

*Hypothesis 1c: an extra euro of cash is less valuable for shareholders in highly levered companies than in companies with a low leverage.*

The interaction between cash holdings and leverage is shown in model 1c. We see an positive value (1.057) for the coefficient. Cash held in high leveraged firms is more valued by shareholders. This finding is more in line with an explanation related to asymmetric information [Myers and Majluf (1984)] than with an explanation related to agency costs [Jensen and Meckling (1976), Jensen (1986)]. This result is not found in the US study where this interactive coefficient is significantly negative (-1.433) when associated with the interaction between change in cash and previous level of cash (C_{i,t-1} * \Delta C_{it}). Finally, Model 1 shows that when both interactions are taken into account, an extra euro of cash is worth less than one euro (0.86) which is not observed in Faulkender and Wang (2006), confirming hypothesis 1c.

5.2. Cash, Working Capital and Firm Value

*Hypothesis 2a: one euro invested in net operating working capital is worth less than one euro.*

The results of estimating model 2a show that \( \Delta NWC_{it} \) is a significant variable in this model. An additional euro invested in net working capital is valued at 0.031 euro. Kieschnick, LaPlante, and Moussawi (2009) found the two working capital variables, \( \Delta NWC_{it} \) and \( NWC_{it-1} \), to be significant and concluded that an additional dollar invested in net operating working capital is valued at approximately $0.43 by investors. Therefore, one can conclude that for the investors in the French companies, working capital management is not as important as for the investors in the US companies even if this second hypothesis is proved.

*Hypothesis 2b: an additional euro invested in net operating working capital at the current levels of investment in net operating working capital reduces firm valuation.*

In addition, in Model 2b the interaction between \( NWC_{i,t-1} \) and \( \Delta NWC_{it} \) shows the effects of an additional euro invested in the net operating working capital at the current levels of investment in net operating working capital. Kieschnick, LaPlante, and Moussawi (2009) show that increasing the beginning of a fiscal year level of investment in net operating
working capital diminishes company value by $0.09 per dollar. However, in this study the variable $NWC_{it-1} \Delta NWC_{it}$ appeared to be insignificant. This implies that working capital management throughout the year is not that important for the companies from the investors’ in French companies’ point of view and hypothesis 3 appeared to be irrelevant.

Table 3: The Effect of Net Operating Working Capital on Firm Value – Fixed Effects Panel Data Model. 267 non financial firms listed at Euronext Paris during 2003-2009. $r_{it} - R^B_{it}$: excess return of stock return, $r_{it}$, over its benchmark portfolio return, $R^B_{it}$; $C_{it}$: cash holdings; $I_{it}$: interest expense; $D_{it}$: dividends paid; $L_{it}$: market leverage (total debt over total debt plus the market value of equity); $N_{it}$: net financing (total equity issuance minus repurchases plus debt issuance minus debt redemption); $E_{it}$: earnings before interest and taxes (EBIT); $NNA_{it}$: total assets minus cash holdings and net operating working capital; $NWC_{it}$: accounts receivable plus inventory minus accounts payable. All variables except company’s market leverage, $L_{it}$, and excess stock return, $r_{it} - R^B_{it}$, are deflated by the lagged market value of equity.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 2a</th>
<th>Model 2b</th>
<th>Model 2c</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_0$</td>
<td>-0.017</td>
<td>-0.018</td>
<td>-0.014</td>
<td>-0.014</td>
</tr>
<tr>
<td></td>
<td>(0.53)</td>
<td>(0.53)</td>
<td>(0.39)</td>
<td>(0.41)</td>
</tr>
<tr>
<td>$\beta_1(\Delta C_{it})$</td>
<td>-0.100</td>
<td>-0.094*</td>
<td>0.109</td>
<td>0.114</td>
</tr>
<tr>
<td></td>
<td>(1.20)</td>
<td>(1.66)</td>
<td>(1.21)</td>
<td>(1.24)</td>
</tr>
<tr>
<td>$\beta_2(C_{i,t-1})$</td>
<td>0.910***</td>
<td>0.931***</td>
<td>0.983***</td>
<td>1.001***</td>
</tr>
<tr>
<td></td>
<td>(3.15)</td>
<td>(4.59)</td>
<td>(5.02)</td>
<td>(4.91)</td>
</tr>
<tr>
<td>$\beta_3(\Delta E_{it})$</td>
<td>0.063***</td>
<td>0.062***</td>
<td>0.160***</td>
<td>0.159***</td>
</tr>
<tr>
<td></td>
<td>(3.24)</td>
<td>(3.01)</td>
<td>(4.08)</td>
<td>(4.03)</td>
</tr>
<tr>
<td>$\beta_4(\Delta N_{it})$</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(1.18)</td>
<td>(1.50)</td>
<td>(1.37)</td>
<td>(1.19)</td>
</tr>
<tr>
<td>$\beta_5(\Delta I_{it})$</td>
<td>-0.489***</td>
<td>-0.487***</td>
<td>-0.462***</td>
<td>-0.461***</td>
</tr>
<tr>
<td></td>
<td>(4.31)</td>
<td>(5.86)</td>
<td>(5.55)</td>
<td>(5.53)</td>
</tr>
<tr>
<td>$\beta_6(\Delta D_{it})$</td>
<td>0.201**</td>
<td>0.200***</td>
<td>0.183***</td>
<td>0.183***</td>
</tr>
<tr>
<td></td>
<td>(2.58)</td>
<td>(3.61)</td>
<td>(3.31)</td>
<td>(3.28)</td>
</tr>
<tr>
<td>$\beta_7(L_{it})$</td>
<td>-0.402***</td>
<td>-0.403***</td>
<td>-0.446***</td>
<td>-0.447***</td>
</tr>
<tr>
<td></td>
<td>(2.87)</td>
<td>(2.77)</td>
<td>(3.06)</td>
<td>(3.07)</td>
</tr>
<tr>
<td>$\beta_8(NF_{it})$</td>
<td>0.047***</td>
<td>0.047***</td>
<td>0.044***</td>
<td>0.042***</td>
</tr>
<tr>
<td></td>
<td>(8.45)</td>
<td>(7.01)</td>
<td>(10.28)</td>
<td>(6.57)</td>
</tr>
<tr>
<td>$\beta_9(\Delta NWC_{it})$</td>
<td>0.031**</td>
<td>0.030***</td>
<td>-0.007</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>(2.25)</td>
<td>(3.25)</td>
<td>(0.45)</td>
<td>(0.49)</td>
</tr>
<tr>
<td>$\beta_{10}(NWC_{i,t-1})$</td>
<td>$-3.11 \times 10^{-4}$</td>
<td>$9.89 \times 10^{-4}$</td>
<td>$2.02 \times 10^{-4}$</td>
<td>$1.47 \times 10^{-4}$</td>
</tr>
<tr>
<td></td>
<td>(0.30)</td>
<td>(0.06)</td>
<td>(0.17)</td>
<td>(0.09)</td>
</tr>
<tr>
<td>$\beta_{11}(\Delta NWC_{it} * NWC_{i,t-1})$</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.37)</td>
<td>(0.32)</td>
<td>(1.28)</td>
<td>(2.88)</td>
</tr>
<tr>
<td>$\beta_{12}(\Delta NWC_{it} * L_{i,t})$</td>
<td>0.121***</td>
<td>0.121***</td>
<td>(2.88)</td>
<td>(2.88)</td>
</tr>
<tr>
<td>$adj. R^2$</td>
<td>0.880</td>
<td>0.880</td>
<td>0.880</td>
<td>0.880</td>
</tr>
<tr>
<td>$F$-statistics</td>
<td>36.43***</td>
<td>36.27***</td>
<td>36.41***</td>
<td>36.41***</td>
</tr>
</tbody>
</table>

Variables significant at 10% (*), 5% (**) and 1% (**).
Hypothesis 2c: An extra euro in net working capital is less valuable for shareholders in highly levered companies than in companies with a low leverage.

In order to examine how financing influences the relationship between net operating working capital and firm valuation, the Model 2c is run. The coefficient of $\Delta NWC_{it} * L_{it}$ is positive and statistically significant and, the coefficient of $\Delta NWC_{it}$ becomes non significant. The value shareholders place on net working capital is positively related to the financing leverage. The fact that one euro invested in net operating working capital is worth less than one euro is mainly explained by the financial structure of a company. Therefore, the financing of investment in net working capital is an important issue while valuing a company. Therefore, the hypothesis 2c appears to be relevant. Kieschnick, LaPlante, and Moussawi (2009) show the $\Delta NWC_{it} * L_{it}$ interaction to be important: the coefficient on this interaction is -1.386. This shows that a marginal value of net operating working capital is sensitive to the percentage of the firm's capital structure comprised of debt.

CONCLUSION

In this paper the focus was put to analyze whether cash and working capital management has influence on company’s value. After collecting the data of French listed companies over the period 2003-2009, panel data analyses were performed and the following main conclusions obtained: 1) investors in the French companies are concerned by the increase in cash in companies’ accounts but value it less than for US firms; 2) investors in the French companies care a lot about the working capital management and value an extra euro invested in the working capital less than one; 3) the fact that a euro invested in cash or in net operating working capital is worth less than one euro is mainly explained by the financial structure of a company.

This area still remains underexplored and more research is worth doing looking for the relationship between cash holdings and working capital management on one hand and company’s value and the other hand. A bigger set of data as well as a longer period could be taken into account, as well as the model could be reworked to take into account corporate governance characteristics. Finally, the differences between financially constrained and unconstrained firms could be explored.
REFERENCES


