THE FREE CASH-FLOW THEORY VERSUS FINANCIAL CONSTRAINTS

INVESTMENTS, CORPORATE GOVERNANCE AND SOFT BUDGETING PROBLEMS

P. HARBULA

The supposed preference of firms for internal financial sources to fund their investments can be explained by either the free cash-flow or the financial constraints theories, both relying on asymmetric information. Neither theory was found fully valid by recent research. Using a French data panel, conclusive evidence will be made in favour of the free cash-flow theory in special cases. The validity of the free cash-flow theory in special cases will bring new issues to light with the introduction of a new definition: soft budgeting problem of capital. Through this analysis, the possible interaction between capital market imperfections and general equilibrium will also gain new dimension.

Keywords: corporate governance, free cash-flow theory, soft budgeting problems.

JEL classification index: G30, G31, G32.

INTRODUCTION

It is commonly accepted that firms prefer internal to external financing for funding investments. As stated by Baumol (1964) internal funds represent the preferred financing hierarchy ("pecking order theory"). Consequently the bulk of business enterprises finance their investment needs insofar as possible out of retained earnings. Only when it becomes impossible to raise enough money from internal resources do firms turn to the (equity and credit) markets for resources. Many academics agree that asymmetric information is a root of capital market imperfections and the subsequently mentioned preference for internal finances. There is however less agreement about why: (1) are information asymmetries between borrowers and lenders leading firms to face *financing constraints* when even profitable projects remain unexploited, or (2) are agency costs and costly

Correspondence: P. Harbula, 45 Boulevard du Château, 92200, Neuilly-sur-Seine, France. E-mail: pharbula@hotmail.com

monitoring allowing managers to waste their firms' resources by using its free cash-flow to pursue unprofitable investments.

The first theory argues that given informational asymmetries between borrowers and lenders, financing constraints can arise, causing investments to fall short even in the case of positive *net present value* (NPV) projects. This suggests that capital markets are imperfect and limit optimal investment expenditures. In this case, companies prefer internal funds, as external financing becomes unavailable or prohibitively costly, since lenders are afraid of *moral hazard* (some companies may use the funds in an inappropriate manner rendering payback difficult if not impossible).

The free cash-flow theory emphasises the principal–agent problem and agency costs as the principal causes of capital market imperfections. Managers might waste the free cash-flow[1] to finance unprofitable projects, creating less wealth (value) to stakeholders than the simple distribution of excess cash as dividends.

Both theories agree however that external finances are subject to informational asymmetries and a consequent loss of efficiency. According to the financial constraints theory informational asymmetries limit a firm's access to external funds. Therefore, firms prefer internal finance because external finance is unavailable or too expensive. These financing constraints may then cause or propagate business cycles.[2] On the other hand, the free cash-flow theory suggests that the separation of ownership and control, in concert with costly monitoring, leave managers the ability to deploy the firm's resources in unprofitable configurations.

This paper will focus on answering whether the financial constraints or the free cash-flow theory explains better the reliance of firms on internal finances. Using a French data sample and special segmentation, I will try to find evidence in favour of the free cash-flow theory by analysing the relationship between sources of funds and investments. For describing situations where the free cash-flow theory is valid, I will introduce an analogy with socialist firms and define this situation as *soft budgeting problems in developed market economies*. In such situations, where agency problems are especially rife, imperfections in the corporate governance system can act as a transmission mechanism through which capital-market imperfections can impact general macroeconomic equilibrium.

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[1]   Jensen (1986) defines free cash-flow as the portion of cash-flow that remains after all net present value projects have been undertaken.

[2]   For example see Devereaux and Schiantarelli (1990).

THEORETICAL BACKGROUND

The recognition of diverging incentives between managers and owners of corporations dates back to Berle and Means (1932), who first stated the separation of ownership and control and the possible impact of managers on firms' profitability. According to them, shareholders are investors, with minimal influence on the life of the corporation.

Coase (1937) and Alchian and Demsetz (1972) offered a new perspective on the theory of the firm. They considered firms as a market in which participants interact through contracts. The firm, by its own very existence, offers the possibility of organising this process in the most efficient way (with regards to information handling and trading). The firm is therefore an alternative to open market and by its own internal structure becomes capable of creating value. However, the existence of such an organisation also triggers conflicts between its various stakeholders *(the agency theory).*

Jensen and Meckling (1976) significantly contributed to the agency theory by implying that incomplete monitoring provides managers with incentives to shirk. However, this phenomenon is greatly influenced by the stake held by managers in their company. The greater is the share of managers, the more they are driven to maximise the value of the company. Jensen (1986) later proposed that for some types of firms, information asymmetries between managers and owners provide incentives for management to "over-invest" and use the free cash-flow for unprofitable investments that increase their utility at the expense of the shareholders (*free cash-flow theory*).

Asymmetric information and investments

Lang and Litzenberg (1989) originally analysed the response of stock prices to dividend changes. They recognised a link between investments and the stock market performance. In their analysis, they split firms into two categories using Tobin's q ratio.[3] Firms with a q ratio of less than one were considered as over-investors. Their analysis showed that over-investing firms exhibit positive changes in their stock price in response to an increasing amount of cash-flow paid to shareholders in the form of high dividends. They interpreted this data as evidence con-

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3 Tobin's q represent the investment opportunities of firms. While firms are overly concerned with a projects' marginal q (measured as the marginal increase in the value of the firm resulting from the project divided by the project's marginal costs), we will use average q in the analysis because of the lack of sufficient information.

sistent with the *free cash-flow* theory. If managers waste free cash-flow on investments with poor returns, these investments should be highly sensitive to changes in internal resources, which are more difficult for outsiders to monitor. On the other hand, some research papers found evidence against the free cash-flow theory, as no conclusive relationship between the *q* ratio, share prices and internal finances was observed.[4]

Both the financial constraints and the free cash-flow theories suggest a positive relationship between investments and internal finances as a result of information asymmetries. However, in order to determine which theory is the most accurate, it would be difficult to develop an empirical model based solely on the firms' response to changes in cash-flow without considering the effect of indebtedness. Consequently, this research will also take into consideration the role that debt plays in financing decisions.

If asymmetric information leads to financing constraints and under-investment, then debt is a source of external finance used to fund profitable investment projects. If firms over-invest because of managerial opportunism (free cash-flow theory), debt might be used as a monitoring device to restrict the managers' ability to waste firm resources. Finally, if a company uses financial debt to repurchase equity, this leverage-increasing transaction is designed to maximise the control effect of debts (Jensen, 1987). The free cash-flow theory suggests that over-investing firms will be forced to reduce investments in unprofitable projects because of the control effect of debt. Also, debt should increase managerial efficiency, as debt burden triggers increased attention to cash-flow forecasting and tightens control of cash-flow, because of the increased probability of bankruptcy (Carpenter, Fazzari and Petersen, 1993).

Before introducing the empirical model, I will present in more detail the financial constraints and the free cash-flow theories.

Financial constraints

The central proposition of models demonstrating the impact of information asymmetries on investment decisions is that information and the exchange of information is costly. In extreme cases, equilibrium in credit markets exists even with excess demand for loans. Such is the case when lenders pursue credit-rationing. In this situation, some firms' investment needs may be constrained by the lack of internal funds, as they do not obtain the necessary credits. In less extreme cases,

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[4]   Examples : Vogt (1993), Griffin (1988).

lenders will charge a premium on the cost of credit based on the average quality of borrowers as perceived by lenders. Borrowers who successfully conceal their riskiness from lenders will partly transfer their risk premiums to less risky borrowers. Notwithstanding the blatant transfer of wealth, some positive NPV projects will not be realised (Stiglitz and Weiss, 1981).

Market imperfections lead positive NPV projects to fall short, since external funds are too expensive for some firms that lack sufficient internal resources. This situation is known as the *under-investment problem*. Firms suffering from financing constraints are unable to realise all their positive NPV projects. According to the theory, a higher level of internal funds will result in higher investments (assuming they are positive NPV), as internal funds are cheapest and easiest to access.

If a company does not have investment opportunities that are considered by lenders as attractive enough to put its capital at risk, investments of the company are limited by its internal finances. Therefore, firms contracting debt have good investment projects that should largely compensate any uncertainty premium related to asymmetric information. If these firms increase their indebtedness, they will pursue positive NPV projects, because they cannot afford to waste resources (Carpenter, 1994).

The free cash-flow theory

The free cash-flow theory focusses on agency costs resulting from the separation of ownership and control. Managers have incentives to pursue activities that are not in the principal's interest, reducing the profitability of the firm. Furthermore, if manager's compensation is linked to the growth of the firm, they may have an incentive to pursue above optimum growth policies. They also may prefer growth, if pecuniary and non-pecuniary benefits they can consume increase with the size of the firm. Some papers analysed the link between managerial compensation and the firm size.[5] Other research papers demonstrated that the elasticity between managerial compensation and the firm sales are twice as high as the elasticity toward the return on stock markets.[6] Internal finances are preferred to external finances by managers as they can more easily evade market scrutiny.

Jensen theorises that managers can limit the agency problems of free cash-flow by issuing debt and paying the proceeds back to shareholders. This course of ac-

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[5] See Murphy (1985) for further details.
[6] Example: Joskow, Rose and Shepard (1993).

tion will reduce the free cash-flow available to the managers' discretion. If investors (shareholders) are acting rationally, they will diversify their portfolio by exchanging shares for bonds, this resulting in a constant return on their investment portfolio. Leverage restricts the use of the internal finance generated by the firm, forcing the managers to use cash-flow to meet their contractually specified interest obligations. Furthermore, managers' incentives to invest in negative NPV projects are reduced, as firms have a higher probability of going bankrupt (Jensen, 1986).

The *free cash-flow theory* has very important implications for the effect of leverage on investment/financing decisions. The free cash-flow model implies that for an over-investor, an increase in leverage should lead to a reduction in unprofitable investment spending. Additional leverage does not significantly affect the overall level of internal funds, but rather tightens the control and improves the efficiency of investments. If leverage (debt) pushes out negative NPV projects, overall investment returns will improve, increasing the firm's stock price. Indeed, most cited empirical studies show evidence of a positive relationship between share prices and leverage-increasing transactions.

The free cash-flow theory presents debt primarily as a measure of control, and not as a source of funds, as debt acts to restrict managers' ability to pursue unprofitable projects that do not increase investor wealth. When a firm previously over-investing in negative NPV projects increases its leverage, investment expenditures should decline as this policy reflects the firm's commitment to pledge free cash-flow to investors. Blair and Litan (1991) use a similar argument to suggest that their findings are consistent with the predictions of the free cash-flow theory.

EMPIRICAL TEST AND HYPOTHESES

This analysis emphasises the relationship between long-term debt and investment decisions of the firm. The selected firms are divided into two groups: firms facing profitable but unexploited investment opportunities (under-investors) and firms with unprofitable investment projects that have been undertaken (over-investors). According to Lang and Litzenberg (1989) and Carpenter (1994), the data panel is divided primarily by Tobin's q, assuming that the q ratio is a good measure of the market's assessment of a firm's investments opportunities. A q ratio greater than one implies a positive outlook since investment projects exceed their costs (positive NPV). A q ratio less than one means that the market value of the firm is less than the replacement cost of its capital stock, implying that the firm is an over-investor. Lang and Litzenberg (1989) proved that an average q ratio of less than one is a sufficient condition for a firm to be considered over-investor.

The regression model[7]

In order to ascertain the link between investments, internal sources of funds and financial (external) debt, a regression on investment is performed. For firm i at time t, the investment functions are as follows:

$$(I_{it} / K_{it}) = \alpha_i + \alpha_t + \beta_1 q_{it} + \beta_2(CF_{it} / K_{it}) + \beta_3(\Delta W_{it} / K_{it}) + \beta_4(\Delta LTD_{it} / K_{it}) + \mu_{it} \tag{1}$$

The α_i and α_t are the constant for the firm i at time t, while μ_{it} represents the random disturbance. Investments (capital expenditures) are represented by I. Beginning period Tobin's q[8] indicates investment opportunity changes. Internal finance is represented by the gross cash-flow (CF), equaling the net income of the firms adjusted for extraordinary items, discontinued operations and non-cash items (amortisation, depreciation, etc.). The change in net working capital is denoted DW.[9] If cash-flow declines, assets with relatively low adjustments costs (working capital) will decline first, enhancing the liquidity of the firm. Working capital investments should therefore have a negative coefficient if firms use internal funds to smooth investments in fixed assets.

The change in financial debt is represented by ΔLTD and is defined as new issues of long-term debt less debt repayments plus the changes in short-term financial debt and in the current portion of long-term debt. This definition also captures any changes in leverage due to the conversion of bonds to equity. Since ΔLTD captures funds actually raised, any premium or discount on debt issuance is also measured. $I, CF, \Delta W$ and ΔLTD are all scaled by the firm's beginning-of-period capital stock to control for heteroscedasticity and to reflect the theoretical relationship between investments, capital and q.[10]

[7]   Using Carpenter (1994).

[8]   Tobin's q is defined as (E+TDBT–C)/PK, where E is the market value of equity (common and preferred), TBDT refers to total financial debts of the firm, C represents excess cash and cash equivalents and PK is the replacement cost of the firms capital stock.

[9]   Working capital is defined as operating current assets less operating current liabilities, excluding any short-term financial debt and current portion of long-term debt. According to Fazzari and Petersen (1993), firms respond to depletion of internal finances by reducing the rate of asset accumulation.

[10]   The replacement cost of capital (K) is estimated by the following formula:

$$K_{it} = [K_{it-1} (P_t / P_{t-1}) + I_{it}] [1 - (2/L_i)],$$

where L is the average lifespan of fixed assets, I represents capital expenditures and P is the depreciation ratio of assets at book value. This formula has been developed by Salinger and Summers (1981).

Hypothesis and empirical tests

Changes in working capital and net issue of long-term debt are endogenous variables. We estimated equation (1) with instrumental variables, instruments including beginning period q, CF, beginning-of-period working capital (W) and the beginning period level of financial debt. With higher levels of financial debt, the probability of default rises, as does the marginal cost of debt as its stock rises. Outstanding financial debt is however also related to the intensity of monitoring the ability of managers to waste free cash-flow. Therefore the $(\Delta LTD_{it} / K_{it})$ variable is crucial to our analysis.

I also examined a more detailed split of the data, by using the payout policies of both under- and over-investor firms as criteria. This segmentation allows for comparing the effect of changes in internal and external funds on the investments of firms with several types of financial attributes.

Firms with low q and payout ratios have bad investment opportunities, nevertheless they retain a substantial portion of their funds. In the financial constraints model, firms evaluated as poor risks and paying low dividends are the quintessential of financially constrained firms. These firms rely heavily on internal finances for funding their investments, as external funds are too costly. However, in a model governed by the free cash-flow theory, a firm's managers may retain high portion of earnings to finance additional investments for which it could not raise funds externally because of market scrutiny.

The financing hierarchy is greatly determined by the response of the firm's investments to both internal and external finance. Firms unable to invest in all their potentially profitable projects because of information asymmetries can be considered as financially constrained. Such firms raise external financing when their projects outperform standard industry criteria and (1) it is demonstrably profitable to lenders (even under a Stiglitz–Weiss-type credit rationing regime) or (2) the return is high enough to remain profitable even after an asymmetric information premium is paid. For a financially constrained firm, issuing new debt indicates a relaxation of the constraints, and the response should be a sharp increase in investments. Therefore, a financially constrained firm's ΔLTD coefficient in the regression should be highly positive.

Firms with managers wasting free cash-flow to pursue unprofitable projects may have low q and payout ratios without facing financial constraints. These firms issue debt to restrict the ability of managers to appropriate free cash-flow to their own utility. This implies a low or negative coefficient linked to ΔLTD.

Splitting the data panel by their payout policies also gives firms with high q and payout ratios. High q firms are less likely to face financial constraints or having

managers wasting resources, as a high portion of the cash-flow is paid out to shareholders. These firms should have relatively small coefficients to the changes in working capital, as internal funds are not likely to generate serious investment constraints. Also, they will not face problems raising external funds, as they are generally viewed as low risk. They are also less likely to consider new debt as an easing of financial constraints, therefore a tight relation between new capital expenditures and changes in financial debts in not likely, since they have more financial flexibility. *Table 1* summarises the above-mentioned hypothesis.

Table 1

Summary of hypothesis

Subset of firms	Low payout ratio	High payout ratio
Low q ratio (over-investors)	Financial constraints theory: positive coefficients for ΔLTD. Free cash-flow theory: very small or negative coefficients for ΔLTD.	Free cash-flow theory: small coefficients for ΔLTD.
High q ratio (under-investors)	Free cash-flow theory: small coefficients for ΔLTD.	Small coefficients to ΔW and ΔLTD (both theories).

A finer screening of the data can still be attempted. Over-investment, as measured by a $q < 1$, is not a sufficient condition to identify managers who act in their own interests rather than in those of shareholders. An average q less than one might result from firms who realised bad outcomes on investment projects where the expected NPV was positive. It may also be result for firms whose managers deliberately invest in negative net present value projects.

Therefore, the sample needs to be further refined by closely scrutinising over-investor firms. Jensen (1986; 1987) argued that the greatest reduction in the agency costs of free cash-flow follows when firms increase leverage *ceteris paribus* and managers do not retain the proceeds. Therefore the over-investor (low q) group must be analysed for firms that re-engineer their financial structure by using financial debt to repurchase shares (this move is similar to dividend payments[11]). If the root cause of over-investment is that managers waste free cash-flow, the control features of debt will be enhanced following such a restructuring transaction. According to the regression model, this would result in a very low or negative coefficient to ΔLTD.

Because the free cash-flow model suggests that the reason that these firms restructure is to restrict the opportunistic behaviour of managers, we need to account

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[11] As emphasized by Lang and Litzenberg (1989).

for this by using interaction dummy variables on the right hand side of the model. This is done to test for any changes in the sensitivity of the firm's investment opportunities or financial variables in the years that succeed a restructuring. The new model is:

$$(I_{it} / K_{it}) = \alpha_i + \alpha_t + (\beta_1 + \gamma_1 D_{it})q_{it} + (\beta_2 + \gamma_2 D_{it})(CF_{it} / K_{it}) + (\beta_3 + \gamma_3 D_{it})(\Delta W_{it} / K_{it}) +$$

$$(\beta_4 + \gamma_4 D_{it})(\Delta LTD_{it} / K_{it}) + \mu_{it} \tag{2}$$

The change to equation (1) is the introduction of the interaction dummy variable D_{it}, which takes a value of one in the period after a restructuring and in all succeeding periods. The γ measures the changes in the regression coefficients post-restructuring. If a firm restructures because of a desire to reduce agency costs, γ_4 takes a negative value, indicating a reduction in the effect that new long-term debt has on investment expenditures because of the reduction in free cash-flow. This last group of companies, as they are primarily concerned with the effects of agency costs, are referred to as *agency firms*.

Lastly, my analysis will incorporate a final dimension. The firms in the data panel will be analysed with regard to their shareholder's structure. Using this dimension, we will define two types of firms: the first group has a reference shareholder, who *de jure* or *de facto* has exclusive control over the critical decisions of the firm. The other group has no major shareholder and has a diffused shareholder structure, governed primarily by institutional investors and proxy contests. This last group will be divided into two subsets, with special regard to French companies with "hard core" ownership structures.[12] The underlying assumption is that the free cash-flow theory is valid when shareholder control is weak and the ownership is diffused. In this situation, key shareholders of the "hard core" structure interact to maintain control over the firms. For these firms, market and internal control mechanisms have little influence and managers dispose of large powers. Therefore debt can play a major role in suppressing managerial opportunism in these companies. On the other hand, a firm with a reference shareholder has more influence on the firms' management, limiting their ability to waste free cash-flow. However, these firms may face financial constraints, as they cannot raise external funds as easily as if they had a large float. For such firms, changes in financial debt should have a positive relationship to investments. If however the coefficients are negative, the free cash-flow theory can be reasonably considered valid.

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[12] See for more details Harbula (1999).

Sample statistics

The sample is composed of a hundred, randomly chosen, listed French industrial firms from the "Réglement Mensuel" and the "Second Marché". The time series used is relatively short, it begins from 1991 up to 1999. The period used in the regression runs is eight years and the companies selected contained information for each year and for all variables.

The sample was first divided according to two characteristics: q ratios over and under one and dividend payout ratios over and under 5%. According to these criteria, the sample splits as follows:

Table 2

Split of the data subset by Tobin's q and the retention ratio

Subset of firms	$q > 1$	$q \leq 1$	Sum
Payout ratio > 5%	31	12	43
Payout ratio ≤ 5%	21	36	57
Sum	52	48	100

Low q firms were also examined further, by analysing changes in their capital structures, as these firms might have undergone restructuring during the sample period (equity repurchases). A decline of at least 5% in the outstanding common stock and a change in the net indebtedness equivalent to 50% of this value were determined sufficient to be considered as a restructuring.

The firms of the sample show a positive correlation between the size factor and the payout ratio. Low q high-dividend firms are twice as large on average as high q high-dividend firms, while low-dividend payout firms are close to the medium size of the subset.

The firms of the sample rely heavily on internal resources for financing. However, the average indebtedness level of the firms analysed was decreasing over the period in relative terms. Gross cash-flow accounted for 64% of funds available in the cash-flow statements at the beginning period versus 75% at the end of the period. This can be explained by the heavy indebtedness of French firms in the eighties. New equity issues accounted only for 1% of resources at the beginning of period and increased to 6% at the end (median values). Other characteristics of the sample are summarised in *Table 3*.

Firms with low payout ratios have higher leverage than firms with high payout ratios and less excess cash. Firms where managers waste cash-flow may have less cash, as it is consumed rapidly by managers at the cost of shareholders. On the

other hand, financially constrained firms may have little working capital and excess cash, as they must draw down all their assets to finance operations.

Table 3

Sample characteristics to key financial attributes

Financial attributes	Low q firms (over-investors)	High q firms (under-investors)
Leverage	Higher than sample average	Lower than sample average
Working capital	Less than sample average	More than sample average
Excess cash	Less than sample average	More than sample average

Other interesting conclusions can be inferred from the sample analysis: high q firms have a higher growth rate in sales and assets than low q firms have. Smaller, higher growth firms are often evaluated by the market as having better investment opportunities and are less likely to invest in negative NPV project than larger companies, while agency firms are likely to have lower growth. However, when considering the free cash-flow theory, we should not forget that leverage loses its positive control effects up to a certain level, as the debt burden becomes too heavy. The control effect of debt is more likely to be effective on firms with slow growth but high free cash-flow potential. According to the general characteristics of the sample, firms with low q having undergone restructuring would tend to limit the control effect of debts.

RESULTS

Table 4

Equation (1) results by split of the data subset by Tobin's q

Variables	Low q		High q		Agency firms	
Q	0.042	(0.056)	0.012	(0.012)	0.055	(0.008)
CF	0.356	(0.012)	0.314	(0.016)	0.213	(0.054)
ΔW	−0.322	(0.045)	−0.143	(0.017)	−0.176	(0.056)
ΔLTD	0.456	(0.089)	0.153	(0.042)	0.304	(0.087)
R^2	0.256		0.281		0.289	

(Standard error in parentheses)

Table 5

Equation (2) results by split of the data subset the *q* and the dividend payout ratios

Low *q*

Variables	Low payout ratio		High payout ratio	
Q	0.009	(0.011)	0.043	(0.012)
CF	0.368	(0.045)	0.377	(0.056)
ΔW	−0.315	(0.055)	−0.369	(0.12)
ΔLTD	0.756	(0.016)	0.276	(0.023)
R^2	0.156		0.255	

(Standard error in parentheses)

High *q*

Variables	Low payout ratio		High payout ratio	
Q	0.025	(0.005)	0.012	(0.001)
CF	0.324	(0.035)	0.028	(0.022)
ΔW	−0.177	(0.043)	−0.113	(0.042)
ΔLTD	0.377	(0.099)	0.037	(0.056)
R^2	0.244		0.321	

(Standard error in parentheses)

Agency firms

Variables	Low payout ratio		High payout ratio	
Q	0.017	(0.004)	0.064	(0.001)
CF	0.193	(0.221)	0.272	(0.044)
ΔW	−0.189	(0.198)	−0.216	(0.078)
ΔLTD	0.118	(0.392)	0.296	(0.088)
R^2	0.288		0.389	

(Standard error in parentheses)

Interpreting the results

Tables 4 and *5* show the regression results obtained by segmenting the sample using the *q* ratio. As argued before, an increase in indebtedness increases the controlling effects of debt (to a certain extent), however it also increases default risk, leading to an increase in the marginal cost of debt. The results of equation (1) are consistent with this hypothesis (Δ*W* has a negative coefficient and Δ*LTD* has a significant positive coefficient).

Table 4 shows the results achieved through a simple segmentation using the *q* ratio. According to our results, low *q* firms are not over-investors due to opportunistic behaviour of managers. As argued before, if low *q* firms are over-investing

and wasting free cash-flow, then debt has rather a control function than being a source of funds. *Table 4* clearly shows that ΔLTD is positively correlated to investments for low *q* and agency firms. Low *q* firms have the greatest sensibility toward internal funds (strong coefficient to *CF*).

Still, the interpreting these results is not that simple. If a firm has a low *q* because of the opportunistic behaviour of management, then they will use internal funds to finance negative NPV investments, as these are opposed to market control mechanisms.[13] *Table 4* shows that high *q* and agency firms are less sensitive to internal finances than low *q* firms. This could be the result of more efficient managerial policies following a restructuring. A low *q* firm can be interpreted in a variety of ways. A firm might have low *q* ratios because it pursued originally positive NPV projects that turned out bad. A low *q* could also imply that financial markets unfavourably evaluate the perspectives of the firm. Consequently, even profit-maximising managers with efficient investment policies might encounter difficulties when trying to obtain external sources of funds. If such firms are financially constrained, then its investments are highly dependent on internal resources.

Table 5 therefore present results of equation (1) broken down by low *q*, high *q*, agency firms and dividend payout. As discussed above, the market evaluates a low *q* firms' investment opportunities as poor and *Table 4* indicated that these companies retain very large portion of their internally generated funds. Are the managers wasting resources on poor investments or do they face financial constraints that force them to use internal finance to fund investment? The latter case suggests that these firms are in a corner and will respond to any easing of the constraints. *Table 5* shows that this is the case for low *q* low-payout firms (large positive coefficient to debt), indicating that these firms face financial constraints rather than agency problems. Low *q* high-payout firms have lower coefficients to changes in financial debt than low *q* low-payout firms do. These firms distribute large dividends regardless of the market evaluation of their investment opportunities. On the other hand, they could invest in negative NPV projects and use dividends to deceive investors. This reasoning is however not supported by the regression results.

Analysing high *q* high-payout firms, we expect these firms to have easy access to external funds. These firms can distribute profit as dividend as they have enough internal sources to fund their investments. These firms have the best access to capital market for financing, as supported by regression results. It is not surprising that the coefficient to changes in long-term financial debt is low for these firms, given that they have a large amount of flexibility in financing decisions.

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[13] Similar reasoning can be find in Hoshi, Kashyap and Scharfstein (1991) and Carpenter (1994).

Results for agency firms

Segmenting our sample by the *q* ratio provides a means of separating over- and under-investors and allows us to test the impact of additional debt financing on capital expenditures. There is however a stronger test of the free cash-flow theory. According to Jensen, the greatest reduction in the agency costs follows a leverage-increasing transaction where managers do not retain the proceeds. Such a restructuring strengthens the control effect of debt.

In *Table 4*, we can observe that the coefficient for internal funds is the lowest for agency firms. When we divide agency firms by their respective dividend payout ratio *(Table 5),* we can argue that high *q* firms are relatively more reactive to both internal finances and changes in financial debt.

Examining the low *q* agency firms, we found that the ΔLTD coefficient is insignificant for these firms, supporting the free cash-flow theory. The variables are however statistically not significant. Still, we were able to identify a group of firms for which there is apparently no strong relationship between investments and long-term debt.

Given that our sample includes companies having restructured in the observed time frame, we can perform additional analysis by using equation (2) (*Table 6*).

Table 6

Equation (2) results for agency firms and split by dividend payout ratio

Variables	Agency firms					
	Global sample		Low-dividend payout		High-dividend payout	
Q	0.064	(0.0023)	0.0556	(0.012)	0.0954	(0.081)
D*Q	−0.0132	(0.0223)	0.0092	(0.023)	−0.0611	(0.071)
CF	0.165	(0.1012)	0.3876	(0.12)	0.023	(0.312)
D*CF	0.067	(0.112)	−0.16	(0.134)	0.056	(0.381)
ΔW	−0.186	(0.1456)	−0.523	(0.275)	−0.0161	(0.239)
D*ΔW	0.034	(0.156)	0.301	(0.273)	0.01965	(0.321)
ΔLTD	0.4563	(0.134)	0.589	(0.187)	0.661	(0.249)
D*ΔLTD	0.131	(0.199)	0.203	(0.189)	0.191	(0.543)
R^2			0.287		0.345	
F-test result			5.4915		5.2517	
P			(0.0002)		(0.0004)	

(Standard error in parentheses)

We find the same results for the three data subsets: restructuring reduces the sensitiveness of firms' investments to changes in financial debt. This supports the free cash-flow theory. Furthermore, analysing the subset of low-payout firms, we find that investment becomes less responsive to internal finances and to changes

in net working capital. Both results are consistent with likely reduction in agency costs due to restructuring. Even if some variables are not significant individually, the F-test applied suggests that the subset of firms cannot be rejected as a group. Furthermore, an examination of the pattern of dummy variable coefficients across firms appears to indicate that coefficients decline as dividend payout increases. This indicates that firms paying higher dividends have lower agency costs.

While the analysis supports that the interaction of dummy variables are consistent with the fact that restructuring reduces the agency costs associated with free cash-flow, the evidence with respect to changes in financial debt is more ambiguous. Even if the sensitiveness of investments to changes in financial debt declines after a restructuring, firms still respond positively to ΔLTD. While these coefficients are relatively low compared to other data subsets, they still indicate an economically significant correlation with the ΔLTD variable.

Conclusion of results insofar

The results gathered insofar are consistent with the results of Carpenter (1994) on a panel composed of 500 US manufacturing firms. Imperfections in the capital markets have important implications for raising funds to finance investments. Still, recognising that these imperfections exist tell us little about their true nature and their impact on aggregate investments. Two arguments have emerged: one says that information asymmetries lead firms to under-invest due to problems of communicating firms' prospects to outsiders, the second argues that information asymmetries will lead to over-investing as managers pursue investments that maximise their utility rather than the firm's value.

The explanation of Baumol's pecking order theory is crucial. Internal finances are highly cyclical and closely related to investments, which represent the most volatile component of aggregate demand. If firms prefer internal funds because financial constraints render access to capital markets difficult, then a drop in the level of internal funds leads to an overall reduction in welfare by limiting the accumulation of productive capital. Alternatively, if agency costs are the cause of this "preference", cyclical downturn in internal funds will not affect aggregate demand. However, the corporate governance structure could have an effect on aggregate demand while all classical economic indicators seem optimal. I shall return to this point later.

We examined the link between investment and external financing sources using firms with different investment opportunities and different financing and investing policies. Still, we were not able to find evidence permitting us to choose between either the financial constraints or the free cash-flow theory. Both theories

have made valid points, and we could even argue, that the financial constraint theory has stronger supporting evidences. As we demonstrated low q and low-dividend payout firms are very sensitive to the level of internal funds. On the other hand, high q and high-payout firms are relatively unresponsive to changes in debt. All these observations support the financial constraint theories.

When analysing agency firms, we found evidence that suggests that some firms may use debt to pledge free cash-flow to shareholders. After these firms restructured their balance sheet, investments became less responsive to financial variables in general, including changes in financial debt. While not every variable was significant, the overall group results were consistent with the free cash-flow theory.

Earlier research papers, at this point, came to the same conclusion to which I arrive using French data.[14] My opinion is that the results are inconclusive as the approach used is incomplete. Up till this point, I followed the same approach in order to demonstrate that it lacked certain critical elements while benefitting from its results.

The issues of corporate governance may not be assessed only through strict monetary and financial characteristics. The results cannot be interpreted without relating them to the country's legal and economic background and other qualitative elements. The basic issues around corporate governance stem from the American economy, where the corporate governance model puts significant weight on managerial competencies and is characterised by a diffused ownership structure. Such a combination naturally enhances principal–agent problems. I believe that the analysis of the two theories does not work on a this or that basis. Rather, a combination of circumstances and the effects of both theories can mutually describe investment responses to changes in external or internal funds. Consequently, special conditions might put one theory forward to the other. Based on an American-type economy, evidence is mixed and ambiguous, as mechanisms at work cannot be described by one theory alone.

As the free cash-flow theory is a special theory, it cannot be considered valid for all firms all the time. The theory applies only to firms under strong managerial leadership and a weak ownership control. While an American-type diffused ownership structure is suitable for both criteria mentioned above, I believe that recent development in corporate governance in the US decreases the validity of the theory. Now, we must find a sample presenting the two above-mentioned criteria. For this, we will use non-monetary criteria to once divide the data sample used earlier.

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[14] Carpenter (1994) concludes that the roots of the financing hierarchy may be found in both theories.

NEW ANALYSIS CONSIDERING OWNERSHIP STRUCTURE

The sample is now analysed segmenting companies by their ownership structure. I have retained three categories: reference shareholder structure, diffused ownership structure and "hard core" ownership structure. As elaborated in a previous research paper, French firms have developed a special corporate governance model, where many shareholders of different companies develop a web of cross ownership, resulting in a *de facto* controlling model, where managers control the firm and the shareholders have very weak powers (Harbula, 1999).

The suggestion I make is that under a "hard core" regime, the free cash-flow theory can prove to be more accurate. Given that the free cash-flow theory was developed based on an American economic model, it is less valid for Europe in general, where the prevailing corporate governance structures are very different. France is a good example, as there the combination of the above-mentioned ownership structures exist.

If a firm has a reference shareholder, the free cash-flow theory is less relevant as the controlling shareholder closely monitors managerial behaviour. Therefore, the control effect of debt can only be very limited. As for firms with diffused ownership, managers are less strictly controlled, therefore the control impact of debt as predicted by the free cash-flow theory can be considered more relevant.

"Hard core" governed companies are a much more interesting case. With the aid of corporate allies, control is in the hands of management. The corporate ownership structure is composed of a network of corporate allies having cross participation in each other. However, these allies rarely have an ultimate voting majority. Outside the "hard core", these companies have a diffused ownership structure (comparable to American companies) making them a good subject to test the free cash-flow theory. As it is the case with most firms with diffused ownership structures, only a small percentage of minority shareholders actually take part in the decisions making process of these firms (general meeting, extraordinary meeting) and therefore, ultimate control is left with management. However, if minority shareholders decide to take control (through proxy contests, aided by institutional investors or by initiating a takeover process), they may consider the funds of the firm badly invested and consequently choose the restructuring of the company to tighten control over free cash-flow. This effect should be captured through a regression analysis. The question then is, whether the control effect of debt is stronger for a diffused ownership structure or "hard core" company.

Companies described before as having a "hard core" ownership structure can be considered similar to firms found a few decades ago in socialist countries. Apart from legal and politico-economical differences, today's "hard core" firms do not have the same *classical soft budget* that socialist firms had as described by

Kornai (1980). Generalising *Kornai's theory*, we can argue that all (private) firms, where shareholders do not sanction bad economic performance[15] and the misuse of capital, have *de facto* a *soft budget*. These firms may nonetheless face the threat of the "wall street walk".

Results

Table 7

Results of equation (1) and (2) divided by ownership structure

Results of equation (1)

Variables	Reference shareholder structure		Diffused shareholder structure		"Hard core" governance	
Q	0.13	(0.022)	0.1254	(0.11)	0.11	(0.243)
CF	0.467	(0.13)	0.311	(0.34)	0.453	(0.398)
ΔW	−0.231	(0.155)	−0.332	(0.297)	−0.432	(0.2234)
ΔLTD	0.532	(0.241)	0.212	(0.345)	0.094	(0.359)
R^2	0.466		0.387		0.591	

(Standard error in parentheses)

Results of equation (2)

Variables	Reference shareholder structure		Diffused shareholder structure		"Hard core" governance	
Q	0.061	(0.0033)	0.0476	(0.022)	0.021	(0.093)
D*Q	−0.0245	(0.023)	0.021	(0.043)	−0.1324	(0.089)
CF	0.421	(0.12)	0.339	(0.23)	0.371	(0.312)
D*CF	0.395	(0.112)	0.311	(0.255)	0.489	(0.391)
ΔW	−0.196	(0.165)	−0.523	(0.288)	−0.454	(0.287)
D*ΔW	−0.234	(0.132)	−0.411	(0.287)	−0.596	(0.354)
ΔLTD	0.511	(0.132)	0.222	(0.234)	0.094	(0.358)
D*ΔLTD	0.376	(0.199)	0.098	(0.456)	−0.483	(0.163)
R^2	0.452		0.391		0.588	
F	5.99		5.61		5.44	
P			(0.003)		(0.005)	

(Standard error in parentheses)

Table 7 clearly shows, that the effect of restructuring is most important for "hard core" firms (according to regression coefficients), which leads to the conclusion that agency costs were significantly reduced. After restructuring, "hard core" companies became much more sensitive to internal funds, which confirms

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[15] Economic performance in this context refers to meeting investors expected returns and maximising wealth for shareholders.

the theory that an increasing debt burden leads to difficulties in contracting addi-
tional external funds. This is the case because the investment opportunities are
judged less favourably by the markets (decreasing q coefficient). The coefficient
for ΔLTD is highest for firms with a reference shareholder. As for the free
cash-flow theory, the control effect of debt is the least important for these firms,
which is consistent with our results, as the ΔLTD coefficient remains significant
before and after the restructuring. Diffused ownership firms have a smaller coeffi-
cient to ΔLTD, which further decreases after a restructuring. However, results are
not more supportive for the free cash-flow theory than in *Table 6*. Furthermore,
we did not find any major evidence for the free cash-flow theory and our results
are not very different from the previous studies.[16]

Regarding the "hard core" sample, our results strongly support the free
cash-flow theory. As suggested by the theory, the sample had a negative coeffi-
cient to ΔLTD and the coefficients are all significant taken individually or in
group. The sample shows that after restructuring, ΔLTD has a negative coeffi-
cient, while internal funds have large positive coefficients, further supporting the
free cash-flow theory. Restructuring also acts as a signal to capital markets, dem-
onstrating their imperfections, as markets can misjudge firms' investment oppor-
tunities. It also leads to better use of funds in the company and therefore increases
shareholder wealth. Increased indebtedness reduces the free cash-flow available
to manager's discretion while it also increases default risk. Consequently, man-
agement has more incentives to improve overall return on capital by investing in
positive NPV projects and to use internal funds.

Interpreting results and further thoughts

In order to find conclusive evidence supporting the free cash-flow theory, we ana-
lysed a sample of group of firms governed by "hard core" shareholders. A classi-
cal segmentation of the data panel did not show conclusive results. Dividing the
panel with a new criteria (shareholder structure) leads to conclusive results in fa-
vour of the free cash-flow theory. I am on the opinion that the free cash-flow the-
ory, as corporate governance in general, are more subject to qualitative rather than
quantitative factors. To prove the free cash-flow theory, we had to revisit the orig-

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[16] Griffin (1988) has similar results, although his panel was composed solely of diffused ownership
     firms. The same applies for Fazzari and Petersen (1988) or Carpenter (1994). While not having
     found incontestable proof for the free cash-flow theory, these papers did not test the sample by
     type of governance, nor did they recognise the special nature of the samples to which they applied
     a regression.

inal roots of corporate governance, the principal–agent problem. Using a data panel with presumably weak shareholder control in the context of a specific corporate governance structure (France), my research indicates that this is the case.

As mentioned earlier, French firms and especially those with a "hard core" shareholding structure, can be considered as having a soft budgeting problem. As opposed to Kornai, private firms where managers (and their companies) are not subject to strong shareholder control, see their budgeting constraints soften. By budgeting constraints I am not referring to monetary resources, but rather to expected return. Since managers accept projects with negative NPV (instead of distributing dividends) that do not cover the company's cost of capital, the cost of capital is not a hard budget constraint (nor is wealth maximisation). I define this as a *soft budgeting problem in developped market economies* or *as the soft budgeting problem of capital.* It differs from the socialist version in the sense that managers are still under the pressure to produce results. But the most important similarity is that firms facing soft budgeting problems, as their socialist counterparts, do not use their resources as efficiently as possible. Socialist firms wasted human and capital resources. The same holds true for private firms exposed to soft budgeting problems, as they do not optimally allocate their resources, implying that the overall welfare of society is not maximised.

The capitalistic soft budgeting problem is defined by a weak and discontinuous control over management. If the soft budget of the socialist firms becomes rigid, and the firm cannot become more efficient, it quickly goes into default. If the soft budget of capital hardens for a private firm, there is no imminent default risk, as the firm operates efficiently by classical profitability standards. However, it means that shareholders have reorganised the capital budgeting of the firm, since they were unsatisfied with the return achieved. When shareholders restructure using debt, it is a process designated to harden the soft budget of capital. Because of the default risk due to higher indebtedness, they have less incentive to pursue negative NPV investments.

Alternatively, firms could go bankrupt, if shareholders increase the debt burden beyond a "reasonable" level even if management runs the company efficiently. This situation would be similar to the contraselection scenario as described by Stiglitz and Weiss on credit markets. However, it is questionable how effectively shareholders are able to change the capital structure of firms. We could further argue, that socialist firms who survived changes in the economic structure, were actually able to reduce agency costs to levels consistent with those of developed market economies. Profitability of firms cannot be measured only through standard financial measures of performances but the underlying replacement cost of capital must also be taken into account.

The free cash-flow theory and soft budgeting problems have however wider implications. When shareholders react to imperfections in corporate governance structures, they can provoke changes at firm level that can have a negative impact on macroeconomic conditions. Leverage-increasing restructuring can decrease the level of overall investments as it may lead to a hardening in the soft budget constraint of capital. This would then cause a decrease in the aggregate level of investments and trigger an economic downturn even when macroeconomic indicators look favourable. Through this mechanism, corporate governance, the principal–agent problem and information asymmetries (capital market imperfections) can become as much part of economic policy as government spending, tax rates or monetary indicators. We can truly argue that we have found another mechanism between capital markets and general macroeconomic equilibrium.

CONCLUSION

My research using a specific subset of companies provided evidence supporting the free cash-flow theory and its relationship to investments. By analysing such a subset, did I render the analysis any less valuable? One could always say that my research provided no general proof of the free cash-flow theory for the full data panel. However, given my opinion that the free cash-flow theory applies only in special circumstances, I find the results not surprising and conclusive for that matter.

The effects of the free cash-flow theory do, however, have greater implications than corporate governance issues. As demonstrated by the conclusions, this research allows for discussions on a broader range of topics such as managerial efficiency and firm performance. Moreover, the question of underlying business cycles was also aborded. Under the premises of the free cash-flow theory, when the soft budget of capital hardens, firms will react by decreasing their investments, ultimately resulting in a decline in aggregate demand for no particular macroeconomic reason. This leads to the conclusion that corporate governance (as a structural rather than a cyclical phenomenon) can be a transmission mechanism that should be considered in macroeconomic models (more evolved macroeconomic models always incorporated the effect of capital markets on the overall economy).

This paper besides proving the validity of the free cash-flow theory under special circumstances was able to show, I hope, another transmission mechanism through which capital markets can affect macroeconomic conditions. Market imperfections can definitely disrupt macroeconomic equilibrium, even when stan-

dard macroeconomic variables would suggest that everything is at its best. That is why a *well-performing corporate governance system* is essential for sustainable economic equilibrium.

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