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Cash Flow at Risk, Financial Flexibility and Financing Constraint

SUMMARY: The liquidity shock during the global crisis required corporate-level adjustment policies. The financial and real economy crisis revalued corporate liquidity, financing and investment flexibility, as well as the mitigation of corporate cash flow volatility using risk management techniques. This study links the corporate cash-flow-at-risk concept with financing flexibility through high risk capacity, highlighting the relationship between lower side risks and financing constraint in periods of decline in liquidity. A company determines the sequence of cash flow allocations over different cash commitments, such as marketing expenses, research and development, capital expenditure, dividend disbursement and debt service, in view of the expectations concerning future cash flow volatility. The low and high levels of corporate free cash flow resulting from a scenario analysis open up a new version of corporate valuation methodology enriched by cash-flow-at-risk models. With an increase in lower side risks, the role of risk management is to provide additional flexibility for investment and financing decisions.

KEYWORDS: cash-flow-at-risk, financing flexibility, hedging

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ENTERPRISE RISK MANAGEMENT

The holistically integrated approach of enterprise risk management (ERM) comes into antagonism with the risks managed independently and separately from one another, i.e. arranged in ‘silo type’ classes (*silo approach*). For example, financing, operational, competitive and legal risks belong to typical risk classes like this. The significance of risk aggregated at a corporate level lies in the degree of the probability of the company’s ability to meet important – operational, investment and funding – targets. The aggregate effect of the various risk exposures, which covers the present and future operating cash flows as well as the intertemporal trade-offs between investment and financing decisions,

has to be managed at a whole-company level. Risk aggregation allows the exploring of the interdependence of risks that depend on one another in various ways, and facilitates the management’s decision regarding which risks to keep and which ones to subject to risk management, in view of the *trade-off* between risk and opportunities. Enterprise risk budgeting (ERB) is a quantitative risk management method that unifies *portfolio theory* and corporate risk theory under the whole *corporate risk* universe (see *Table 1*).

Recognising individual factors of the total enterprise risk facilitates the predictability of the volatility of corporate free cash flow and its probability. In lieu of the deterministic models of traditional scenario analysis and vulnerability examinations, it builds upon a dynamic methodology based on a high number of simulations,

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Table 1

CLASSIFICATION OF APPROACHES TO CORPORATE RISK MANAGEMENT

		RISK AGGREGATION	
		NO	YES
RISK CAPACITY CONSIDERED	YES	Silo-Approach	Enterprise Risk Management (ERM)
	NO	Silo Risk Budgeting	Enterprise Risk Budgeting (ERB)

Source: Alviniussen – Jankensgård, 2009, page 16

while integrating enterprise risk management, financial planning, the cash-flow-at-risk concept and hedging.

CASH FLOW AT RISK

A distinction needs to be made between the various earning-at-risk (EaR) and cash-flow-at-risk (CFaR) measures. The former include operating income at risk (OpINC@R), earnings before interest, taxes, depreciation and amortisation at risk (EBITDA@R), earnings before interest and taxes at risk (EBIT@R) and net income at risk (NI@R). The cash-flow-at-risk concept was developed by the Riskmetrics Group within J. P. Morgan in 1999, when they attempted to create the cash flow equivalent of the VaR model. According to the Riskmetrics definition, the CFaR aims at the cash flow volatility that depends on market risks stemming from various factors, including foreign currency exposure, interest rate risk or revenues and expenditures sensitive to commodity prices. According to another definition, cash flow at risk, depending on the currently available information, refers to the probability distribution of corporate operating cash flow projected to a future time horizon. CFaR is a risk measure that provides information about the declines in corporate cash flow, which can be captured with a certain associated probability, and which are experienced by the

company from time to time. Therefore, it belongs to the subject of enterprise risk management (ERM). The difference between the CFaR and the analogy of value at risk (VaR) is that the CFaR focuses on the operating cash flow, whereas the VaR on the asset value, and the time horizon of the CFaR can even be a quarter or one year. The essence of the CFaR metrics is to condense the overall corporate risk exposure into one manageable figure. Management must be fully aware what risk measures are monitored by those concerned within the company, and has to disclose the related information in the form of a risk report accordingly.

The EBITDA is a popular factor of operating profitability, the probability normal distribution of which is risk management field. Corporate cash flow needs may fall victim to the risks appearing along the left tail of the normal distribution curve in the spectrum of the volatility of the operating profit before depreciation and amortisation. As a result of EBITDA shocks, the level of expenditures that can be allocated to the area of research-development-innovation has to be reduced, the magnitude of costs that can be spent on marketing has to be lowered, the approvability of decisions on future capital expenditures (CAPEX) has to be revised, the sustainability of the dividend disbursement policy has to be reviewed, and the affordability of debt servicing burdens needs to be questioned. On the asset side, these

items are the real option settlement prices of the implementation of future growth opportunities (R+D+I, CAPEX), whereas on the liability side they are the bases that ensure continuity for the funding background of this same future potential (dividend disbursement, debt service).

Based on *Chart 1*, the risk absorption capacity of the company (the area of cash surplus) is well distinguishable from its gradual shortage taking shape along the sacrificing of cash expenditure items (cash requirement). The high risk capacity indicates the possibility of manoeuvring, i.e. to what extent the company is able to survive hard times without having to adjust business activities in a costly manner. *Alviniussen and Jankensgård (2009)* call attention to three relevant areas:

- cash and securities levels as well as the amount of voluntary asset sale,
- capacity to take on additional debt and
- hedge positions.

In the case of *high risk capacity*, it is possi-

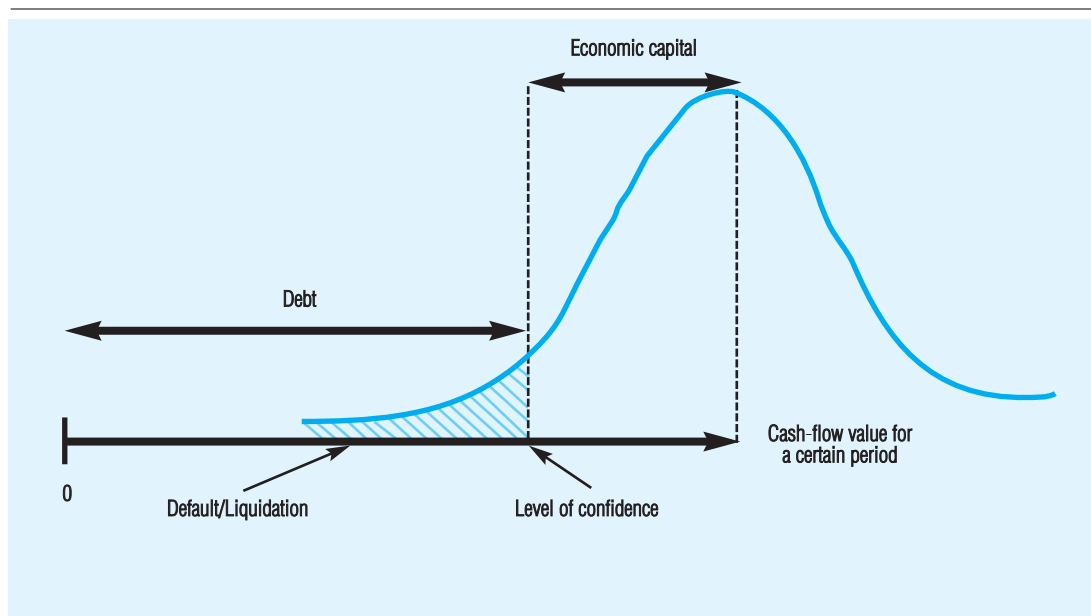
ble to realise the present value of growth opportunities (PVGO) and achieve the rate of return required by the financiers, i.e. to meet the expectations of the owners and creditors.

In the case of *low risk capacity*, present or future investment has to be restrained, expenditures on research-development-innovation need to be cut, marketing costs have to be reduced, annual dividend needs to be lowered or perhaps temporarily discontinued, or the company is compelled to breach creditors expectations (for example, covenants). Accordingly, in the allocation of funds to these areas management should strive for risk optimisation.

The missing cash flows along the left tail realisations are costly for the company. These implicit costs reduce shareholder value, the main areas of which may be captured in the lost present value of growth opportunities (PVGO), the lemon costs of the increasing risk premium of the user cost of capital, the costs of

Chart 1

NORMAL DISTRIBUTION OF THE PROBABILITY OF THE EBITDA



Source: Buehler et al., 2008, page 107

financial distress and in the costs of bankruptcy. Due to the decline in EBITDA, the commitment opportunities of the company are impaired over the cash payments required by the capital expenditures, owners and creditors, the earlier outlined negative series of events of which become even more costly when the debt service capacity also suffers a permanent shock. The cost of keeping negatively asymmetrical or skewed distribution exposures is usually much higher than that of positively skewed exposures. Moreover, if a company has a negatively skewed exposure, it seeks hedging transactions in a much more aggressive manner, and in the meantime its investment strategy will be less aggressive, but more diversified (Froot, 2003).

In terms of risk management, a company is able to *shape the EBITDA distribution probability curve* with its own operating, investment and financing decisions. According to *Buebler et al.* (2008), embedded risk management methods include:

- in operational decisions: value chain planning, outsourcing, labour cost saving, diversified production in a geographical sense, flexibility of supplier systems and hedging transactions (options, futures);
- in investment decisions: the identification of the negative NPV range and the application of real options;
- and in financing decisions: the trade-off relationship between cash flow at risk and corporate value as well as the relation between hedging transactions and debt capacity.

A company that is excessively exposed to aggregate corporate risk can move its risk level towards the optimum level by applying hedging transactions, lowering gearing, managing the individual risks of corporate assets using a portfolio approach or by applying risk reducing contracts in its operational activities. An overinsured company, in turn, may strive to reach the optimum level through additional

borrowing or by tapping the surplus cash flow in the form of cash returned to the owners, which adds to liquidity risk.

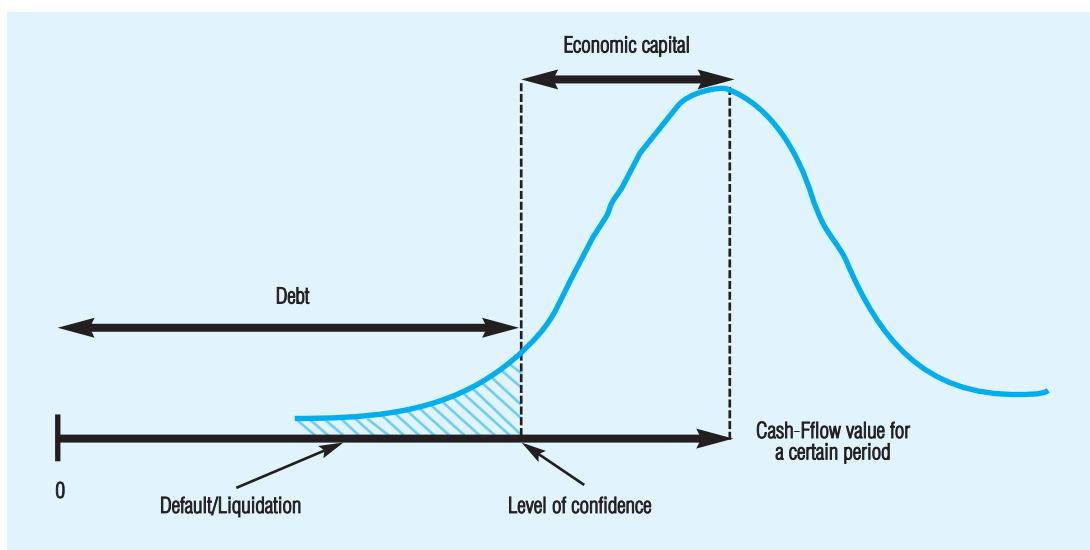
EBITDA and its riskiness constitute the operating cash flow related pillar of the free cash flow to firm (FCFF), and are thus key factors of corporate value. The consequences of left tail volatility may reduce corporate value. As long as the company manages and transfers risks at an acceptable cost and the probability of negative consequences is reduced, the value of the company can increase. *Bancel and Tierny* (2010) integrate the cash-flow-at-risk approach with the methodology of corporate valuation, when they apply the economic capital concept of *Merton and Perold* (1993) to non-financial corporations as well (see *Chart 2*). Economic capital indicates to what extent the company is able to absorb uncertainty and risk, i.e. to create a *survival buffer for the worst-case scenario*.

Pursuant to their cash-flow-at-risk model, with the help of scenario analysis, they distinguish between the minimum and maximum of the free cash flow to firm (FCFF). In their opinion, the minimum of FCFF is sufficiently safe for free cash flow to debt (FCFD); therefore, it is also a suitable basis for debt finance, which reflects the acceptable financing structure of shareholders' relative risk aversion. The difference between FCFF and FCFD is the economic capital, which the owners have to invest into the company. In this context, the significance of corporate asset diversification lies in the extent to which the stand-alone risk of the incremental cash flow generated by the individual asset is able to reduce whole-company risk and thus lower economic capital needs. To put it more to the point, equity capital is the option basket of risk pooling, a cushion against the risk of bad corporate performance.

There is a correlation between the minimum of EBITDA at risk and the so-called *below-target risk* concept of *Culp et al.* (1998). In the opinion of *Jankensgård* (2007), the limitations

Chart 2

ECONOMIC CAPITAL AND FIRM RISK PROFILE



Source: Bancel-Tierny, 2010, page 10

of cash flow at risk lie in the fact that on the shortfall of cash flow the concept does not reflect the costly 'states of nature', i.e. it disregards the costs of risk. This problem is addressed by the introduction of the conditional lower partial moments (CLPM) framework (see Table 2), which allows distinction between non-risky and risky outcomes by including a critical threshold level (Jankensgård, 2008). Non-risky liquidity shortfall may be supplied with funds by external financing up to the extent of the debt capacity, when the company is still able to continue with its strategic plans (R&D, CAPEX) and to meet its other important cash commitments (such as dividend and interest payment); risky liquidity shortfall may result in negative consequences of the missing debt capacity. The former is called *covered*, whereas the latter is referred to as *uncovered liquidity shortfall*.

It is about creating a cash flow risk (liquidity risk) measure that depends on debt capacity, where, according to Froot *et al.* (1993), debt capacity itself is also a stochastic, state-dependent

variable. The conditionality of the correlation between cash flow at risk and debt capacity may be linked to the net debt/equity ratio¹, debt covenants or credit rating. Moreover, a business plan may also serve as the basis for the targeted level. The framework of conditionality that can be included in the CFaR model, can be expanded by the inclusion of the conditionality related to macroeconomic and market factors (Andrén *et al.*, 2005), or with three corporate factors: with the development of the conditionality related to total assets, capital expenditure (CAPEX) and change in net working capital (Δ NWC) (Maurer, 2011) as well.

CASH FLOW AT RISK AND FINANCING FLEXIBILITY

The relationship between financing policy and financial flexibility can be understood in the context of the management of the total – systematic and company specific – risk. Financing flexibility refers to the company's

MAIN APPROACHES TO CORPORATE RISK MEASUREMENT

RISK MEASURE/Framework	CONCEPT	COMMENTS
Standard deviation	Measures the degree of dispersion around the mean	<ul style="list-style-type: none"> • Symmetrical perception of risk • Relies on normal distribution
Cash Flow at Risk	Measures the maximum loss associated with a certain statistical confidence level	<ul style="list-style-type: none"> • Asymmetric, i.e. treats losses differently than gains • Based on operating cash flow
Lower Partial Moments (LPM)	Measures risks as the deviations below a target level penalised by a risk aversion coefficient	<ul style="list-style-type: none"> • Adopts easily to varying levels of risk aversion • Makes no explicit reference to debt capacity
Conditional Lower Partial Moments (CLPM)	Makes reference to a second probability distribution to separate risky from non-risky shortfalls	<ul style="list-style-type: none"> • Incorporates information debt capacity

Source: Jankensgard, 2008, page 8

ability to react to unexpected corporate cash flow changes or investment opportunities in due course and in a value maximising manner. It means the way companies treat negative cash flow shocks and the way they are able to react to the positive shocks of their investment opportunities. From the aspect of liquidity management there are various interrelations among costly external financing, uncertain cash flows and unpredictable growth opportunities (Denis, 2011). The issues of financing flexibility cover the holding of cash, the cash flow sensitivity of cash holding, the real effects of corporate liquidity as well as the capital structure and dividend policy decisions that provide the flexibility of the access to low-cost financing. The existence of financial frictions makes financing policies that preserve flexibility even more valuable. If external financing is costly, companies are interested in accumulating financial slack in order to avoid shocks to profit or to investment opportunities.

The relationship between financing flexibility and the normal distribution of cash flow at risk has to be managed by the company in the return/risk dichotomy between the preserva-

tion of growth opportunities (R&D, CAPEX, PVGO) and the access to capital market financing (dividend, debt service), while cash payment commitments may have their shares in the whole-company operating cash flow periodically in a volatile market environment. High risk capacity entails a high degree of financial flexibility. During recession, as a result of profit losses, credit contraction and the fall in shareholder value, cash flow volatility increases, the shape of the normal distribution curve changes, and financing flexibility alters as well.

It is an interesting question how *forward-looking financing flexibility* is managed by companies expecting future probability of recession. The latter refers to the framework of conditionality of the CFaR model extended to macro factors. According to a survey of French firms about the impact of the global financial crisis, two-thirds of chief financial officers reported a strong impact of the crisis and cited liquidity problems, banks' reluctance to lend and cost cutting as their major concerns, and only firms with internal financing were exposed to lower crisis impacts (Bancel –

Mittoo, 2010). During recession, typically the other forms of flexibility – such as overdraft facilities, cash flow, asset sales and debt capacity – dry up. Consequently, cash holdings become important, but only financially unconstrained companies that have no lack of *ex ante* cash are able to accumulate such reserves (Ang – Smedema, 2011). Understandably, the motivations of keeping cash reserves include the volatility of operating cash flow, which can be reduced by corporate diversification. It is no coincidence that the value of cash holdings is significantly lower at diversified firms as opposed to single-segment ones (Tong, 2011).

FORMS OF FINANCING FLEXIBILITY

Cash holdings are a source of financing flexibility. Increased cash holdings in the decade of the turn of the millennium are attributable to increasing cash flow volatility and the level of intangible assets (Bates et al., 2009). The value of cash holdings grows together with the increase in the uncertainty of future cash flows (Gamba – Triantis, 2008). In terms of flexibility, cash holdings provide unconditional liquidity at any time, whereas credit lines mean conditional liquidity, because they are open until the creditor is ready to renew its commitment again and again, if the firm does not breach a covenant, and its creditworthiness is also maintained.

Credit line contracts account for the greater part of the outstanding debt of most firms. Moreover, the amount of unused lines of credit is twice as much as that of used ones (Sufi, 2009). For companies with low cash flow and high agency costs, cash holdings and credit line cannot be considered liquidity instruments that substitute one another (Yun, 2009). As corporate liquidity sources, lines of credit are imperfect substitutes for cash, because access and borrowing through a credit line are tied to the

conditionalities of the debtor’s credit rating, its alternative external sources and, in the case of financial constraint, its high external financing costs as well as of the creditors’ conditions (Demiroglu – James, 2011). The two types of corporate liquidity are used to cover different risks. Cash holdings for non-operating purposes provide protection against future cash flow shocks in bad times, while credit lines provide an option for companies, allowing them to exploit future business opportunities at the right time. In other words, companies hold cash surpluses as general-purpose assurance, while credit lines are for financing future growth options (Lins et al., 2010).

The issue of *debt capacity* is also a pillar of great importance in terms of financing flexibility. Debt capacity is the extent to which the company is able to access to new loans at a user cost that does not exceed the the company’s expected risk-adjusted rate of return on these additional sources. Debt capacity is sometimes defined as ‘untapped borrowing power’. A company’s debt capacity becomes exhausted if borrowing by the company is limited, it does not receive new loans or its balance sheet is so weak that new borrowing adds to the costs of financial distress in the future. Not surprisingly, companies primarily use their cash surpluses for debt repayment instead of stock repurchases or accumulating cash reserves (Byoun, 2008). The maturity structure of loans also plays a role in the manageability of debt capacity. *Short term debt overhang* limits a company’s willingness to invest more strongly than long term debt overhang (Diamond – He, 2010). During the 2008 credit crisis, investment declined more significantly in the case of those companies where the portion of long-term loans maturing within one year was higher than in the case of those where this portion was lower (Almeida et al., 2010). Accordingly, short term debt overhang is a weak link of debt capacity during a credit crisis.

Debt capacity opens new dimensions in capital structure dynamics. Companies are interested in maintaining low leverage as long as they can preserve their borrowing power for the periods of high capital needs (DeAngelo – DeAngelo, 2007). When cash flow is scarce, the possibility of access to so-called *transitory debt* is the source of financing flexibility for satisfying non-anticipated capital needs (DeAngelo et al., 2011). Following temporary borrowing, it is not the primary objective of firms to rebalance their capital structure towards a long-run target through debt repayment as soon as possible. In fact, corporate cash flow surplus is needed to reduce the level of indebtedness; if liquidity remains scarce, they borrow even more, even if leverage becomes significantly higher than the target ratio (Denis – McKeon, 2011). As reflected by the results, debt ratios may simultaneously and in parallel have permanent and transitory components.

The so-called transitory debt shapes corporate capital structure dynamics in the context of *intertemporary financing frictions*. The opportunity cost of debt in the present may be that the firm will not be able to borrow in the future. Optimum financing policies *ex ante* preserve the *ex post* access to capital markets in the case of cash flow declines or unexpected investment opportunities.

In times of scarce liquidity, financing flexibility may also be provided if the company unblocks cash flow by *asset sales* in order to avoid restraining investment or dividend disbursement. For constrained companies, the cash flow sensitivity of investment to funds from voluntary asset sales is significantly stronger than that of the control group (Hovakimian – Titman, 2003). However, the illiquidity of corporate assets makes this option unaffordably costly (Shleifer – Vishny, 1992; Pulvino, 1998).

Cash disbursement to owners is the fourth major area of financing flexibility, in addition

to cash holding, debt capacity and asset sales. After satisfying the investment needs and debt service obligations, the company may either return its remaining flow of money as dividend and stock repurchase to the owners, or may reserve it in the form of cash and securities. Of the cash returned to shareholders, stock repurchase allows greater flexibility for the company than the ‘sticky’ dividend disbursement, although there is flexibility in the latter as well if the disbursement policy complies with the corporate life cycle. In a dynamically changing, uncertain environment, the dividend flexibility hypothesis (DeAngelo – DeAngelo, 2006; Blau – Fuller, 2008) suggests that rapidly growing companies pay dividends in line with flexibility considerations, whereas slowly growing ones pay because of the agency problem of free cash flow (Lee et al., 2011).

The lesson from the S&P survey conducted on a sample of 1,500 companies for the period between 1992–2006 is that very few firms (6%) cut dividends, the majority (68%) prefer to make significant cuts in investment. Investment cuts make up for approximately half of the shortfall in cash flow, with the other half being covered primarily by debt financing. Net equity issues, reductions in cash balances and asset sales account for a trivial percentage of the shortfall (Daniel et al., 2010). On this basis, the authors draw some important conclusions that question the earlier consensus prevailing in the relevant literature:

- the significance of debt capacity is higher than that of cash holding in times of scarce liquidity,
- in the cash flow hierarchy, dividend disbursement precedes residual investment policy,
- in capital structure dynamics, the so-called transitory debt builds up and increases corporate leverage as a result of cash flow deficit; later, in times of cash flow surplus, the firm repays its debt, and thus the

volatility of indebtedness ratio largely moves together with the changes in cash flow in time.

Financing flexibility depends on *operating flexibility*, and vice versa. Financial flexibility facilitates the maintenance of operating flexibility (Shapiro, 1990). Due to managerial discretion, the untrackable production flexibility increases risk shifting, which reduces debt capacity. In contrast, due to managerial opportunism, investment flexibility adds to the problem of asset substitution, which the creditors attempt to prevent with restrictive contracts and stricter covenants, but this form of real flexibility allows higher debt capacity. Based on this argumentation, *real and financial flexibility are substitutes* (MacKay, 2003).

One must not forget the ‘*dark side*’ of *financing flexibility* either. In addition to the higher agency costs, the relatively poor investment opportunities move the palette towards the policy of a higher cash disbursement to owners (Officer, 2011), which results in increasing liquidity risk. Moreover, higher cash holding carries lower rate of return, exacerbates agency problems through the managerial empire building, the higher level of equity forgoes the tax savings of interest payment, increasing the weighted average cost of capital, and hedging transactions also have their own disadvantages.

CASH FLOW AT RISK AND FINANCIAL CONSTRAINT

The lower side risks of the normal distribution of cash flow at risk raise the problem of financial constraint. If the operating cash flow does not reach the expected degree of investment and dividend payment, the company needs to reduce dividends and restrict investment, or needs to raise funds in the capital markets or through asset sales. Constrained firms that show continuously low and declining cash

flows are unable to accumulate adequate cash reserves; consequently, the investment costs of these companies largely depend on the current cash flow (Denis – Sibilkov, 2010).

The correlation between cash flow and investment on the basis of the different costs of internal and external funds is discussed in the literature of financial constraint (Fazzari et al., 1988). Internal funds are cheaper than external ones due to capital market frictions, such as information asymmetry (Myers – Mayluf, 1984) or agency problems (Myers, 1977, Jensen – Meckling, 1976, Jensen, 1986). These imperfections may result in credit rationing or situations where the feasibility of corporate investment depends on internal financing.

Firms facing financial constraints are unable to implement additional future investment without reducing their current investment or without striving to hold more cash, as they have depleted their external sources of financing. Constrained firms show higher willingness to reserve cash from the incremental cash flow than unconstrained firms. Moreover, the cash flow sensitivity of the cash holding of constrained firms increases in times of recession, which is not true for unconstrained companies (Almeida et al., 2003). During the crisis, companies that had limited access to credit lines had to decide between savings and investment, while firms that did not struggle with cash shortage could afford higher levels of expenditures. Consequently, credit lines mitigated the impact of the global economic crisis on corporate spending (Campello et al., 2010). The higher cash holding of financially constrained firms is also sensitive to cash flow volatility because the financing constraint creates intertemporal trade-off between current and future investments (Han – Qiu, 2007). According to the authors, the non-diversifiable nature of future cash flow volatility incites constrained firms to hold precautionary cash.

For financially constrained companies, the long-term costs of the liquidity shock of the global economic crisis materialise in the drastic cuts in cash expenditure that are reflected in the reduced or cancelled investment expenditures (of positive net present value), in lay-offs, in curtailing the amounts spent on research and development, and that undermine future growth prospects and value creation (Campello et al., 2009). With financing constraint, a firm without adequate cash reserve can become illiquid and can be forced into a state of default, while it still remains solvent over the long term. Interaction between liquidity and solvency is provided by information, hedging transactions and channels of leverage (Gryglewicz, 2011).

HEDGING TRANSACTIONS

Operational and financing hedging transactions may reduce the consequences of costly volatility and ensure the level of corporate cash flow. Risk management transactions create operational and financing flexibility, and thus may create corporate value. Risk management – referring back to the cash flow at risk and economic capital models – can practically be considered the direct substitute of equity (Stulz, 1996), because it creates debt capacity. In general, corporate level *advantages* of risk management, and thus of hedging strategies, include:

- the reduction of bankruptcy costs (Smith – Stulz, 1985), the mitigation of expected tax payment,
- the reduction of shareholders' risk compensation (Shapiro – Titman, 1986),
- the management of the underinvestment problem due to external financing costs (Froot et al., 1993),
- the avoidance of dividend reduction steps (Lessard, 1990) and

- the exemption from the involuntary sale of assets (Schleifer – Vishny, 1992).

The inefficient market of corporate assets, in other words the risk of asset illiquidity, encourages firms to apply hedging transactions, as relative to the discounted value of future cash flows the compulsory sale of assets represents a further discount (Jankensgård – Hagströmer, 2011).

The *disadvantages* of hedging transactions appear if in the forward contracts the upside potential has to be given up, if it would have been possible to use the option premium in an alternative manner as well (for example as investment expenditure), if the accounting of hedging transactions results in accounting noise, if the so-called 'margin call' makes liquidity troubles and if the poorly structured hedging transactions trigger 'hidden risks' (Alviniussen – Jankensgård, 2009).

If there is a *liability overhang* in the balance sheet, underinvestment makes hedging strategies valuable, but if access to external funds is sufficient for the cash needs of the firm, i.e. debt capacity can be depleted, hedging transactions become less attractive. Referring to Table 2, if the difference between the lower partial moment (LPM) and the conditional lower partial moment (CLPM) is positive, hedging transactions may actually function as equity substitutes (Jankensgård, 2008).

CONCLUSIONS

In a volatile environment, the demand for flexibility increases, which the firm's management needs to take into account in the asset management, capital structure and dividend policies in an integrated manner. Corporate decisions regarding cash holding, the adjustment and timing of investment and the voluntary sale of assets provide asset-side flexibility; credit lines,

‘transitory debt’ and cash disbursement to owners mean liability-and-equity-side flexibility. Liquidity flexibility is less valuable in the high risk absorption ranges of cash flow at risk

than in the lower one. The management of left tail risk builds debt capacity and substitutes equity, and on the whole it may create corporate value.

NOTE

¹ Net debt refers to short- and long-term interest-bearing liabilities less cash and securities holdings. Almeida et al. (2006) call attention to the weak point of this indicator; in their opinion, cash can-

not be considered ‘negative’ debt when financing frictions exist, if it is the cover for funding future investment in the case of a decline in profit.

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