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Capital Structure and Profitability

S&P 500 Enterprises in the Light of the 2008 Financial Crisis

Diplomica Verlag

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ISBN: 978-3-8366-4547-8
Herstellung: Diplomica® Verlag GmbH, Hamburg, 2010

Contents List

Abbreviations

AV	Average (e.g. profits from 2004 to 2008)
bn	billion
CCEG	Cash and Cash Equivalents Generic
CD	Consumer Discretionary (Sector/Industry)
CE	Capital Employed
CEO	Chief Executive Officer
CI	Confidence Interval
CS	Consumer Staples (Sector/Industry)
DP	Dividends Payments
EBIT	Earnings before Interest and Tax
EN	Energy (Sector/Industry)
FI	Financials (Sector/Industry)
H	Hypothesis
HC	Health Care (Sector/Industry)
IN	Industrials (Sector/Industry)
IT	Information Technology (Sector/Industry)
MA	Materials (Sector/Industry)
MM	Modigliani and Miller
N	Number of Cases (Sample Size)
NA	Not Applicable
NIATC	Net Income Available to Common
NPV	Net Present Value
PAT	Profit After Tax
PBT	Profit Before Tax
PCC	Pearson Correlation Coefficient
R&D	Research and Development
ROCE	Return on Capital Employed
S&P	Standard and Poor's
Std. Dev.	Standard Deviation
SG&A	Selling, General and Administration Expenses
Sig.	Significance (Level)
SPSS	Statistical Package for Social Sciences
TE	Telecommunication (Sector/Industry)
USD	US Dollar
UT	Utilities (Sector/Industry)
WACC	Weighted Average Cost of Capital

1 Introduction

1.1 General Definition and Justification of Issues and Objectives

The publication of the Modigliani and Miller (MM) capital structure irrelevance theorem in 1958 and the subsequent preference of purely debt financing due to tax advantages in 1963, was in contradiction to traditional approaches which suggested an optimal capital structure. Meanwhile the theories of MM are academically accepted (Fama and Miller 1972; Kraus and Litzenberger 1973; Miller 1988; Frank and Goyal 2009) and out of competition with other approaches, since the underlying assumptions, especially the existence of perfect capital markets, is considered as unreal (Jackson 2009). However, in every economic boom, when access to capital becomes easier, financial markets seem to come close to the conditions of perfect markets, characterised by high competition and prosperity.

It is found that the western economic order is marked by asset bubbles that resulted in over one hundred crises over the last three decades (Stiglitz 2008) and which bring companies back to reality with a hard landing. Access to capital becomes extremely restricted and uncertainty dominates as the collapse of Lehman Brothers in September 2008[1] showed. Although signs were evident in 2007, the change from prosperity to depression can come overnight, where free market policy shows its true face, with unpredictable damages deeply wounding in the economy, and seeming to paralyse even the most experienced economists (Atkins and Guha 2009).

[1] http://business.timesonline.co.uk/tol/business/industry_sectors/banking_and_finance/article4761892.ece (accessed 03.04.09)

Since liquidity becomes a scarce resource and consumption declines, free cash flows that were previously available to finance an amply corporate structure, dividends and bonuses, are likely to fall. As debt, if any, must still be paid back – often to worse conditions than before (Johnson 2009) – corporations might run out of liquidity, as has happened to major US companies during the last twelve months (Tieman 2009; Sakoui 2009). Also, investments that ought to ensure future profits are likely to be reduced or to come to a still stand (Giles 2009), sending firms and the economy in a downward spiral. However, as experienced and predicted by Copeland (2005) and Greenspan (2008), systematic organisations which are considered as 'too-big-to-fail' are offered bail-outs at the cost of society.

This study aims to investigate the impact of the capital structure on the profitability of large capitalised US companies. It does not, therefore, aim to test existing theories, nor does it try to find a model to predict one or another capital structure, since numerous attempts have previously been made that have so far struggled to capture the full complexity of the real world (Arnold 2008; Ross *et al.* 2008; Watson and Head 2007). Rather, it focuses on correlations between capital structure and profitability and major profitability-associated measures that can have an impact on a firm's survival, i.e. liquidity, dividends, investments and the impact of an industry-related target gearing ratio as a potential systematic risk. Thus, this work is supposed to contribute to the understanding of how resistant companies are to financial distress, and it provides evidence on the extent to which vulnerability can be reduced to prevent major systemic crises by means of their capital structure adjustments through the awareness of shareholders and corporate governors.

1.2 Research Questions and Methodology

The basis of this research project is a selection of secondary performance data over the period from 2004 to 2008 of firms listed in the Standard & Poor's 500 index (S&P 500) in January 2004. The index represents the 500 largest capitalised US companies among ten sectors that reflect the whole US market (Standard & Poor's 2008a). The combination of the US market and the S&P 500 companies, who have access to the widest range of financial sources, is expected to give a highly reliable result to find empirical evidence for the following research questions.

Question 1. According to the MM theorem and the pecking order theory that relies on information asymmetry between insiders and investors (Myers 1984), leverage should not depend on the industry a firm is in. However, evidence (Ross *et al*. 2008; Antoniou *et al.* 2008) suggests that firms in different industries operate with different capital structures. Thus, the first hypothesis (H_1) is to verify whether industry-specific leverage exists.

Question 2. Since revenues are likely to decrease in an economic downturn, this reduces a firm's ability to meet debt payments, which is expected to have a negative impact on profitability. The second and central hypothesis (H_2) is, therefore, that a negative correlation between gearing ratio and profitability exists, i.e. higher geared firms are less profitable. As this research question is the centre of attention, it merits a deeper investigation than all other hypotheses, especially for the years 2007 and 2008.

Question 3. Most of the companies are affected by financial distress, not because they are not unprofitable, but because they have no liquidity (McLaney and Atrill 2008). If cash inflows decline, firms are likely to be unable to finance current expenses, including the interests on debt. Hence, the third hypothesis (H_3) is the existence of a correlation between gearing ratio and liquidity. Higher geared firms are supposed to have lower cash positions, especially in 2008.

Question 4. Investments in R&D are crucial for survival and competitiveness of firms within some industries. Since higher geared firms must concentrate more to the avoidance of financial distress, they may tend to reduce expenses in long-term R&D projects that have no immediate effects. The aim of the fourth hypothesis (H_4) is to prove whether a correlation between gearing ratio and R&D expenditure exists, especially in 2008, that is expected to have a negative influence on future profits.

Question 5. Highly geared companies are encouraged to pay out higher dividends by transferring wealth from bondholders to shareholders (Ross *et al.* 2008), although managers should have an incentive to reduce them if liquidity becomes a scarce resource. The fifth hypothesis (H_5) is, therefore, to find evidence of the existence of a correlation between gearing ratio and dividend policy, especially in 2008.

1.3 Overview and Organisation of Chapters

This book is organised into seven sections, each with a brief statement at the beginning and the end of the issues previously and subsequently discussed. Although this might

seem repetitious, it enables the reader to go through in multiple sessions. The following few paragraphs give an outline of the next six sections.

After the introduction and definition of the above stated research questions, section 2 attempts to review the existing literature on capital structure with a discussion of the main theories, after which a more detailed focus on the fields in respect of the research questions is provided.

Section 3 discusses and justifies the methodology used to answer the research questions, which refers to data sampling and data collection, the treatment of missing values, the variables defined and applied hypothesis testing methods.

Section 4 outlines the key findings in respect of the hypotheses initially stated, which are then analysed and discussed. Where appropriate, the results found are related to the most relevant findings discussed in the literature review.

Section 5 recalls the research objectives and findings previously obtained. After that, it concludes with the underlying assumptions required for the implications drawn from those findings, which are part of the next section.

Section 6 attempts to identify management implications and recommendations to solve the issues. Based on the results revealed from the sample, it aims to identify measures in reducing vulnerability and systematic risk in order to achieve sustainable economic growth without adverse effects for society.

Ultimately, section 7 points to the achievement of the objectives of this study, its strengths, weaknesses and limitations.

2 Existing Theories and their Predictions

In the previous section the objective of this paper and its importance, as well as the research questions are stated. This section reviews existing literature and discusses major capital structure theories that are subsequently related to the core aspects stated in the five research questions, where theories and findings are analysed in more detail and lead to the expected predictions.

2.1 Existing Theories

Following the publication of "The Cost of Capital, Corporation Finance and the Theory of Investment" by Modigliani and Miller in 1958, scholars became busy for a while trying to provide evidence that capital structure, i.e. the mix of equity and debt, is not irrelevant for a firm's value. With the MM theorems, the traditional approach, according to which "an optimal capital structure *does* exist for individual companies" (Watson and Head 2007:264) – determined by gearing level, volatility of profits, bankruptcy risk and the weighted average cost of capital (WACC) – was rejected (Ross *et al.* 2008). To explain that the capital structure is irrelevant, MM (1958:279) used the analogy of a dairy farmer, who "cannot in general earn more for the milk he produces by skimming some of the butter fat and selling it separately, even though butter fat, per unit weight, sells for more than whole milk." Thus, it does not matter whether a company is financed by 100 percent equity or 100 percent debt, or any mix of the two, because "the increased cost