Target Capital Structure Determinants and Speed of Adjustment Analysis to Address the Keynes-Hayek Debate

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Abstract: According to F. A. Hayek, Keynes' General Theory neglects an analysis of the production structure. As a contribution to this research gap, we look at companies' decisions to finance investments and at their agility to adjust their capital structure. We thus study the relationship between capital structure to finance corporate production and shifts in aggregate demand. Target capital structure determinants and speeds of adjustment to these target capital structures will be analyzed for a geographically comprehensive sample of 2,706 companies listed in Asia, Europe and the U.S.A. in the period 1995 – 2009. Aggregate demand turns out to be the coordinating force which determines managers' choices of target capital structures. The speed of adjustments towards target capital structures indicate that firms are agile in adapting to their targets. Our results provide evidence on Keynes' General Theory from a firm level perspective: Firms respond quickly to shifts in aggregate demand by adjusting capital and production structure correspondingly.

Keywords: Keynes, Hayek, capital structure, dynamic adjustment, panel models.

1. INTRODUCTION

Friedrich A. Hayek's point of view, explicated by Bas (2011), sees a major deficiency of Keynes' "General Theory" (Keynes, 1936) in the fact that it is not based on a theory of capital. According to Hayek, the market constitutes a network of companies working with each other. Thus the market forms a complex production structure. Keynes' concept of aggregate investment, as seen in the pure macroeconomic perspective, should therefore, according to Hayek, be supplemented with insights from the underlying real processes within the market network. This critique is valid if the network of companies and the market structure reveal economic behavior that is unrelated to aggregate demand. Hayek's critique should be of lesser importance if the network of companies and the market structure always and fluently adapt to aggregate demand.

One contribution to close the research gap mentioned in Hayek's critique can be made by studying the financing and investment decisions at firm levels. The financial decision-making of managers leads to a better understanding of the real economy and of market networking and market structures. Related to the Keynes-Hayek debate is the question of the nature of determinants for financing and capital structure decisions in firms. Are these determinants unrelated to aggregate demand or are they simply translations of aggregate demand? The international validity of capital structure theories and dynamic corporate financing decisions in the major regions of the world economy are subject to ongoing and current research. This research has already revealed factors which drive capital structure choices and determinants of the speeds of adjustment towards target capital structures. These are firm-, industry- and region-specific factors, and their understanding contributes to fill the research gap pinpointed by Hayek.

Regarding the choices in financing, research of listed firms in the U.S.A. shows significance of the Tradeoff Theory and of firm-specific capital structure determinants (Frank and Goyal, 2009). A significant headquarters location effect is evident within the U.S.A., which is attributed to geography and community driven differences in corporate finance decisions (Gao *et al*., 2011). Evidence on Asia reveals the dominance of pecking-order financing, while the validity of the Tradeoff Theory is still disputed (Fan and So, 2004; Getzmann *et al*., 2014). This evidence is in contrast to findings for Europe, where the Tradeoff Theory appears to be valid in certain countries (Rajan and Zingales, 1995; Drobetz and Fix, 2005; Ozkan, 2001; Bevan and Danbolt, 2002; Bontempi, 2002; De Miguel and Pindado, 2001).

Clark *et al*. (2009) present evidence on the speed of adjustment towards target capital structures in European and Asian markets. They discuss whether the observed adjustment speed towards target capital structures represents a tendency to a long-run average or is a deliberate corporate finance choice. Furthermore, in their international study Fan *et al*. (2011) point out that institutional variables, such as the

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strength of the legal system, the existence of deposit insurance and to some extent the preferences of capital suppliers determine how corporations structure the liability side of their balance sheets. Öztekin and Flannery (2012) present country-specific evidence on how institutional features affect transaction costs of firms' financing decisions and find that adjustment speeds vary with differences in financial system features.

The aim of our study is to test the determinants of capital structures and adjustment speeds towards target capital structures in Asia, Europe and the U.S.A., with regard to industry- and firm-specific effects. Conducting the study gives insights on the impact of aggregate demand on companies' financing decisions and the companies' agility to adapt their capital structures to cope with shifts in aggregate demand. We impose a size restriction of 1bn. US-Dollars on corporate market capitalizations, which allows us to establish comparability in the global dataset. This enables us to investigate capital structures across the major regions of the world economy, as we control for different financing cost structures in small and large companies (Hennessy and Whited, 2007). First, we test the Tradeoff Theory based on time-varying endogenous and exogenous factors by following seminal studies of U.S. capital markets (Flannery and Rangan, 2006). In a second step, we estimate the speed of adjustment, which companies display in adapting their balance sheets to target capital structures (Huang and Ritter, 2009). Our article is organized in six sections. Section two gives an overview of the literature on empirical capital structure research. In sections three and four, we introduce the econometric methodology and the data sample. Section five discusses the empirical results and section six concludes the study.

2. LITERATURE REVIEW

The theoretical basis of capital structure research is the seminal study by Modigliani and Miller (1958) who prove, that the value of a company is independent of debt financing in perfect capital markets. If these assumptions are relaxed by allowing for taxes, informational asymmetries and transaction costs, further theories are able to explain capital structure and corporate finance decisions as optimal with regard to the maximization of corporate value. Empirical research has focused on validity tests of two particular theories on capital structure choices in imperfect capital markets: the Static and Dynamic Tradeoff Theory and the Pecking Order Theory. The following literature review focuses on the milestones of empirical capital structure research.

2.1. Static and Dynamic Tradeoff Theory

Modigliani and Miller (1963) research capital structure decisions in a market setting where taxes exist. As tax exemptions on interest payments result in a tax shield, firms should increase the use of debt until a higher probability of financial distress makes debt financing too costly. Companies increase the use of debt to a point where the marginal cost of debt, including the costs of higher credit risk, equals the benefits of debt over equity financing in the form of realizing tax shield benefits and benefits of higher returns on equity. Thus, an optimal capital structure point should exist, defined as the proportion of debt to equity, which maximizes the corporate value under given assumptions.

Bradley *et al.* (1984) report evidence on the Static Tradeoff Theory. Bris *et al.* (2006) report a rising utility of the tax shield with higher profitability, higher tax rates and lower depreciations, furthermore estimating the costs of financial distress between 2% and 20% of asset values. In U.S.-capital markets positive correlations exist between leverage, company size, the tangibility of assets, expected inflation and the industry median of leverage (Frank and Goyal, 2009). Positive shocks to profitability lead to an increase in equity and a decrease in debt. In addition, survey-based information shows that 10% of U.S. and European firms have a strict target debt ratio and another 34% of firms in the U.S., respectively 66% in Europe, follow a target debt to equity ratio (Brounen *et al.*, 2006; Graham and Harvey, 2001). For companies from Thailand, Malaysia, Singapore and Australia, Deesomsak *et al.* (2004) find that target capital structure ratios are determined by non-debt tax shield, liquidity and share price information.

The Dynamic Tradeoff Theory implies that the optimal target capital structure of companies adjusts over time and is therefore a function of changing exogenous and endogenous factors. Fischer *et al.* (1989) study dynamic capital structure choices in the presence of transaction costs and find empirical evidence on firm-specific effects, which are related to firms' debt ratios. Leland and Toft (1996) focus on endogenous levels of bankruptcy and explain the optimal amount and maturity of debt. Hennessy and Whited (2005) present the Dynamic Tradeoff Theory with endogenous choice of leverage and real investment in the presence of taxes and transaction costs. They find that leverage is path dependent and decreasing in liquidity. Endogenous investment and financing choices are incorporated by Titman and Tsyplakov (2007) in a model with bankruptcy costs, financial distress and transaction costs. They find that firms, which are subject to financial distress costs and firms without conflicts of interest between debt- and equity-holders adjust quicker to target capital structures.

2.2. Pecking Order Theory

The roots of the Pecking Order Theory can be traced to Donaldson (1961), Myers (1984) and Myers and Majluf (1984) who propose it as an alternative model to the Tradeoff Theory. The traditional version of the Pecking Order Theory stipulates that firms prefer internal to external financing and debt to equity if retained earnings are insufficient. Firms therefore do not pursue target capital structures, but managers decide individually on financing based on net cash flow. Myers (1984) extends the Pecking Order Theory by assuming that asymmetric information between managers and investors causes costs of adverse selection. The adverse selection costs stem from share price decreases when new equity is issued, because investors suspect an overvaluation. On the other hand, the issuance of debt increases the probability of financial distress, which in turn increases the cost of capital. Thus, firms always recur to internal financing for new projects first. If no internal resources are available, the safest among risky securities are issued first, and hence debt ranks before equity in many large firms.

Empirical evidence on the Pecking Order Theory is less clear. In the U.S.A., Frank and Goyal (2003) find little evidence for pecking order financing in companies. In Asia there exists some evidence on country-specific pecking order financing. For example Wiwattanakantang (1999) finds evidence on tax effects, signaling effects, and agency costs in financing decisions, indicating the validity of the Pecking Order Theory for the Thai capital market. Fattouh *et al.* (2005) find significant nonlinearities in the determinants of capital structures of South Korean firms from 1992 until 2001. This suggests the validity of the extended version of the Pecking Order Theory, which includes asymmetric information. However, Seifert and Gonenc (2008) find no support for the Pecking Order Theory in a multitude of emerging markets. Firms in emerging markets issue equity more often than would be expected under the Pecking Order Theory, indicating that economic growth is financed on an entrepreneurial basis. Research on European capital markets shows consistent findings with the U.S.A. on pecking order financing, evident through the correlation between leverage and stock price movements (Bessler *et al.*, 2008). There seems to be greater validity of the Pecking Order Theory in small firms and in countries, whose economies have small firm structures, such as Spain (González and González, 2012). Higher information asymmetries between equity and debt holders of small firms are due to firm location effects and the fact that the quality of financial analyst coverage seems to be related to the geographical proximity between firms and banks (Arena and Dewally, 2012).

3. CAPITAL STRUCTURE DETERMINANTS AND DATA DESCRIPTION

3.1. Capital Structure Determinants and the Impact of Shifts in Aggregate Demand

The selection of capital structure determinants is based on significant results for the U.S. market as reported by Frank and Goyal (2009). Subsequently, Table **1** gives an overview on the proxies and their signs predicted by the Tradeoff Theory and the Pecking Order Theory, as well as whether an impact of aggregate demand is predicted.

At the company level, an increase in aggregate demand is a call for capital investment in the production structure, while a decrease in aggregate demand yields the opposite. Changes in the production structure induce capital measures, ultimately leading to a change of the target capital structure according to the availability of financing. The impact of aggregate demand on corporate financing is modeled through the capital structure determinants “profitability”, “market expectation” and “retained earnings”. Verifying the significance of these capital structure determinants is a contribution to the theory of capital, because they are evidence for the impact of aggregate demand on the production structure. Subsequently, further discrimination of the determinants between the Tradeoff Theory and the Pecking Order Theory is provided.

Aggregate demand determines the profitability of a company, measured as a margin. According to the Tradeoff Theory increasing profitability also increases the availability of debt financing, stemming from lower probability of default and higher tax shields. Hence,

Table 1: Determinants of the Target Capital Structure

Table **1** contains the target capital structure determinants, calculated with Worldscope data for the period 1995 - 2009. The determinants are defined as follows: PR = EBIT / Total assets, SI = ln(Total assets), ME = Market price year end / Book value per share, TA = Fixed assets / Total assets, NT = Expenses for depreciation / Total assets, RE = Earnings retention rate, the calculation of IM is based on the definition of LEV = book value of debt / sum of total capital and structured debt. Scaled figures, extracted in the unit of millions include: EBIT, total assets, fixed assets, expenses for depreciation. Size (SI) is converted to US-Dollars based on the exchange rate of October 1st, 2009. As the remaining determinants are proportions, longitudinal fluctuation of the currency is by definition offset.

	Determinant	Impact of aggregate demand	Tradeoff Theory	Pecking Order Theory	Proxy
PR	Profitability	Existing	+	−	EBIT / Total assets
SI	Size	None	+	−	ln(Total assets)
ME	Market expectation	Existing	−	+	Market price (year-end) / Book Value per share
TA	Tangibility of assets	None	+	−	Fixed assets / Total assets
NT	Non-debt tax shield	None	−		Expenses for Depreciation / Total assets
RE	Retained earnings	Existing		−	Earnings retention rate
IM	Industry median of leverage	None	+		Calculation based on LEV

increasing profitability has a positive impact on leverage. By contrast, the Pecking Order Theory predicts a negative relationship between profitability and leverage. This can be explained by the accumulation of internal financing resources with increasing profitability, which decreases leverage over the course of time.

Arguments can be found for a positive as well as a negative relationship between size (SI) and leverage. The Tradeoff Theory states that diversification reduces the volatility of cash flows and firms´ default probabilities. Also low cash flow volatility increases the probability that companies can profit from the full benefit of the tax shield. This implies a positive correlation between leverage and corporate size. By contrast the Pecking Order Theory predicts a negative correlation between size and leverage on the grounds of information asymmetries. Information asymmetry is higher in small firms, which are not monitored as closely by analysts as large firms (González and González, 2012).

Market expectations reflect inter alia the expected change in aggregate demand and are positively related to the availability of debt financing. The Pecking Order Theory predicts a positive relationship between market expectations and leverage. Market expectations are proxied by the proportion between market price per share and book value per share at year-end and indicate corporate growth over the years. The positive relationship between market expectations and leverage results from the fact that corporate growth often needs funding in excess of profits. By contrast the Tradeoff Theory predicts a negative sign between these variables, as growth implies also a reduction of free cash flow, which in turn reduces the need to discipline managers by means of corporate debt.

Tangible assets can be sold easier than intangible assets, which implies higher creditworthiness if valuable tangible assets exist. Furthermore, the valuation accuracy from the perspective of external debt investors increases with the amount of tangible assets. According to the Tradeoff Theory, this enables companies to become more indebted, hence the positive sign. However, as lower costs of adverse selection at the same time lower the cost of equity, the Pecking Order Theory predicts a negative relationship between tangibility of assets and leverage.

The determinant non-debt tax shield (NT) measures the earnings reduction caused by depreciation expenses. Depreciation expenses reduce profits and therefore lower the value of the debt tax shield. According to the Tradeoff Theory, a reduction of the utility of debt leads to lower leverage. Furthermore, we investigate the relation between leverage and the

Table 2: Number of Companies Per Industry and Region

	Asia	Europe	U.S.A.
Oil and Gas	38	53	89
Basic Materials	217	66	67
Industrials	374	220	169
Consumer Goods	228	107	96
Health Care	61	54	88
Consumer Services	174	136	113
Telecommunication	29	23	44
Technology	118	42	100
Total by region	**1,239**	**701**	**766**
Total all regions	**2,706**		

percentage of retained earnings (RE). The ability to plow back profits is given in years of increasing aggregate demand and leads to an increase in equity, which in turn lowers leverage. However, Welch (2004) finds that U.S. companies do not readjust to capital structure deviations resulting from profits and losses, suggesting that transaction costs impede adjustments. The decision on the distribution of earnings must be seen under corporate financing and dividend policy aspects. According to the Pecking Order Theory, the general corporate financing policy is in favor of low rates of earnings distribution.

Finally, if managers tend to choose a capital structure similar to the one of their competitors, the factor industry median leverage (IM) should be significant. Flannery and Rangan (2006) find significance of this factor in the U.S. market. Maksimovic *et al.* (1999) point out that there is a relation between a firm's leverage and the information intensiveness of its investment policy and hence, leverage has an informational role for industry competitors. Uysal (2011) finds that firms´ capital structure affects the ability and quality of acquisitions, with managers of overleveraged firms choosing the most value-enhancing acquisition targets.

3.2. Dataset

The dataset to calculate capital structure determinants is obtained from the Thomson Financial Worldscope database.[1] The Worldscope database uses standardized definitions for company figures and offsets possible differences in the disclosure and presentation of company figures, which arise from different accounting standards.[2] A company qualifies, if it is listed on an Asian, European or U.S. stock exchange, and if the company has a market capitalization of at least 1 bn. US-Dollar, as of FY 2007. The size restriction warrants to study companies with homogenous financing costs. There is an unbalanced panel of 2,706 companies, which we sort by region and industry for the time period from 1995 to 2009. We use the Industry Classification Benchmark (ICB) to split the dataset into ten industries and exclude the industries “Financials” and “Utilities”, because these industries are highly regulated on a country level and often display significant state ownership, which may distort corporate financing decisions.

The regional composition of the dataset is made up of 1,239 Asian firms[3], with 14,241 firm-year observations and an average data history per company of 11.49 years. The European dataset contains 701 firms[4] with information for 8,790 firm-year observations and an average data history per company of 12.54 years. The U.S. dataset contains 766 companies[5], 9,733 firm-year observations and an average data history per company of 12.71 years. Outliers are

[1]Courtesy of University of St. Gallen.

[2]90% of the companies in our data set use local accounting rules, 10% use International Financial Reporting Standards (IFRS) and US-Generally Accepted Accounting Principles (US-GAAP).

[3]Asia: 504 listed in Japan, 497 in China, 72 in Taiwan, 48 in India, 41 in Singapore, 31 in Malaysia, 20 in Thailand, 11 in Indonesia, 9 on the Philippines and 6 in Pakistan.

[4]Europe: 178 listed in England, 87 in France, 81 in Germany, 50 in Switzerland, 48 in Sweden, 44 in Italy, 35 in the Netherlands, 34 in Spain, 30 in Finland, 24 in Denmark, 21 in Norway, 19 in Belgium, 14 in Ireland, 13 in Greece, 12 in Austria, 7 in Portugal, 3 in Luxembourg and 1 in Iceland.

[5]USA: 591 listed on the New York Stock Exchange, 172 on the Nasdaq, 3 on the Amex.

winsorized at the 0.5% level in both tails of the complete distribution. Table **2** gives an overview of the regional and industrial composition of the dataset.

4. METHODOLOGY

4.1. Regression Specification

A substantial part of the literature is concerned with measurement issues, in order to clearly separate technical effects from economic reasoning in corporate finance (Byoun (2008), Huang and Ritter, 2009). We take these results into account and regress the identified determinants of target capital structures (Table **1**) against target leverage ratios (*LEV**) to discriminate between the Tradeoff and the Pecking Order Theory, using one period lagged determinants for the regression on leverage. An advantage of this approach is that capital structure determinants are well-known by CFOs at the time of the decision, which reduces endogeneity problems in the estimation set up. The basic equation is defined as follows:

$$LEV^*_{i,t+1} = \alpha_t + \beta_1 PR_{i,t} + \beta_2 SI_{i,t} + \beta_3 ME_{i,t} + \beta_4 TA_{i,t} + \beta_5 NT_{i,t} + \beta_6 RE_{i,t} + \beta_7 IM_t + \varepsilon_{i,t}, \quad (1)$$

*LEV** is the target capital structure of company *i* at time *t*+1, PR is profitability, SI is company size, ME stands for market expectations (Market price year end / Book value per share), TA is tangibility of assets, NT is the non-debt tax shield, RE is the earnings retention rate, IM is the industry median of leverage, *α* and *β* are parameters and $\varepsilon_{i,t}$ is the error term. We follow Flannery and Rangan (2006) in constructing the dependent variable *LEV** as the book value of debt, divided by the sum of total capital and structured debt. We perform OLS-, TSLS- and GMM-estimations for all industries to control for estimation biases.[6] The Two Stage Least Squares-method (TSLS) is a viable method to deal with the problem of model over-identification. We estimate TSLS-regressions on the basis of weighted least squares. Moreover, we use period weights to correct for heteroscedasticity in the dataset and report White period standard errors. Both estimations, TSLS and GMM are robust to serial correlation and heteroscedasticity.

Furthermore, the identification of endogenous factors is crucial in instrumental variables (IV)-regressions. As profitability (PR), market expectations (ME) and industry median of leverage (IM) lie beyond the direct control of managers, they are deemed exogenous by causality, whereas the remaining factors are potentially endogenous. These remaining capital structure determinants are instrumentalized if they qualify as truly endogenous according to the Hausman Test (Hausman, 1978).[7]

4.2. Estimating the Speed of Adjustment Towards Target Capital Structures

The literature is still discordant on the econometric design to measure the speed of adjustment towards target capital structures. However, measuring the speed of adjustment is important to understand the overall agility of a company, also with regard to its flexibility in adapting its production structure. Changes in the production structure either tie up capital, in the case of a capacity increase, or free up capital, in the case of a capacity decrease. This translates into a shock to the company's target capital structure. The longer it takes a company to adapt to the target capital structure after such a shock, the higher is the sum of costs for deviating from the target capital structure. Therefore, a rational manager weighs these costs against the benefits from adapting the production structure to a shift in aggregate demand. The lower the costs are, the smaller is the required magnitude of the aggregate demand shift for firm managers to be willing to adjust the production structure.

Estimations on the basis of substituting the target capital structure into equations for adjustment speeds yield yearly rates of 34% (Flannery and Rangan (2006), 13% in LS-regressions and 25% in GMM-regressions (Lemmon *et al.* (2008), 17% (Huang and Ritter (2009), 15% (Frank and Goyal (2007), 18% in LS-regressions and 15% in Blundell-Bond GMM-regressions (Flannery and Hankins, 2007).[8] Our estimation procedure follows a two-step process. In the first step, the target capital structure is constructed as the variable $LEV^*_{i,t}$ and taken from GMM-estimations based on model (1). In

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[6]As we cannot a priori assume that the explanatory variables chosen in equation (1) reflect the entire number of relevant factors, we also include firm-fixed effects in the OLS-estimation to control for estimation biases (Hovakimian and Li, 2011).

[7]The Hausman Test is carried out in two steps: First, we regress all potentially endogenous factors (SI, TA, NT and RE) on the truly exogenous factors and instruments. As we work with time series data, one period lagged variables are used as instruments, whereas tangibility of assets (TA) is instrumentalized by the factor research and development (RD), defined as costs of research and development divided by sales. Second, we include the residuals of the first step as regressors in the regression model and check their significance. Endogeneity can only be rejected, if the OLS-regression rejects the significance of the residuals.

[8]Furthermore, on the basis of different models for the calculation of adjustment speeds, the following results are obtained: 7% - 18% (Fama and French, 2002), 21% - 39% (Tsyplakov, 2008) and 16% (Roberts, 2002).

the second step, we calculate the yearly change of the gap between the target and the actual capital structure as variable $LEV_{i,t}$ Following Lemmon *et al.* (2008) and Antoniou *et al.* (2008), we then use System-GMM to estimate the following model:

$$LEV_{i,t+1} = \lambda LEV^{*}_{i,t} + (1-\lambda) LEV_{i,t} + \varepsilon_{i,t+1} \quad (2)$$

$LEV_{i,t+1}$ is leverage at time $t+1, LEV_{i,t}$ stands for the target leverage at time t, λ is the speed of adjustment and $\varepsilon_{i,t+1}$ is the error term. We use lagged values of $LEV_{i,t}$ as instruments for this endogenous variable and define a range, which is dynamically enhanced from lag one up to a maximum of five period lags.

There is no general consensus on the optimal estimation method to meet the econometric challenges in model (2), which are endogeneity, firm-fixed effects, short panel bias, correlation between observable and unobservable variables and serial correlation in the error terms. However, as Judson and Owen (1999) show by Monte Carlo simulations, GMM methods give reasonable results, when dealing with unbalanced dynamic panel data. Therefore, we follow the empirical capital structure literature by using System-GMM as developed by Arellano and Bover (1995) and Blundell and Bond (1998) to estimate equation (2).[9]

5. Discussion of the results

5.1. Results on Leverage Dispersion

Figure **A1** shows boxplots on the dispersion of leverage ratios across industries and regions. The results show that median leverage ratios are influenced by industry and region. The median leverage ratios of the industries Oil and Gas, Basic Materials, Industrials and Consumer Services lie between 30% and 41%, across regions, while median leverage ratios of the industries Health Care and Technology lie below 28% across regions. In Europe and the U.S.A., the telecommunications industry has the highest median leverage ratios. We can thus conclude that leverage varies substantially across industries. Consistent with the predictions of Miao (2005) and others, there seems to be an international tendency towards low leverage ratios in high-growth industries, such as Technology and Health Care, and a tendency towards high leverage ratios in industries with high market entry barriers, such as Telecommunications.

However, we find region-specific evidence, when focusing on the absolute level of leverage ratios in peer group comparisons. In terms of minimum median leverage ratios per industry, Asia shows five minima, Europe two and the U.S.A only one minimum, when comparing the peer industries. This finding is consistent with Glen and Singh (2004), who point out, that companies in emerging markets have lower leverage ratios than their peer companies in developed countries. Considering the maximum median leverage ratios per industry, Europe shows maxima in five out of seven industries. Also there is region-specific evidence on the dispersion of leverage ratios, which is highest in the Asian market with 37.02%, followed by the European market with 30.03% and the U.S. market with 26.95%. A possible explanation can be based on findings of Almazan and Molina (2005), who state a negative relationship between corporate governance variables and the dispersion of leverage ratios across industries.

5.2. Results on the Speed of Adjustment

The estimation of the dynamic regression model (2) is based on the GMM-Sys method with LEV as a dynamic instrument starting at a lag of two periods and ending at a lag of five periods. In addition to the speed of adjustment, we provide Hansen's J-statistic, a more general version of the Sargan test, as a measurement for instrument validity. To enhance the comparability of the speed of adjustment, this section discusses half-life times, detailed in Table **A4**.

The target adjustment hypothesis can be confirmed by high speeds of adjustment over all industries and regions in Asia, Europe and the U.S.A. without restrictions. The yearly speed of adjustment per industry lies between 25% and 45% in Asia, between 41% and 65% in Europe, and between 39% and 60% in the U.S.A. This leads to half-life times in Asian companies between 1.54 and 2.77 years, in European companies between 1.07 and 1.69 and in U.S. companies between 1.26 und 1.78 years. The highest yearly speed of adjustment can be found in the U.S.A. with 91%, followed by Europe with 66% and Asia with 52%. However, the consistently high values of Hansen's J-statistic indicate that there is no guideline for the instrument specification. Differences in the speed of adjustment towards target capital structures could reflect different costs of adjustment. Hence, the

[9]System-GMM is used by Lemmon *et al.* (2008) as well as Antoniou *et al.* (2008), Flannery and Rangan (2006) use Difference-GMM, while Huang and Ritter (2009) favor long difference estimators, Flannery and Hankins (2007) use corrected least squares dummy variables and Byoun (2008) employs a restricted maximum likelihood method.

costs of adjustment are highest in Asia, followed by Europe and the U.S.A. The regional differences in the speed of adjustment also strengthen the notion of macroeconomic influences on the speed of adjustment (Drobetz and Wanzenried, 2006).

We find faster adjustment speeds towards target capital structures than in previous studies. The values for the U.S.A. lie above the yearly rate of 34% documented by Flannery and Rangan (2006) or 20% as reported in Faulkender *et al*. (2008). A higher speed is expected due to lower transaction costs. For the European market there exists evidence, that larger companies have higher speeds of adjustment than smaller companies (Drobetz *et al*., 2007). Regarding the market value definition of leverage, the values for Asia and Europe are similar, only in the U.S.A, the average speed of adjustment rises from 47% to 63% on a yearly basis, due to differences between book value and market value definitions of leverage in the Health Care and Consumer Services industries.

The confirmation of the target adjustment hypothesis by means of high speeds of adjustments shows that firms are agile in adapting towards their target capital structure. This holds true across all tested industries and geographies. The high speeds of adjustment imply low cost impacts from deviating from target capital structures. Hence, this reveals that capital costs are not likely to impede firm managers from adjusting the production structure.

5.3. Results on Capital Structure Determinants

In all three regions, regression model (1) shows that companies pursue target capital structures.[10] The target capital structure decision is based on several firm-specific factors, where decisions in Europe, Asia and the U.S.A. are consistently influenced across industries by profitability (PR), size (SI) and tangibility of assets (TA), (see Tables **A1**, **A2** and **A3**).

The consistent influence of profitability (PR) across industries and geographies implies, that to a certain extent, markets demand the coordination between aggregate demand and the target capital structure. A prerequisite is that firm managers adapt the corporate production structure. Furthermore, the hypothesis of such coordination is in line with Keynes' General Theory.[11]

Table **A1** shows the results for Asia, where we find evidence in favor of the Tradeoff Theory. Profitability (PR) and tangibility of assets (TA) are the common significant determinants across Asian industries, influencing target capital structures. The industry median of leverage (IM) is significant in five out of seven industries: Oil and Gas, Basic Materials, Industrials, Consumer Goods and Technology. Corporate size (SI) is significant in five industries: Basic Materials, Industrials, Consumer Goods, Health Care and Technology. The determinant non-debt tax shield (NT) is only significant in three Asian industries Oil and Gas, Basic Materials and Industrials, whereas retained earnings (RE) only influences the capital structure decision of Industrials in Asia. For the Asian market, we thus cannot confirm Welch's (2004) hypothesis, that companies do not counteract capital structure changes resulting from profits and losses. With six significant factors each, the industries Industrials and Basic Materials have the highest number of significant capital structure determinants. The signs are relatively constant and by majority support the Tradeoff Theory. Nevertheless, the evidence is not strong enough to reject the Pecking Order Theory completely. This is the case, because the negative sign of profitability (PR) can be explained by the Tradeoff Theory, but fundamentally reflects the rationale of the Pecking Order Theory. Hence, there exists a preference of internal over external financing decisions in Asia.

In Europe, three out of the seven industries have one or more significant capital structure determinants on the 0.1 significance level of the GMM-estimations, as shown in Table **A2**. In case of the TSLS-estimations, the number of significant determinants rises to two and more factors. Size (SI) is significant on the 0.1 significance level for the following industries: Oil and Gas, Industrials, Consumer Goods, Consumer Services. The factor tangibility of assets (TA) is significant on the 0.1 significance level in the industries Basic Materials, Industrials and Technology. Furthermore, the factor ME is significant in the industries Consumer Goods and Industrials, whereas NT is significant in Basic Materials, Industrials, Consumer Services and Technology. In addition, the

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[10]Due to serial correlation and possible heteroscedasticity in the data set, the investigation of capital structure determinants as well as their signs is based on the TSLS- and GMM-estimates. Significance will, as long as not stated otherwise, be reported on the 0.05 significance level.

[11]The remaining two determinants, which are impacted by aggregate demand (i.e. market expectations (ME) and retained earnings (RE) are not significant target capital structure determinants across industries and geographies.

Table 3: Results Hausman Test

Table **3** contains the t-statistics of the potentially endogenous factors assessed with the Hausman Test for the regression model by region and industry. * denotes statistical significance at the 0.05 level. SI stands for the determinant size, TA for the determinant tangibility of assets, NT for the determinant non-debt tax shield and RE for the determinant retained earnings.

	Asia				Europe				U.S.A			
	SI	TA	NT	RE	SI	TA	NT	RE	SI	TA	NT	RE
Oil and Gas	0.72	1.32	-0.53	-0.69	1.11	*4.33	0.22	-1.25	0.89	0.87	-1.09	*-2.15
Basic Materials	1.59	1.93	-0.15	1.20	0.98	-1.79	1.19	1.46	*-2.29	-0.02	1.28	-0.44
Industrials	*2.28	*3.50	0.61	*3.71	*6.74	-0.04	-0.46	-0.66	*4.58	*-2.22	-0.62	0.02
Consumer Goods	1.92	0.87	0.44	-0.09	*6.02	-1.65	0.69	-0.57	-0.72	*-2.08	0.31	0.43
Health Care	0.99	*3.32	1.10	-1.83	0.69	0.81	1.09	-0.95	0.05	0.80	0.65	0.07
Consumer Services	*4.85	*5.90	-1.69	1.35	*4.44	-1.65	*2.43	*2.11	*2.58	-0.38	*-2.58	*2.42
Technology	1.94	-0.65	0.86	-0.65	1.37	-0.01	0.92	-0.75	0.82	-0.26	-1.11	-1.00

factor IM is significant on the 0.1 significance level in the industries Oil and Gas and Industrials.

A consistent sign can be found for the factors PR and TA in all eight industries for the European market. Whereas the relationship between PR and leverage is negative and therefore reflects pecking order financing, the positive relationship between TA and leverage speaks in favor of the Tradeoff Theory. Additional evidence on capital structure decisions of European companies, neither reflecting purely the Tradeoff Theory nor the Pecking Order Theory, is represented by the factors SI and ME. Whereas the sign of factor SI reflects tradeoff financing in all industries, except for Oil and Gas and Basic Materials, the sign of factor ME is, except for the industry Oil and Gas, in accordance with the Pecking Order Theory.

For the U.S.A. Table **A3** shows that the majority of industries have significant capital structure determinants, even when considering 0.1 significance levels. The only exception is the industry Telecommunications, which shows only weak significance for the determinants profitability and size. The general picture of our findings is consistent with Flannery and Rangan (2006), who show that U.S. companies clearly follow target capital structures.

The signs of the determinants show that capital structure decisions are influenced by the rationale of the Tradeoff Theory as well as the Pecking Order Theory. Consistent signs for all eight industries are found for PR and SI, based on TSLS-estimations. Whereas the sign of PR is in line with the Pecking Order Theory (except for Telecommunications), the sign of SI supports the Tradeoff Theory. The evidence on the remaining factors is mixed. Whereas the sign of ME reflects pecking order financing in four industries, the sign of TA reflects the predictions of the Tradeoff Theory in six industries. Taking a closer look at the industry level, we find that companies in the Oil and Gas and Basic Materials industries by majority follow the rationale of the Tradeoff Theory.

5.4. Consistency Tests and Robustness

Subsequently, we discuss the results of consistency tests for the regression model. We focus on the Hausman test to detect endogeneity and on the Durbin-Watson test for serial correlation. By causality the factors size (SI), tangibility of assets (TA), non-debt tax shield (NT), as well as retained earnings (RE) as potentially endogenous. These factors of regression (1) are tested for endogeneity with the Hausman test (see Table **3**). We find values of the Hausman test between -1.83 and 1.94 across industries and regions. Endogeneity is mainly caused by the factors size (SI) and tangibility of assets (TA) and only spuriously by the factors non-debt tax shield (NT) and retained earnings (RE). The industry Technology is the only industry with exogenous factors in all regions.

Positive first-order serial correlation exists in the dataset for all industries and regions.[12] For Asia, the Durbin-Watson statistics range between 0.37 and 2.00 (see Table **4**). For Europe these statistics are between

[12]Only the data set of Asian Consumer Services companies lacks serial correlation.

Table 4: Durbin-Watson Statistics

Table **4** contains the Durbin-Watson statistics of regression model (1) for Asia, Europe and the U.S.A.

	Asia			Europe			U.S.A.		
	OLS	TSLS	GMM	OLS	TSLS	GMM	OLS	TSLS	GMM
Oil and Gas	1.42	0.70	0.95	1.37	1.07	1.70	1.18	0.61	0.59
Basic Materials	0.98	0.40	0.37	0.64	1.54	0.97	0.98	1.26	0.79
Industrials	0.89	0.96	1.47	0.92	1.25	0.53	0.90	0.40	0.38
Consumer Goods	0.81	0.54	0.92	0.93	0.56	0.57	0.92	0.90	0.89
Health Care	1.07	0.47	0.38	1.02	0.57	1.01	1.03	0.68	0.62
Consumer Services	0.92	0.52	2.00	0.84	0.37	0.31	0.71	0.45	0.25
Technology	0.96	0.39	0.39	1.29	1.50	1.48	0.89	0.43	0.45

0.31 and 1.70, respectively 0.25 and 1.26 for the U.S.A. This leads to an average serial correlation of 0.93 for Asian, 0.94 for European and 0.57 for U.S. GMM-estimations.

Our principal method of controlling the robustness of our results is to base our estimations on the three econometric methods explained above (OLS, TSLS, GMM). Following standard procedures, we also experimented with the market value definition of leverage as a dependent variable in our regressions. We find higher R-squares, but are aware that the market value definition of leverage is an important factor particularly in short-term market timing decisions (Baker and Wurgler, 2002). Since we contribute to the explanation of long-term corporate financing decisions, we discuss our results based on the book value definition of leverage. Regarding the speed of adjustment we are interested in short-term and long-term effects and hence report results based on both definitions of leverage.

6. CONCLUSION

F. A. Hayek required to base considerations of aggregate demand on studies and theories of the production structure and the market network created by firms. This critique of Keynes' "General Theory" is relevant, if determinants of production structure and the market network are unrelated to aggregate demand. It is of lesser relevance, though, if the patterns of production structure and the market network easily and fluently adapt to changes in aggregate demand. To contribute to this research question, we study how managers make financing decisions, which lead to the investment and production behavior of firms. Important determinants of financing decisions turn out to be target capital structures and speeds of adjustments. We provide empirical evidence on the target capital structure determinants and the speeds of adjustments of 2,706 large companies listed on the major stock exchanges in Asia, Europe and the U.S.A. Our results add a further piece to the capital structure puzzle by providing evidence on tradeoff financing in Asia. Profitability (PR), tangibility of assets (TA) and size (SI) are common factors in all three regions of the world economy. Aggregate demand impacts firm managers' choices of target capital structures through profitability (PR).

This finding reflects that firm managers adapt corporate production structures to adapt to shifts in aggregate demand. Our results thus provide evidence on Keynes' "General Theory" at firm level. Furthermore, the high speeds of adjustments across all industries and geographies show that capital costs stemming from deviating from target capital structures are limited. Also we find that capital structure decisions can be divided into common and industry-based components. The most important industry-based components in the Asian market are industry median of leverage (IM) and size (SI). In Europe and the U.S.A. tangibility of assets (TA) and market expectations (ME) are the most common industry-based capital structure determinants. The dispersion of the speed of adjustment on an industry level indicates that industry-specific factors influence the speed of adjustment towards target capital structures, implying that a unified capital structure theory could be based on a model consisting of several factors of influence.

APPENDIX

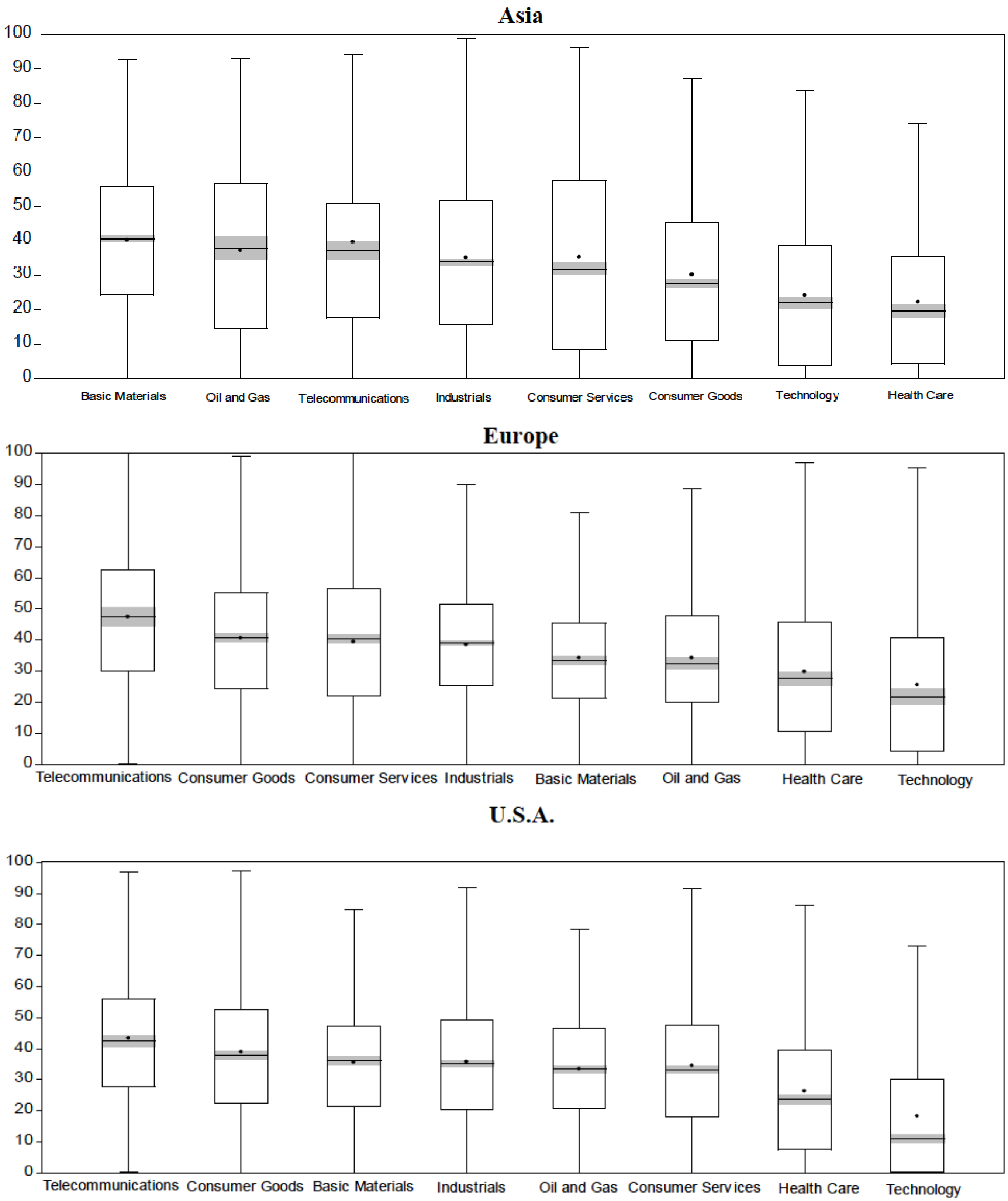

Figure A1: Leverage per industry grouped by region

Figure **A1** depicts the inter-quartile range of book based leverage ratios per industry between 1995 and 2009. The length of the box corresponds to the inter-quartile range, which includes 50% of the values. The line represents the median, the arithmetic average is marked with a point. We do not show outliers. Minima and maxima are marked by the staples.

Table A1: Capital Structure Determinants Asia

Table **A1** contains the regression coefficients for Asia estimated by OLS, TSLS and GMM with the following regression model $LEV^{*}_{i,t+1} = \alpha_t + \beta_1 PR_{i,t} + \beta_2 SI_{i,t} + \beta_3 ME_{i,t} + \beta_4 TA_{i,t} + \beta_5 NT_{i,t} + \beta_6 RE_{i,t} + \beta_7 IM_t + \varepsilon_{i,t}$. The OLS estimations include a parameter u_i denoting firm fixed effects. T-statistics are shown in parentheses. T-statistics of the TSLS and GMM estimation are robust to serial correlation and heteroskedasticity. * denotes statistical significance at the 0.05 level. ** denotes statistical significance at the 0.1 level. The results are classified by industry and regression technique. LEV* stands for the book value definition of leverage, PR for profitability, SI for size, ME for market expectations, TA for tangibility of assets, NT for non-debt tax shield, RE for retained earnings and IM for the industry median of leverage.

	Oil and Gas N=38				Basic Materials N=217				Industrials N=374		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-87.25	-87.81	-108.06	PR	-92.09	-144.53	-141.72	PR	-60.43	-120.13	-112.99
	*(-6.25)	*(-2.68)	*(-2.68)		*(-16.19)	*(-7.10)	*(-7.31)		*(-12.22)	*(-5.94)	*(-4.99)
SI	2.71	2.38	2.33	SI	3.028	6.097	6.768	SI	6.33	6.30	7.45
	**(1.81)	(0.94)	(0.79)		*(3.99)	*(4.37)	*(4.76)		*(11.78)	*(5.29)	*(5.77)
ME	-0.20	0.11	0.90	ME	0.44	2.33	2.49	ME	-0.23	1.04	0.60
	(-0.56)	(0.03)	(0.25)		**(1.87)	*(4.05)	*(4.26)		(-1.43)	*(2.00)	(0.91)
TA	27.44	66.31	62.82	TA	21.680	65.984	69.799	TA	13.17	65.36	61.44
	*(3.40)	**(1.97)	*(2.06)		*(4.70)	*(4.81)	*(4.77)		*(4.67)	*(6.57)	*(4.91)
NT	-259.82	-957.23	-894.82	NT	-51.33	-400.51	-426.29	NT	-18.17	-253.48	-257.79
	*(-4.41)	*(-3.33)	*(-2.94)		**(-1.8)	*(-4.31)	*(-4.30)		(-0.72)	*(-3.27)	*(-2.96)
RE	-0.01	0.10	0.16	RE	0.001	0.036	-0.004	RE	0.00	0.31	0.53
	(-1.43)	(0.64)	(0.80)		(0.33)	(0.42)	(-0.05)		(0.31)	*(2.33)	*(2.49)
IM	0.37	0.66	0.78	IM	0.76	1.19	1.09	IM	1.12	1.20	1.17
	*(4.30)	*(2.47)	*(2.31)		*(14.08)	*(10.21)	*(9.44)		*(21.54)	*(5.23)	*(4.12)
R^2	0.84				0.82				0.80		
Firm-year obs.	401				2369				4375		
	Consumer Goods N=228				**Health Care N=61**				**Consumer Services N=174**		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-67.21	-98.97	-89.83	PR	-84.53	-111.73	-89.03	PR	-51.36	-112.92	-148.34
	*(-12.06)	*(-5.35)	**(-1.84)		*(-6.71)	*(-3.96)	*(-3.33)		*(-7.99)	*(-1.67)	*(-4.14)
SI	2.49	2.78	5.05	SI	4.64	-4.77	-5.06	SI	5.41	1.36	0.86
	*(3.26)	*(2.31)	*(3.09)		*(3.36)	*(-3.65)	*(-3.76)		*(8.27)	(0.69)	(0.49)
ME	0.24	1.95	1.31	ME	-0.55	-0.53	-0.57	ME	0.57	3.16	2.48
	(1.59)	*(3.47)	(1.44)		**(-1.71)	-0.95	(-0.97)		*(3.89)	*(3.14)	*(3.82)
TA	13.39	31.73	38.08	TA	-10.68	53.47	46.20	TA	15.49	97.55	89.99
	*(2.90)	*(3.25)	*(2.72)		(-1.21)	*(2.37)	*(2.21)		*(5.09)	*(9.90)	*(10.05)
NT	28.79	16.35	21.22	NT	35.56	-15.34	-16.80	NT	-59.82	-229.77	-111.99
	(1.06)	(0.22)	(0.14)		(0.66)	(-0.11)	(-0.14)		*(-2.20)	**(-1.83)	(-0.92)
RE	-0.01	-0.11	-0.18	RE	0.01	0.08	0.04	RE	-0.002	-0.05	0.10
	*(-2.38)	(-0.63)	(-0.37)		(0.99)	(0.76)	(0.32)		(-0.82)	(-0.24)	**(1.72)
IM	0.92	0.82	1.35	IM	0.63	0.21	0.16	IM	0.60	0.25	0.19
	*(12.49)	*(3.00)	*(4.14)		*(6.25)	(1.26)	(1.04)		*(4.64)	(0.41)	(0.54)
R^2	0.76				0.79				0.88		
Firm-year obs.	2688				733				2017		

	Telecommunications N= 29				Technology N=118		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-231.42	-14.19	-13.65	PR	-43.71	-72.02	-71.56
	*(-12.83)	(-0.27)	(-0.06)		*(-7.48)	*(-9.10)	*(-5.74)
SI	2.32	0.36	-0.44	SI	4.09	3.70	3.93
	(0.67)	(0.24)	(-0.16)		*(5.16)	*(6.86)	*(3.33)
ME	0.83	0.44	-0.51	ME	0.05	0.24	0.18
	*(2.21)	(0.27)	(-0.2)		(0.66)	(1.23)	(1.09)
TA	-21.53	8.20	-1.32	TA	38.23	23.82	23.34
	(-1.1)	(0.43)	(-0.04)		*(6.28)	(3.99)	*(2.07)
NT	207.55	15.08	57.10	NT	-54.71	-13.85	-9.21
	*(2.76)	(0.18)	(0.6)		*(-2.65)	(-0.43)	(-0.18)
RE	0.01	0.55	0.47	RE	0.00	-0.02	0.01
	(0.77)	*(2.98)	(1.01)		(-0.52)	(-0.15)	(0.04)
IM	1.38	0.07	0.67	IM	0.85	0.75	0.82
	*(3.06)	(0.10)	(1.15)		*(7.77)	*(4.15)	*(2.99)
R^2	0.59				0.72		
Firm-year obs.	366				1292		

Table A2: Capital Structure Determinants Europe

Table **A2** contains the regression coefficients for Europe estimated by OLS, TSLS and GMM with the following regression model $LEV^{*}_{i,t+1} = \alpha_t + \beta_1 PR_{i,t} + \beta_2 SI_{i,t} + \beta_3 ME_{i,t} + \beta_4 TA_{i,t} + \beta_5 NT_{i,t} + \beta_6 RE_{i,t} + \beta_7 IM_t + \varepsilon_{i,t}$. The OLS estimations, include a parameter u_i denoting firm fixed effects. T-statistics are shown in parentheses. T-statistics of the TSLS and GMM estimation are robust to serial correlation and heteroskedasticity. * denotes statistical significance at the 0.05 level. ** denotes statistical significance at the 0.1 level. The results are classified by industry and regression technique. LEV* stands for the book value definition of leverage, PR for profitability, SI for size, ME for market expectations, TA for tangibility of assets, NT for non-debt tax shield, RE for retained earnings and IM for the industry median of leverage.

	Oil and Gas N=53				Basic Materials N=66				Industrials N=220		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-22.79	-34.28	-2.44	PR	-88.78	-153.64	-153.15	PR	-26.35	-49.32	-35.34
	*(-3.13)	**(-1.92)	(-0.06)		*(-9.63)	*(-4.64)	*(-4.06)		*(-4.63)	*(-2.15)	*(-2.26)
SI	3.82	-3.91	-4.84	SI	0.70	-0.88	-1.33	SI	6.35	1.78	4.22
	*(4.38)	*(-2.50)	*(-2.32)		(1.44)	(-0.57)	(-0.73)		*(12.70)	**(1.72)	*(5.22)
ME	0.25	-1.37	-1.51	ME	1.37	1.00	0.92	ME	0.10	0.07	0.13
	(0.67)	(-1.59)	(-1.01)		*(2.74)	(0.61)	(0.62)		(1.50)	(0.21)	(0.48)
TA	14.04	21.59	27.90	TA	10.39	24.44	30.68	TA	9.28	36.53	19.26
	*(2.59)	(1.26)	(0.69)		*(2.19)	**(1.93)	(1.54)		*(2.31)	*(2.82)	*(3.26)
NT	-2.68	70.52	83.03	NT	-67.52	-367.03	-378.76	NT	39.34	-286.48	-35.25
	(-0.11)	(1.21)	(1.35)		**(-1.82)	*(-2.57)	(-1.63)		**(1.69)	*(-2.30)	(-0.63)
RE	-0.00	-0.10	-0.09	RE	0.00	0.26	0.06	RE	-0.00	-0.20	0.07
	(-0.11)	(-1.31)	(-1.19)		(0.44)	(1.40)	(0.48)		(-0.2)	(-1.47)	(0.80)
IM	0.52	-0.82	-0.31	IM	-0.00	-0.46	-0.05	IM	0.31	0.47	0.41
	*(2.26)	**(-1.76)	(-0.44)		(-0.01)	(-0.85)	(-0.06)		*(3.56)	**(1.77)	*(2.70)
R^2	0.57				0.56				0.65		
Firm-year obs.	605				808				2801		
	Consumer Goods N=107				**Health Care N=54**				**Consumer Services N=136**		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-45.49	-127.22	-121.95	PR	-19.87	-46.33	-56.68	PR	16.17	-33.53	-31.32
	*(-5.52)	*(-6.57)	*(-6.51)		*(-3.38)	*(-2.25)	*(-2.79)		*(2.33)	*(-2.11)	**(-1.95)
SI	3.94	3.68	3.49	SI	5.02	0.41	0.03	SI	5.03	4.67	4.33
	*(4.75)	*(4.35)	*(3.94)		*(5.49)	(0.37)	(0.02)		*(5.12)	*(3.89)	*(3.65)
ME	0.34	1.51	1.43	ME	0.62	1.02	1.09	ME	0.06	0.18	0.12
	*(3.05)	*(6.39)	(6.35)		*(6.05)	*(5.34)	*(5.57)		(0.77)	(0.68)	(0.45)
TA	4.39	12.42	12.21	TA	79.69	5.08	7.06	TA	13.95	5.44	6.64
	(0.62)	(1.11)	(1.11)		*(7.31)	(0.26)	(0.36)		*(2.28)	(0.87)	(1.02)
NT	1.69	13.80	25.87	NT	-21.73	-81.45	-128.01	NT	49.30	-78.09	-78.30
	(0.06)	(0.24)	(0.45)		(-0.53)	(-0.82)	(-1.36)		*(2.25)	(-1.59)	(-1.64)
RE	-0.01	-0.01	-0.03	RE	-0.01	-0.16	-0.19	RE	0.00	0.03	-0.01
	**(-1.74)	(-0.18)	(-0.35)		(-0.54)	(-1.58)	(-1.67)		(0.14)	(0.31)	(-0.12)
IM	0.15	-0.07	-0.10	IM	-0.16	-0.17	-0.20	IM	0.42	0.39	0.42
	(1.16)	(-0.26)	(-0.38)		(-1.29)	(-1.13)	(-1.41)		*(3.24)	(1.51)	(1.63)
R^2	0.70				0.68				0.65		
Firm-year obs.	1424				645				1670		

	Telecommunications N=23				Technology N=42		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-71.24	-38.27	-61.08	PR	-36.85	-100.01	-79.04
	*(-5.24)	(-1.06)	**(-1.67)		*(-5.11)	*(-2.79)	*(-3.54)
SI	-3.44	-0.41	1.14	SI	5.35	1.20	2.24
	*(-2.11)	(-0.26)	(0.34)		*(4.31)	(0.71)	**(1.75)
ME	-0.088	-0.109	-0.148	ME	0.39	0.62	0.29
	(-0.93)	(-1.56)	*(-2.38)		*(3.42)	(1.27)	(0.67)
TA	28.42	11.78	24.64	TA	74.11	73.96	65.32
	*(-2.52)	(0.63)	(1.07)		*(4.38)	*(2.70)	*(2.51)
NT	-46.93	-13.97	12.99	NT	-76.39	-159.49	-149.28
	(-1.42)	(-0.21)	(0.24)		*(-4.19)	(-1.22)	(-1.35)
RE	-0.00	-0.13	-0.11	RE	-0.01	-0.71	-0.27
	(-0.11)	**(-1.73)	(-0.55)		**(-1.94)	*(-2.15)	*(-2.10)
IM	0.80	0.02	-0.01	IM	0.02	-0.64	-0.90
	*(3.31)	(0.05)	(-0.01)		(0.08)	(-0.79)	*(-2.14)
R^2	0.44				0.61		
Firm-year obs.	297				540		

Table A3: Capital Structure Determinants U.S.A.

Table **A3** contains the regression coefficients for the U.S.A. estimated by OLS, TSLS and GMM with the following regression model $LEV^{*}_{i,t+1} = \alpha_t + \beta_1 PR_{i,t} + \beta_2 SI_{i,t} + \beta_3 ME_{i,t} + \beta_4 TA_{i,t} + \beta_5 NT_{i,t} + \beta_6 RE_{i,t} + \beta_7 IM_t + \varepsilon_{i,t}$. The OLS estimations, include a parameter u_i denoting firm fixed effects. T-statistics are shown in parentheses. T-statistics of the TSLS and GMM estimation are robust to serial correlation and heteroskedasticity. * denotes statistical significance at the 0.05 level. ** denotes statistical significance at the 0.1 level. The results are classified by industry and regression technique. LEV* stands for the book value definition of leverage, PR for profitability, SI for size, ME for market expectations, TA for tangibility of assets, NT for non-debt tax shield, RE for retained earnings and IM for the industry median of leverage.

	Oil and Gas N=89				Basic Materials N=67				Industrials N=169		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-34.36	-74.66	-49.93	PR	-38.90	-38.55	-42.58	PR	-30.08	-66.72	-48.84
	*(-5.84)	*(-5.66)	*(-3.19)		*(-6.38)	*(-2.21)	*(-2.48)		*(-4.69)	*(-3.39)	*(-2.44)
SI	-0.11	0.4	-1.81	SI	4.38	3.07	3.68	SI	0.06	3.96	4.18
	(-0.19)	(0.41)	**(-1.77)		*(4.55)	**(1.91)	*(2.34)		(0.08)	*(3.90)	*(3.86)
ME	-0.70	-0.59	-1.03	ME	0.830	-1.660	-1.450	ME	-0.41	-0.60	-0.60
	*(-2.58)	(-0.89)	(-1.05)		*(2.47)	(-1.17)	(-1.02)		*(-3.52)	*(-2.30)	**(-1.82)
TA	15.67	16.57	-2.75	TA	-7.08	-24.97	-25.90	TA	4.95	15.21	31.22
	*(3.05)	*(2.91)	(-0.27)		(-1.33)	*(-2.53)	*(-2.62)		(0.65)	*(2.14)	*(2.31)
NT	-16.61	-72.33	18.06	NT	97.28	324.20	243.18	NT	84.74	-68.46	-117.60
	(-0.65)	(-1.14)	(0.21)		*(2.87)	(1.63)	(1.31)		*(1.96)	(-0.89)	(-1.03)
RE	-0.01	-0.03	-0.05	RE	-0.00	-0.18	-0.10	RE	-0.01	-0.05	-0.03
	**(-1,8)	(-0.64)	(-0.83)		(-0.39)	(-0.94)	(-0.68)		(-1.01)	(-1.31)	(-0.66)
IM	0.30	0.15	-0.24	IM	0.640	0.240	0.330	IM	0.38	0.50	0.63
	*(2.49)	(0.83)	(-0.98)		*(5.65)	(0.63)	(0.97)		*(4.24)	*(3.35)	*(3.62)
R^2	0.65				0.71				0.68		
Firm-year obs.	1114				857				2203		

	Consumer Goods N=96				Health Care N=88				Consumer Services N=113		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-19.08	-69.97	-105.25	PR	-29.22	-45.68	-47.54	PR	-9.52	-33.58	-34.29
	*(-2.46)	(-1.24)	**(1.69)		*(-5.50)	*(-4.31)	*(-4.68)		(-1.40)	**(-1.65)	**(-1.94)
SI	-0.76	6.34	6.40	SI	5.71	2.32	3.00	SI	2.99	3.36	3.71
	(0.78)	*(2.01)	**(1.96)		*(6.28)	*(2.12)	*(2.92)		*(4.09)	*(2.31)	*(3.10)
ME	-0.14	-0.04	0.09	ME	0.11	0.38	0.29	ME	0.01	0.67	0.00
	*(-3.06)	(-0.09)	(0.31)		*(1.97)	*(2.53)	*(2.18)		(0.31)	*(2.17)	(0.00)
TA	-28.54	390.13	382.96	TA	24.90	-4.77	19.08	TA	9.35	17.16	8.02
	*(-3.34)	*(2.88)	*(2.88)		*(2.19)	(-0.22)	(0.98)		(1.31)	**(1.73)	(1.12)
NT	103.48	-1459.49	-1531.64	NT	39.96	242.31	148.29	NT	-5.32	-0.63	10.56
	*(2.12)	*(-2.37)	*(-2.45)		(0.78)	**(1.78)	(1.19)		(-0.17)	(-0.02)	(0.27)
RE	0.00	0.37	0.35	RE	-0.03	-0.09	-0.02	RE	-0.01	-0.15	-0.00
	(0.17)	(1.63)	(1.54)		(-1.05)	(-0.88)	(-0.24)		(-0.76)	(-0.73)	(-0.01)
IM	0.34	1.17	1.31	IM	0.17	-0.07	0.12	IM	0.48	0.46	0.33
	*(2.92)	**(1.88)	**(1.87)		(1.02)	(-0.32)	(0.54)		*(2.71)	(1.31)	(1.34)
R^2	0.76				0.50				0.66		
Firm-year obs.	1263				1108				1366		

	Telecommunications N=44				Technology N=100		
	OLS	**TSLS**	**GMM**		**OLS**	**TSLS**	**GMM**
PR	-34.26	52.12	-147.12	PR	-20.33	-55.93	-55.94
	*(3.46)	(0.58)	(-0.27)		*(-5.17)	*(-5.5)	*(-5.63)
SI	-5.077	2.291	-7.418	SI	1.23	1.86	2.06
	*(-3.80)	(0.82)	(-0.24)		**(1.86)	**(1.67)	**(1.93)
ME	0.16	0.50	0.24	ME	0.02	0.16	0.17
	(0.90)	(0.78)	(0.11)		(0.31)	**(1.81)	**(1.90)
TA	-11.26	17.52	-15.16	TA	-3.44	110.18	94.22
	(-1.43)	(0.53)	(-0.23)		(-0.43)	*(2.63)	*(2.21)
NT	1.14	24.63	234.74	NT	-68.87	-357.95	-294.21
	(0.04)	(0.13)	(0.33)		*(-2.75)	*(2.12)	**(1.75)
RE	-0.01	-0.02	-0.68	RE	0.01	-0.15	-0.14
	(-1.05)	(-0.05)	(-0.27)		(0.68)	(-0.83)	(-0.88)
IM	-0.12	0.15	-1.33	IM	0.35	0.16	0.19
	(-0.64)	(0.19)	(-0.21)		*(2.61)	(0.67)	(0.78)
R^2	0.64				0.62		
Firm-year obs.	536				1286		

Table A4: Speed of Adjustment

Table **A4** contains the speed of adjustment per region and industry based on the following dynamic regression model in the case of model (1): $LEV_{i,t+1} = \lambda LEV^*_{i,t} + (1-\lambda)LEV_{i,t} + \varepsilon_{i,t}$ and in the case of model $MLEV : MLEV_{i,t+1} = \lambda MLEV^*_{i,t} + (1-\lambda)\mathrm{M}LEV_{i,t} + \varepsilon_{i,t}$, where *LEV* and *MLEV* stand for the book value respectively market value definitions of leverage, *LEV** and *MLEV** for the target capital structures and *λ* for the speed of adjustment. *LEV* is the book value of debt divided by the sum of total capital and structured debt, *MLEV* is constructed by dividing total debt by the sum of total debt and the market value of the company at year-end. All models are estimated by GMM-Sys, half-life times are reported in round parentheses, Hansens J-statistics in squared parentheses.

	Asia		Europe		U.S.A.	
	Model LEV	**Model MLEV**	**Model LEV**	**Model MLEV**	**Model LEV**	**Model MLEV**
Oil and Gas	35%	44%	64%	36%	46%	60%
	(1.98)	(1.58)	(1.08)	(1.93)	(1.51)	(1.15)
	[28]	[25]	[34]	[41]	[50]	[51]
Basic Materials	31%	39%	41%	55%	39%	47%
	(2.23)	(1.78)	(1.69)	(1.26)	(1.78)	(1.47)
	[75]	[73]	[40]	[44]	[47]	[44]
Industrials	27%	43%	61%	61%	46%	41%
	(2.56)	(1.61)	(1.14)	(1.14)	(1.51)	(1.69)
	[103]	[127]	[73]	[102]	[72]	[75]
Consumer Goods	32%	35%	56%	65%	44%	64%
	(2.16)	(1.98)	(1.24)	(1.07)	(1.58)	(1.08)
	[76]	[76]	[65]	[70]	[56]	[55]
Health Care	25%	12%	44%	65%	55%	89%
	(2.77)	(5.77)	(1.58)	(1.07)	(1.26)	(0.78)
	[26]	[40]	[42]	[35]	[45]	[41]
Consumer Services	25%	35%	65%	61%	46%	91%
	(2.77)	(1.98)	(1.07)	(1.14)	(1.51)	(0.76)
	[43]	[58]	[52]	[70]	[51]	[53]
Telecommunications	52%	35%	45%	66%	60%	70%
	(1.33)	(1.98)	(1.54)	(1.05)	(1.15)	(0.99)
	[26]	[27]	[21]	[19]	[38]	[37]
Technology	45%	47%	63%	45%	46%	57%
	(1.54)	(1.47)	(1.10)	(1.54)	(1.51)	(1.22)
	[48]	[50]	[37]	[35]	[49]	[38]
Geometric average	33%	34%	54%	56%	47%	63%

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