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**SPEED OF ADJUSTMENT TOWARDS TARGET
CAPITAL STRUCTURE IN MERGERS AND
ACQUISITIONS**

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DECLARATION

I hereby declare that this doctoral thesis titled as “Speed of Adjustment Towards Target Capital Structure in Mergers and Acquisitions” has been written by myself in accordance with the academic rules and ethical conduct. I also declare that all materials benefited in this thesis consist of the mentioned resources in the reference list. I verify all these with my honor.



28/05/2019

Irfan Ullah SHAH

ÖZET

Doktora Tezi

Birleşme ve Satın almalarda Hedef Sermaye Yapısına Uyum Hızı

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Bu tezin amacı hedeflenen sermaye yapısına uyum hızını (SOA) farklı birleşme ve satın almalar (M&A) için araştırmaktır. Yöneticiler tarafından gerçekleştirilmesi gerekli önemli faaliyetlerin başında hedef sermaye yapısını belirlemek, belirlenen hedef sermaye yapısını yani kaldıraç düzeyinin devamlılığını sağlamak ve kaldıraç düzeyinden sapmalar olması durumunda bu sapmaların düzeltilmesini sağlamak gelmektedir.

M&A öncesi ve sonrası sermaye yapısı değişimlerine göre satın almaların amaçları finansal ve finansal olmayan amaçlar olarak ikiye ayrılmaktadır. Finansal motivasyon ile gerçekleştirilen birleşme ve satın almalarda, M&A sonrası dönemde yeni bir sermaye yapısı hedefi benimsenmektedir. Finansal olmayan motivasyon ile gerçekleştirilen birleşme ve satın almalarda ise M&A öncesi sermaye yapısından sapma yaşansa bile M&A sonrasında başlangıçtaki sermaye yapısına geri dönülmektedir. Bu nedenle, bu çalışmada birleşme ve satın alma sonrası hedef sermaye yapısına uyum hızı incelenmiştir.

Çalışmada hedef sermaye yapısına uyum hızı birleşme ve satın almalar şu kriterlere göre farklı gruplara ayrılarak karşılaştırmalı olarak incelenmiştir; i) yıl bazında; ii) sınır ötesi ve sınır ötesi olmayan birleşme ve satın almalar; iii) sektörler arası veya aynı sektör içinde gerçekleşen birleşme ve satın almalar; ve iv) Avrupa, ABD ve “dünyanın geri kalanı” dahil diğer bölgeler (REST) olmak üzere farklı bölgelerde gerçekleşen birleşme ve satın almalar. Çalışmanın örneklemini 2000-2013 yılları için halka açık finansal olmayan 6520 adet birleşme

ve satın alma oluşturmaktadır. Satın alan şirketlerin satın alma öncesi ve sonrası için üç yıllık finansal verilerinden oluşan toplam 45640 gözlem analizde kullanılmıştır. SOA hem defter kaldırıcı (BLEV) hem piyasa kaldırıcı (MLEV) kullanılarak tüm farklı M&A grupları için ayrı ayrı araştırılmıştır. Literatürden geliştirilen 11 farklı hipotez ampirik olarak test edilmiş ve SOA'yı tahmin etmek için ayarlanmış regresyon modelleme tekniklerinden yararlanılmıştır.

Bulgular SOA'nın kriz yıllarında BLEV için kriz dışı yıllara göre daha düşük olduğunu, MLEV için kriz yıllarında kriz dışı yıllara göre çok az bir farkla daha düşük olduğunu göstermektedir. Analiz, her iki kaldırıcı için (BLEV ve MLEV) sınır ötesi SOA'nın daha yüksek olduğunu göstermiştir. Hem BLEV hem MLEV için SOA'nın, aynı sektör ve sektörler arası M&A için yaklaşık olarak aynı olduğu sonucuna varılmıştır. Sonuçlar, ABD'deki birleşme ve satın almalarda gerçekleşen SOA'nın hem BLEV hem de MLEV bazında Avrupa ve REST bölgelerine göre daha düşük olduğunu göstermektedir. Her M&A için BLEV ve MLEV için hesaplanan SOA'nın sektör içi ve sınır ötesi olmayan durumlar dışında kalan diğer gruplandırmalar bazında farklılık gösterdiği tespit edilmiştir. Tüm yıllar için BLEV'in hedef sermaye yapısına ortalama uyum hızı 2,95 yıl, MLEV için ise 3,58 yıldır. Tez, çalışmanın kısıtlarını vurgulayarak ve gelecekteki çalışmalara önerilerde bulunarak sona ermektedir.

Anahtar Kelimeler: Birleşme ve Satın Almalar, Uyum Hızı, Sınır Ötesi Birleşme ve Satın Almalar, Sektörler Birleşme ve Satın Almalar, Sermaye Yapısı, Hedeflenen Sermaye Yapısı.

ABSTRACT

Doctoral Thesis

Doctor of Philosophy (PhD)

Speed of Adjustment Towards Target Capital Structure in Mergers and Acquisitions

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In this thesis, the speed of adjustment (SOA) toward target capital structure is investigated in different merger and acquisition (M&A) deals. Determining, maintaining a target capital structure and rebalancing if deviated from the target leverage range, are major issues faced by managers. Pre & post M&A capital structure movements illustrate two different scenarios based on financial and nonfinancial motives. In the financial motives M&A deals, a new capital structure target is adopted in post-M&A. While nonfinancial motives M&A depart from their pre-capital structure ranges and rebalance back in the post-M&A scenario to their initial range. Therefore, the SOA in the post M&A scenario is investigated.

The SOA is evaluated for different types of M&A deals; i) based on years; ii) between cross border and non-cross border; iii) between cross industry and same industry; and iv) for different regions including EUR, US and “rest of the world” (REST). The M&A deals consist of non-financial public-to-public 6520 deals for the time period of 2000 to 2013. A pre & post three years financial data was collected for the acquiring firms comprising of a panel data of 45640 firm year’s observation. The SOA for both book leverage (BLEV) and market leverage (MLEV) was investigated for all the different M&A cases. There were 11 different hypotheses developed from the literature and were empirically tested, adopting the adjusted regression modeling techniques as to estimate the SOA.

The findings show that the SOA is lower in the crisis years than the non-crisis years for BLEV while for the MLEV it was slightly lower for crisis years

than the non-crisis years. The analysis showed that for both leverage measures, (BLEV & MLEV) SOA for cross border were higher than non-cross border M&A deals. The SOA for both BLEV and MLEV were almost the same for same industry and cross industry M&A deals. The different regional M&A deals show that US had lower SOA for both BLEV and MLEV, than the EUR and REST region M&A deals. The difference between the SOA for BLEV and MLEV for each M&A case shows that all cases had differences in the SOA between BLEV and MLEV except non-cross border and same industry M&A deals. The average SOA for BLEV toward target capital structure is 2.95 years while for the MLEV it is 3.58 years for all the years. The thesis concludes with highlighting the limitations and providing suggestions for future study.

Keywords: Mergers and Acquisitions, Speed of Adjustment, Cross Border M&A, Cross Industry M&A, Capital Structure, Target Capital Structure.

SPEED OF ADJUSTMENT TOWARDS TARGET CAPITAL STRUCTURE IN MERGERS AND ACQUISITIONS

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ABBREVIATION

M&A	Mergers and Acquisition
SOA	Speed of Adjustment
CFO	Chief Finance Officer
BLEV	Book Leverage
MLEV	Market Leverage
EUR	Europe
US	United States
REST	Rest of the World
TCS	Target Capital Structure
WACC	Weighted Average Cost of Capital
NPV	Net Present Value
NYSE	New York Stock Exchange
AMEX	American Stock Exchange
NASDAQ	National Association of Securities Dealers Automated Quotations
USD	United States Dollar
G7	Group of Seven
EFWAMB	External Finance Weighted Average Market-To-Book
EBIT_TA	Earnings Before Interest and Taxes as a Proportion of Total Assets
MB	Market to Book Ratio of Assets
DEP_TA	Depreciation as a Proportion of Total Assets
LnTA	Natural Logarithm of Total Assets
FA_TA	Fixed Assets as a Proportion of Total Assets
R&D_TA	Research and Development Expenses as a Proportion of Total Assets
R&D_DUM	Research and Development Dummy
IND_MED	Industry Median Debt Ratio
SDC	Securities Data Company
RIC	Reuters Instrument Code

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INTRODUCTION

Capital structure is an important concern for corporate finance. Determining the optimal capital structure, maintaining a target capital structure and if deviated from the target leverage range, then rebalancing are major issues faced by managers (Auerbach, 1985; Flannery and Rangan, 2006; Jalilvand and Harris, 1984; Leary and Roberts, 2005; Marsh, 1982; Opler and Titman, 1994; Taggart, 1977). The focus of this study is mainly on the speed of adjustment (SOA) to target capital structure in different types of M&A deals, therefore the changes in capital structure surrounding the M&A activities are investigated. In the literature, M&A is considered as an expansion or organic growth for the firms (Moatti et al., 2015). Several advantages are achieved through M&A such as; increase in market share, financial growth, operational synergies, economies of scale, tax benefits and elimination of compensation threats (Jarrell et al., 1988; Staikouras, 2006).

Regarding SOA and M&A, Vermaelen and Xu (2012) found that 80% of their M&A sample firms out of 3,097, came closer to their target leverage following the M&A. Yang (2011:1-2) states that most of the M&A decisions narrowed the gap between actual and target leverage ratios after the M&A. Similarly, Leland (2007:766) observes that adjusting to target capital structure may be the primary motive underlying the M&A decisions. At the same time distinguishing between different motives underlying M&A decisions is very difficult. Graham and Harvey, (2001:211) states that most of the companies have flexible targets or target ranges rather than an exact status point of target capital structure, hence the capital structure fluctuates between the higher and lower ends of the range. Costs of adjustment are the reason why firms are not able to fix an optimal point as their target capital structure (Fischer et al., 1989:19; Faulkender et al., 2010: 1-4). In a frictionless world or if the cost of adjustment is kept constant, every firm would be at its optimal capital structure. As stated by the tradeoff theory of capital structure, firms target to be at their optimal capital structure where the costs and benefits of debt and equity financing are balanced (Myers, 1984). In this context, the target capital structure depends on the cost of bankruptcy, the agency costs of debt and equity financing, the costs and benefits of

signaling, and tax benefits of debt (Modigliani and Miller, 1963; Ross, 1977; Jensen and Meckling, 1976; Myers, 1977; Stulz, 1990).

In literature while considering the adjustment of capital structure and M&A activities, two different scenarios are observed. The first is that M&A decisions are made solely for financial motives and the intention of managers is to adjust to target capital structure (Leland 2007; Lewellen, 1971; Scott, 1977; Gugler and Konrad, 2002). While in the second scenario, nonfinancial motives such as; market share growth, operational synergies, economies of scales are the motives behind the M&A decisions (Lintner, 1971, Markham, 1973, Mitchell & Mulherin 1996, Weston 2001, Harford 2005), hence the primary objective is non-financial and due to it the firms mostly deviate from target capital structure.

In the first scenario, the firm leverage ratio is at a point away from its target leverage, therefore the motives are financial. Where a firm may undertake an M&A activity to adjust to the target capital structure by targeting a firm and absorbing the debt and equity of the acquired firm (Gugler and Konrad, 2002). In the second case, when firms enter an M&A deal, the financial structure as stated in the literature is expected to change and according to the tradeoff theory (Shyam-Sunder and Myers, 1999), these firms will start adjusting to target capital structure in post-M&A period (Byoun, 2008:3070). Leary and Roberts (2005:2577) state that a large number of firms is actively busy in rebalancing their leverages to sustain their targeted range.

Different studies have shown that firms consider a target debt ratio or a target range when making their financing decisions (Graham and Harvey, 2001; Vermaelen and Xu, 2012). Graham and Harvey (2001) found that 392 CFO that is 81% of their sample has admitted having a target debt-equity ratio or a target range. Further their result show that 71% of the firms have a flexible or somewhat tight target ratio or target range while the remaining 10% have a strict target debt ratio. According to the result of Harford, Sandy and Nathan (2009:11) study, which indicated that within the first five post-merger years, 75% of the financing effects is reversed. These results show that firms maintain a target capital structure and managers try not to divert too far from it. Hence, in the M&A literature it is found that firms adjust back to their target capital structures in post-M&A period if they move away from their target

capital structures during the M&A (Varmaelen and Xu, 2012; Yang, 2011; Harford et al., 2009).

In this thesis, the focus is on evaluating the SOA toward target capital structure in different kinds of M&A deals for both book leverage (BLEV) and market leverage (MLEV). The study is designed to investigate the SOA of the M&A deals in four different categories; i) yearly; ii) cross border and non-cross border; iii) cross industry and same industry; and iv) Different regions including Europe, US and “rest of the world” (REST). The data set consists of financial data starting from 1997 to 2016 while M&A is of 2000 to 2013. The data consists of non-financial 6,520 acquiring firms and panel data of 45,640 firm year observations.

The thesis tests 11 hypotheses related to the SOA and M&A deals, which are developed based on the literature. The hypotheses were empirically tested, adopting the adjusted regression modeling techniques as to estimate the SOA. Also for calculating the target leverage estimators, the panel regression modeling were adopted. Three-year pre and post financial data were acquired for the examination of M&A deals of the acquiring firms.

The findings of the study showed support for BLEV for the first hypothesis stating that “SOA is lower in the crisis years than the non-crisis years”. While for the MLEV there were partial support for hypothesis one. The hypothesis 2 (the speed of adjustment is higher in cross border than non-cross border M&A deals), were accepted for both BLEV and MLEV and results showed that SOA for cross border M&A deals were higher than non-cross border M&A deals. In the case of the third hypothesis in which the “SOA for same industry is lower than cross industry”, M&A could not be accepted. Because the SOA of both BLEV and MLEV were almost the same for same industry and cross industry M&A deals. The hypothesis 4 that the “SOA of US region M&A deals is lower than EUR and REST region M&A deals” was accepted as the SOA results for US were lower than other regions for both BLEV and MLEV. The hypothesis 5 to 11 state that there is a difference between the SOA for BLEV and MLEV across the seven types of M&A deals (non-cross border; cross border; same industry; cross industry; EUR; US; and REST M&A deals). The hypotheses 5 (there exists a difference between SOA for BLEV and MLEV for non-cross border M&A deals) could not be accepted while hypothesis 6 (there exists a difference between

SOA for BLEV and MLEV for cross border M&A deals) is accepted. The SOA pattern for the same industry deals, where BLEV is 35.51% and MLEV is 35.50%, shows the hypothesis 7 could not be accepted. In contrast, the results for cross industry M&A deals indicate a difference between SOA for BLEV and MLEV, therefore hypothesis 8 could not be rejected. The results while comparing the SOA for BLEV and MLEV for different regions show support for the hypotheses 9, 10 and 11.

This thesis aims to contribute to the literature of M&A, target capital structure and SOA in the following ways. Firstly, almost all of the previous studies focusing on SOA have not focused mainly on M&A deals, while the ones that have focused on M&A are investigating the pre-M&A scenario of target capital structure and SOA. Therefore, this study contributes to the literature regarding the post-M&A scenario of target capital structure and SOA.

Secondly, the study developed, a pre and post M&A capital structure movement's scenarios framework highlighting two scenarios based on financial motive and nonfinancial motive. The framework is a major contribution to the literature and the first, to the best of our knowledge, which will help researchers in the M&A and target capital structure studies.

Thirdly, this study contributes to the SOA literature by expanding it to two different major M&A deals types; i) the cross border and non-cross border M&A deals and ii) cross industry and same industry M&A deals. This is also one the first study investigating the SOA for these two major M&A deals group.

Fourthly, the SOA for M&A deals for different regions that is EUR, US and REST analysis is also a contribution to the literature. Majority of the studies focus on a single region while this study investigated a wide range of global M&A deals regarding the SOA and target capital structure. Hence, this study is a comprehensive study for the researchers and managers interested in the areas of M&A and SOA.

The thesis is organized as follows; chapter one consist of three section, the first section (1.1) discuss the different theories of capital structure, second section (1.2) explain literature regarding the motives for M&A and different M&A waves, third section (1.3) concluding by developing a link between M&A and target capital structure. Chapter two consist of four section, section 2.1, illustrate modeling of target capital structure and the measurement of the different variable. Section 2.2, discusses

the modelling of SOA towards target capital structure. In section 2.3, the previous studies related to SOA are displayed, while in section 2.4 concluded the chapter by providing the hypothesis of the thesis.

Chapter three covers the data and explains the methodology, the chapter consist of four section; section 3.1 presents the aim and main question of the thesis, section 3.2 discuss the sample and data collection, Section 3.2, displays the models and variables, while the last section 3.4 illustrate the descriptive statistics of the data analyzed.

Chapter four, provides the empirical results and discussion of empirical findings. The distribution of section are; in first section 4.1, the results of SOA of all firms for both BLEV and MLEV are displayed. Section 4.2, show the results of SOA for cross border and non-cross border M&A deals. Section 4.3 present the SOA for cross industry and same industry M&A deals. In section 4.4, the SOA for different regional M&A deals are explained. The last section 4.5, is the discussion portion, in which the results are compared with the hypothesis

The thesis is concluded with providing key contribution, limitations and future research suggestions at the end with the Conclusion.

CHAPTER ONE

CAPITAL STRUCTURE AND MERGERS AND ACQUISITIONS

The main objective of this study is to measure the speed of adjustment (SOA) of firms to their target capital structure (TCS) in post-merger and acquisitions (M&A). Hence this chapter is made up of three main parts explaining theories on capital structure and M&A. Section 1.1 explains the different theories of capital structure. In section 1.2, the literature on the motives for M&A, different M&A waves, each wave's underlying motive and how they ended are presented and discussed. In section 1.3, theoretical and empirical literature on theories of capital structure and M&A is considered collectively to develop a link between TCS and M&A. The chapter is concluded with an overall summary.

1.1. THEORY OF CAPITAL STRUCTURE

It has been a central question for firms whether and when to issue debt or equity. The appropriate capital structure has always been a matter of concern for firms. The most influential theory of capital structure is the theory of Modigliani and Miller (1958). Modigliani and Miller's (1958) theory of capital structure is based on assumptions including rational investor behavior and perfect capital markets; no transaction costs, bankruptcy costs or taxes; no asymmetry of information that is all relevant information is available for insiders and outsiders; availability of borrowing and lending for all parties at the same interest rate; and hundred percent dividend payout. Based on these assumptions the proposition-I argues that no optimal leverage exists and capital structure is irrelevant for shareholders' wealth (Modiglian and Miller, 1958: 268-269). That is, they argue that the value of a leveraged and unleveraged firm will be the same. Further, Modigliani and Miller's (1958:271) proposition-II claims that the cost of equity increases with the increase of the ratio of debt in the capital structure but the weighted average cost of capital (WACC) of the firm remains constant. Since the cost of debt is cheaper compared to equity, the increased cost of equity is compensated by the cheaper cost of debt leading to constant weighted average cost of capital.

Theoretically, the capital structure irrelevance theory is considered valid but its assumptions are not realistic. Therefore, several researchers were inspired to apply capital structure theory on an imperfect market, where the assumptions of Modigliani and Miller (1958) that concerned taxes, bankruptcy costs, agency costs and arbitrage opportunities could be relaxed. Consequently, other theories have emerged. The literature on these theories could be categorized as following;

- a) Trade-off theories
- b) The pecking order theory
- c) The market timing theory

1.1.1. The Trade-off Theories

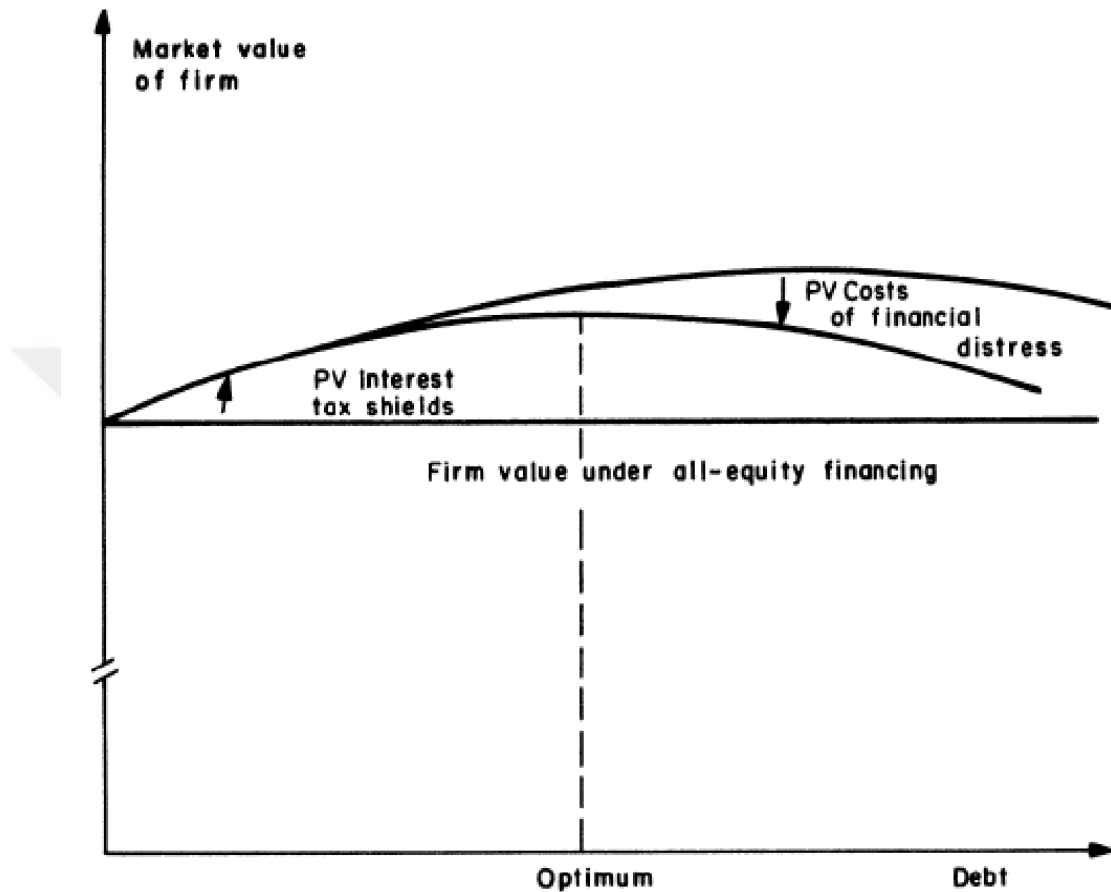
The trade-off theories literature suggests that a firm can maximize its value by maintaining an optimal leverage ratio. The trade-off literature emphasizes the costs and benefits of debt financing including (1) tax shield, (2) bankruptcy costs, and (3) agency costs/benefits of debt. To obtain the optimal capital structure, the trade-off between tax advantages of debt financing and the costs of financial distress or costs of bankruptcy, when the amount borrowed reaches a certain level, must be considered.

Myers (1984:577) as shown in Figure 1, argues that firms, which focus on value-maximization, would operate at the top of the curve where the cost of capital is minimum and the firm value is maximum. At this point, the benefits of debt financing exceed its costs at its maximum levels.

Two types of trade-off theory are found in the literature; i) static trade-off theory and ii) dynamic trade-off theory. The static trade-off theory traces back to the one period valuation model developed by Krauss and Litzenberger (1973). The model takes into consideration both the value of the tax advantage to debt and the potential bankruptcy costs. Static trade-off model suggests that the firm will always be at a constant debt-equity equilibrium subject to change in the market value of equity. The flaw in static trade-off model is that it deals with the capital structure in one period in isolation of other periods in which the firm operates. Empirically, the static model suggests that sudden changes will immediately be incorporated as firms are always at

optimal capital structure, which is rejected by studies like Flannery and Rangan (2006).

Figure 1: The trade-off theory of capital structure



Source: Myers, (1984: 577)

On the other hand, Fischer et al. (1989) developed a model, which incorporates more than one period. This was one of the first models of the dynamic trade-off theory. Dynamic trade-off theory suggests that the firm's capital structure decision is a continuous process over several periods considering the trade-off between the tax advantage of debt and costs of financial distress. It also takes into consideration the investment decisions and restructuring costs (Hennessy and Whited, 2005). Hereafter, in the thesis the "trade-off theory" is used to refer to dynamic trade-off theory.

The trade-off theories focus on the following three issues to explain benefits and costs of debt financing;

- a) tax shield,
- b) bankruptcy costs, and
- c) agency costs of debt

1.1.1.1. Tax Shield

Modigliani and Miller's (1958) arguments were theoretically sound but their assumptions were unrealistic and hence their arguments were not applicable in the world of taxes. The availability of taxation contributes to making debt capital an advantageous source of financing because it provides a shield against corporate taxes (Modigliani and Miller, 1963; Graham, 2000; and Van Binsbergen, Graham, and Yang, 2010).

Modigliani and Miller (1963) incorporated the tax effect on cost of capital and on the firm value. Their findings show that in the world of corporate taxes the value of the firm will increase with the increase of leverage due to the tax shield. Benefit of debt capital is that the interest paid to the debt providers are deducted from earnings before the tax liabilities are calculated, on the other hand no tax deduction exists for dividend payments to equity holders. As a result, if everything remains constant, debt financing may be considered a value-enhancing financing strategy over equity financing (Modigliani and Miller, 1963:442).

Empirical literature regarding tax benefits also shows that firms benefit from debt financing. According to Graham (2000: 1901) the capitalized tax benefit of debt based on a sample of 87643 firm-year observations is 9.7% of the asset value, the taxes, debt and income were treated based on the United State. Graham (2000:1903) states that Engel et al. (1999) in their working paper, consisting of a sample of 22 large companies show that the net tax benefit of a dollar of "interest" is of \$0.315 where the federal and state taxes were around 40 percent. Van Binsbergen et al. (2010: 2091) examined 126,611 firm-year observations for the period 1980 to 2007 and reported that the tax benefit of debt of the book value of total assets is 10.4%. Therefore, the presence of debt in the firm capital structure is worth more than the firms having zero debt, because the cost of debt capital (interest paid on liabilities) is reduced when calculating corporate taxation.

Therefore, it could be concluded that firms will prefer debt financing to a certain level where they could have maximum tax benefits. On the other hand too high debt will also have a negative impact on the performance of managers and the overall firm.

1.1.1.2. Bankruptcy Costs of Debt

As discussed in the earlier section, despite the benefits of debt financing most firms are conservative and they adopt a lower leverage ratio than the optimal level (Graham, 2000; Molina, 2005). According to Graham (2000:1903), in a total sample of 87,643 firm-year observations, around 44% of the firms have extremely conservative leverage ratios where they could double the amount of interest deductible from taxes and could still expect to realize full tax benefits. However, the reason behind this conservatism is the financial distress or bankruptcy costs (Borio, 1990; Andrade and Kaplan, 1998; Molina, 2005; Scott, 1976).

The costs of financial distress (bankruptcy) are challenges for firms in many ways (Andrade and Kaplan, 1998). Firms having increases in financial leverage are to be associated with higher default probabilities (Molina, 2005). Therefore highly leveraged firms have high chances of bankruptcy hence face higher bankruptcy costs, which fully or partially offset the tax related benefits of debt. In such circumstances, the debt capital becomes more expensive relative to equity capital. Therefore extremely aggressive debt policy leads to high costs of debt financing and to higher chances of bankruptcy.

1.1.1.3. The Agency Cost of Debt

The conflict of interest between shareholders, bondholders, and managers is the most discussed issue in corporate finance (Fama and Miller, 1972; Jensen and Meckling, 1976; Merton, 1977; Myers, 1977; Jensen, 1986; and Stulz, 1990). All three parties, namely shareholders, bondholders, and managers, are directly or indirectly concerned with the financing arrangements and the utilization of free cash flows. To understand the agency cost of debt, firstly the agency theory and secondly the agency

problem needs to be discussed. The contract between the owner (shareholders) and the agents (managers) is the basis of the agency theory (Jensen and Meckling, 1976). The core theme of agency theory is the alignment of the interests of the principal with the agents. According to Jensen and Meckling (1976), shareholders delegate authority to the managers in hope that the managers will act in their interest. However, there is a difference in the interest between shareholders and agents resulting in conflict, leading to the agency problem. For instance; managers may demand less intensive work and utilize more perks; invest in less risky investments and lower financial leverage to decreased risk of bankruptcy and losses to their managerial capital and portfolios; preferring short-term investment horizon. On the other hand, shareholders will want to increase the profitability of their investment in the form of dividends and capital growth (reflected through the share price).

According to Jensen (1986) free cash flows, also lead to an agency problem. When firms have substantial “free cash flow” and are invested in project at below the cost of capital rather than encouraging manager to retain cash leads to agency problem. Further, introducing debt into the capital structure may create another potential conflict of interest, because shareholders, managers and debt holders all have different goals. The agency cost of debt arises when debt holders assume the managers are in support of shareholders.

Literature highlights different agency problems. Some studies show that self-interested managers would waste corporate funds in non-profitable projects to entrench themselves and to maximize their own wealth creating an overinvestment problem (Jensen, 1986; and Stulz, 1990). On the other hand, firms with debt capital may align manager interests with those of investors because they need to make interest payments which commit them to focus and try to make investment decisions which are value creating (Bharadwaj and Shivdasani, 2003; Chava and Roberts, 2008). However, too high debt levels may create financial distress, which also has an impact on the managerial investment decisions. In such cases, managers utilize the funds more conservatively which may lead to the underinvestment problem (Leary and Roberts, 2010). Therefore, the agency costs arising from underinvestment and overinvestment problems are related with capital structure decisions of the firms.

Other agency problems that may occur due to debt financing are “asset substitution” and “debt overhang” problems (Jensen and Meckling, 1976; Myers, 1977). When managers act in the interest of shareholders, to maximize shareholder wealth, they carry out asset substitution adopting aggressive investment strategies, which are risky and which may reduce the value of the debt holders (Leland, 1998; Jensen and Meckling, 1976; Myers, 1977). In such a case, the principle of limited liability provides an edge to shareholders if the investment fails and debt holders bear the consequences (Harris and Raviv, 1991). Therefore, highly overleveraged firms could be deemed as risky, hence limit the borrowing ability of the firm.

Moreover, according to Myers (1977) if the firm’s current capital structure has high debt levels it will also affect the future investments. The cost of debt for such firms is high and they may forgo valuable investment opportunities. In such a case the managers may forgo positive net present value (NPV) projects due to the pressure of shareholders if the benefits have little or no pay-offs to them after fulfilling the debt obligations. Smith and Watt (1992:264), who utilized industrial-level data from 1965 to 1985, suggest that firms which have growth and valuable investment opportunities will have lower leverage and a conservative debt policy. In such a case, the firms will not forgo future positive NPV projects. Hence two situations may appear (i) pre-existing debt discourages firms from investing and (ii) anticipating debt overhang, initial debt issuance is lowered.

1.1.2. Pecking Order Theory

The pecking order theory is in contrast to trade-off theory. The trade-off theory puts emphasis on target leverage ratio while the pecking order theory disagrees with the significance of a target leverage ratio. As Myers (1984) argues, pecking order theory suggests that managers first rely on internal funds and then on external capital for their financing choices. This sequence of financing choice of pecking order theory reduces the agency cost of equity and benefits the managers to retain control on firms (Hawawini and Viallet, 1999). Myers and Majluf (1984) and Myers (1984) discuss that raising external finance (debt or equity) will be costly and market would perceive it as a negative signal, because managers issue equity when the company stocks are

overvalued. The equity issuance is surrounded with high asymmetric information problem when compared to debt issues therefore a firm would prefer to raise external debt to external equity. Firms will utilize its internal funds first, if these are insufficient to cover investment needs then they will use debt financing and only after exhausting debt capacity, they will issue external equity (Hubbard et al., 1995; Paul et al, 2007).

The literature regarding pecking order theory could be classified into two as the studies in support of the pecking order theory and the ones not in support. Shyam-Sunder and Myers' (1999:223) findings show that firms follow a financing behavior and in the shortage of cash at hand the firms would prefer debt over equity financing. According to Bharath, Pasquariello, and Wu (2009:3236), firms facing high levels of information asymmetry issue 40% to 70% more debt compared to the ones facing low levels of information asymmetry, while firms facing low levels of information asymmetry prefer to issue equity. Their study provides evidence that there exists an order of preference in financing behavior as predicted by the pecking order theory. Lemmon and Zender (2006) presented a modified version of pecking order theory, that all firms consider internal funds as their first choice of financing then based on the firm's debt capacity, the external financing choice of debt or equity is made.

Contrary to the above studies, Frank and Goyal (2003) conducted a study on the empirical relevance of the pecking order theory and found that large firms persist a financing decision behavior, while small firms violate the pecking order theory. According to Fama and French (2005), more than half of their sample firms including NYSE, AMEX, and NASDAQ firm, do not follow the pecking order. Leary and Roberts (2010) found that fewer than 20 percent of their sample for the U.S firms follow the pecking order in debt and equity financing decisions.

1.1.3. Market Timing Theory

The market timing theory, which generates a form of pecking order but slightly different from the standard pecking order (Huang and Ritter, 2005). The managers focus on the conditions in the market and how their stocks are valued by the investors when making financing choices. Hence they try to find the right time and make financing decisions based on the situation of the market. If the cost of equity is very

low, the firm would prefer external equity otherwise they would prefer debt (Baker and Wurgler, 2002: 4). According to Myers (1984: 587), the firms will follow standard pecking order under normal market conditions, however if equity is cheaper than debt then the firms will issue equity as first choice not as a last resort. This leads to the “equity market timing” which is described as the practice of issuing shares at high prices and repurchasing at low prices (Baker and Wurgler, 2002:1). A takeover or buyback is seem to be driven by capital structure considerations or trade off, while on the other hand, issuing equity is only driven by market timing (Baker and Wurgler, 2002:38).

In summary, according to capital structure theories, a wide range of reasons determine the choice of financing source. Trade-off theory suggests that a certain amount of debt capital should be included in the capital structure of firms so that the firms can benefit from tax savings and minimize the agency costs of free cash flow, leading to value-maximization. On the other hand, the firms must be cautious in using debt capital because of asset substitution problem, bankruptcy costs, and underinvestment problem. However, the literature suggests that as long as the benefits of debt offset the costs of debt, debt should be preferred over equity. Secondly, based on the pecking order theory, after utilizing internal funds, debt capital choice is always selected prior to equity capital. However, in one condition when the equity is highly valued by the stock market, equity capital would be preferred over debt capital. Finally, in conclusion, based on the market timing theory, the choice of financing always depends on the market conditions.

1.2. MERGERS AND ACQUISITIONS

In this section, M&A are discussed focusing on the motives for M&A, different M&A waves and the motive underlying each one.

1.2.1. Motives for Mergers and Acquisitions

Mergers and Acquisitions (M&A) is a process in which two firms combine together for the purpose to create a synergy through which it can achieve organizational goals more effectively and efficiently (Jandik and Lallemand, 2017:8; Manne, 1965:111; Ross, Westerfield, and Jaffe, 2013:885-895; Walsh, 1989:308). In a merger, a new legal entity is established due to the combination of two firms, where the ownership of the newly combined entity remains with pre-existing shareholders of the two firms. However, in an acquisition, one firm (acquirer) purchases the shares or assets of another firm (target). In such a case, the control is transferred to the acquirer firm, the target firm becomes an affiliate or a subsidiary of the acquirer (Brigham and Ehrhardt, 2011:830). Brigham and Ehrhardt, (2011a:830) discusses four different types of M&A, that are; (1) horizontal, (2) vertical, (3) congeneric, and (4) conglomerate.

Horizontal M&A occur when both the acquiring and the target firms are from the same market and industry or from the same line of business (Eckbo, 1983:242; McAfee and Williams, 1992:181; Stillman, 1983:226). In vertical M&A, a firm acquires another firm in a different level of the value chain, hence expanding backward or forward by acquiring a supplier or the final customer (Chen, 2001:667-668; Comanor, 1967:225; Salinger, 1988:345). Congeneric M&A occur when two companies are in the same or related industries but have different product lines having similar distribution channels (Brigham and Ehrhardt, 2011b:831). The last type of M&A is the conglomerate, in which the combining firms are both from different industries and have different business lines (Matsusaka, 1993:357-358; Servaes, 1996:1202).

The combination of different firms to form a merger is driven by different motives. The literature suggests that the motives of M&A are probably almost as many as the number of acquirers and targets. These motives can be grouped into different categories based on resemblance (Mukherjee, Kiymaz, and Baker, 2004:11). According to Brigham and Ehrhardt (2011:828), the primary motive that should guide the process of M&A is to increase the value of the combined firm. In other words, it could be said that the primary motive of M&A is to achieve synergies.

There are a number of other motives that drive M&A such as; diversification, taxes, increasing market power and the management performance etc. As shown in Figure 2, Trautwein (1990:284) brought forward seven different theories that may underlie M&A, as efficiency, monopoly, raider, valuation, empire-building, process and disturbance theory. In Figure 2, all the theories are classified into three main categories, a) merger as rational choice; b) merger as process outcome; and c) merger as macroeconomic phenomenon. The first category consists of the theories that are the motives behind the mergers, while in the other two cases the merger is considered as a process outcome.

According to Trautwein (1990), the first category of theories focuses on the benefit to the shareholders and to the managers. The merger benefits consist of net gain through synergy (efficiency theory), wealth transfer from customers (monopoly theory) or target shareholders (raider theory) and the gains from private information (valuation theory). The last theory, Empire-building theory, focuses on the benefits to the managers, in which managers plan to execute a merger to maximize their own utility and entrenchment.

Figure 2: Theories of merger motives

Merger as rational choice	Merger benefits bidder's shareholders	Net gains through synergy	Efficiency theory
		Wealth transfers from customers	Monopoly theory
		Wealth transfers from target's shareholders	Raider theory
		Net gains through private information	Valuation theory
	Merger benefits managers		Empire - building theory
Merger as process outcome			Process theory
Merger as macroeconomic phenomenon			Disturbance theory

Source: Trautwein, (1990:284)

The second main category of theories leads to process theory, where the merger takes place not due to comprehensively rational choices but due to the outcome of some irrational process or limited information arising from incomplete evaluations and cognitive simplifications used. The third category theory argues that the merger activities are due to economic disturbance leading to the disturbance theory. The changes caused in the individual expectations are due to the increase of general level of uncertainty in the economy.

Even though theories of Trautwein (1990) lack enough empirical support, and other researchers such as Berkovitch and Narayanan (1993), Seth, Song, and Pettit, (2000) and Seth, Song, and Richardson Pettit (2002) present different motives, they all agree on three common motives which are synergy, hubris and managerialism as drivers of M&A. Mueller and Yurtoglu (2007:881-882) further suggest five motives that are; synergy, market for corporate control, managerial discretion, overvaluation and the hubris hypothesis. The findings of their study indicate that some mergers generate synergies but majority of the mergers were dependent on managerial discretion and hubris hypothesis. Based on the abovementioned studies, the list of the motives that have gained most attention in literature can be listed as;

- a) Synergy motives- The managers initiate the M&A process to utilize synergy gains,
- b) Agency motives- The managers initiate the M&A process for personal interest rather than shareholder interest,
- c) Hubris/behavioral motives- The managers initiate the M&A process based on valuation errors.

These motives have also been found occurring in different intervals, and different studies showed that M&A have occurred in different waves which were driven by different motives. In the next section the M&A waves are illustrated indicating the underlying motives.

1.2.2. M&A Waves and the Underlying Motives

As discussed above, there is no single motive underlying the M&A behavior. Accordingly, the literature also shows that past M&A activity occurred in cycles or waves indicating that at a certain time period, a set of common motives could have stimulated firms to engage in M&A activity as presented in Table 1.

In the literature, six such cycles or waves are highlighted starting from the end of the 19th century in the US while in Europe, the M&A waves were observed and reliable evidence were available after the 1960's (Martynova and Renneboog, 2005:3). The first wave took place in the years between 1897 and 1904, in which the US firms especially in the manufacturing sector were the main parties (Martynova and Renneboog, 2008:2151). In this wave, which is considered as one of the great merger waves in the US, firms mostly in the same industry including competitors or rivals were involved in horizontal mergers. The motive behind these M&A was to establishing monopolies and market dominance. The collapse of the capital market between 1903 and 1905 brought an end to the first wave.

The US government intervened and banned such M&A activities that lead to monopolies and anticompetitive behavior. These governmental laws led the firms to switch over to vertical integration and a second M&A wave emerged, starting from 1916 to 1929 where firms started engaging in vertical mergers (Martynova and Renneboog, 2008:2149). In the vertical M&A the motive of the companies was to reduce costs rather than increasing revenue. The focus was more efficiency-oriented which involved firms that were not competitors but collaborators. The engagement of firms were to target a firm that was in the "upstream" toward the resources or in "downstream" towards the end-user (Chen, 2001:668). In this wave mostly the small firms consolidated with larger ones. The crash of the US stock market in 1929 put an end to this wave.

In the mid-1960s after the great depression and World War II, a third wave of M&A began. In this wave firms focused on horizontal diversification also known as diversified conglomerate mergers. The goal was to benefit from growth outside the firms' original market and to reduce volatility of their profits. The oil crisis in the 1970s which brought the world to recession ended the third wave. According to

Sudarsanam (2003:26), at this time, UK firms focused more on horizontal integration M&A while the US firms on large conglomerates. The European countries such as Germany and France observed a wave of diversification during the 1960's (Matsusaka, 1996:284). After the economic recession, the world witnessed changes in antitrust policy, deregulation of financial services, development of new financial instruments, and increased technological progress.

A new wave emerged in the start of 1980s and ended in 1989. In this era, a large number of divestitures and hostile takeovers had emerged (Renneboog and Simons, 2006:3; Renneboog, Simon and Wright, 2007:594). The hostile raiders were always ready to jump in and pick off less efficient firms. Blair (1993) states that the "de-diversifying" and refocusing on core corporate ideals were once again preferred. In October 1987, the stock market crash was the event that gradually ended this wave.

The fifth wave of M&A occurred in the 1990s. The main take over motive was growth and firms were moving towards globalization. The deal volume and value were both exceptional. The US and European M&A had 119,000 and 117,000 M&A deals respectively, while during the fourth wave it was 34,000 and 13,000, respectively (Gregoriou and Renneboog, 2007: 4). According to Martynova and Renneboog (2007:4) the total global value reached to USD 20 trillion which was five times the total value as compared to the fourth wave. Cross border transactions were high due to stronger competition from abroad and a substantial takeover market emerged in Asia as well. According to Renneboog and Szilagyi (2007:798) during this period the low interest rate and relaxed credit terms may have increased the amount of M&A activity. Also corporate bond market grew with a tremendous speed. This wave ended with the bursting of the internet bubble in 2000.

Table 1: M&A Waves and Descriptions

Waves	Period	Description
1	1897–1904	Monopolization was the motive in this period moving towards horizontal mergers. Firms doing business in the same industry, producing the same products or providing the same services are combined.
2	1916–1929	Due to governmental restriction on horizontal mergers, the motive was integration leading to vertical mergers. The acquirer expands the firm backwards, towards the resources (upstream mergers) or forward, towards the end user (downstream merger). The interest has shifted from monopolies to oligopolies.
3	1965–1969	Diversified conglomerate mergers, in which firms enter unrelated fields of business.
4	1981–1989	Congeneric mergers; Hostile takeovers; Corporate Raiding; firms that are combined do business in close fields but produce different products.
5	1992–2000	Cross-border mergers, in which the target firm is located in a different country; multinational corporations appear.
6	2003–2007	Shareholder Activism, Private Equity, Leveraged Buy Out (LBO), for where the motive is globalization, support from the government and the growth of private equity funds.
7	2008- Onwards	No clear M&A wave was observed post financial crisis

Source: (Martynova and Renneboog, 2008; Cordeiro, 2014)

In 2003, after the technology bubble burst, the sixth merger wave emerged. The delay to this wave was also caused by the events of September 11, 2001, due to the uncertainty in the financial market (Martynova and Renneboog, 2005:12). The transactions were delayed due to the uncertainty about world economies created by the 9/11 terrorist attack. This wave came to an end with the subprime crisis that started in 2007 in the US. The availability of low interest rates, where companies could acquire cheap credit fueled the M&A wave. The low interest rates also increased the number of private equity acquirers in the M&A deals (Alexandridis, Mavrovitis and Travlos, 2012). Besides private equity; globalization and shareholder activism were the key features of the sixth wave. Shareholders had a more active and leading role in overseeing the performance of management. They exercised their ownership rights and displayed influence over the actions and behaviors of the board of directors and management. Leveraged Buy-outs (LBOs) also became prevalent. Due to the availability of cheap credit, the acquiring firms borrowed money for purchasing the stock of the target firm (Gaughan, 2011:285).

Confusion exists in differentiating between the seventh M&A wave and a bubble. Based on the previous six waves, to consider a M&A wave, there should exit a significant change in the environment, legislative, technological shift or specific buying trend of M&A etc for a certain time period. During the period between 2008 and 2016, a mix of certain market behavior is observed. Based on the Statista Report (2018) the dollar values of M&A, decreases sharply from 4.958 trillion U.S. dollars to 2.198 trillion U.S. dollars from 2007 to 2009. However, from 2013 the value started increasing and reached to 4.776 trillion U.S. dollars in 2015, which again decreased in 2016 to 3.649 trillion U.S. dollars according to the Statista (2018) report. The value of M&A in 2015 was almost the same as the M&A value in 2007 (Statista, 2018).

Post financial crisis of 2008, Cordeiro (2014:6) argues that a new M&A wave is emerging because, companies have adjusted to the uncertainties in the world that there will always will be war, and countries will face economic challenges. But this argument of a new M&A wave stated in Corderio (2014) reported could not be accepted, because the value of the M&A globally was at a raise from 2013 until 2015, but in 2016, it decreased to 3.649 trillion U.S. dollar from 4.776 trillion in 2015 (Statista, 2018) ending the M&A new wave expectation. In contrast, Brusati (2013)

stated that the domestic and global condition does not favor an M&A wave. However, M&A deals require large capital and the globally institutions and companies are facing liquidity problems (Brusati, 2013). In addition, the International monetary fund (IMF) cut global growth forecast, while US is facing internal debt and European Union struggling with protracted recession. According to the global M&A Statista (2018) dollar value, there are short period upward movement for two to three year but fall down to the same or lower level in the fourth year.

This section could be summarized that the waves emerge as a result of favorable economic and political environment but end with different crises such as technological, industrial or political (Martynova and Renneboog, 2008:2152).

In the following section the literature of M&A and capital structure are reviewed.

1.3. M&A AND CAPITAL STRUCTURE

M&A are considered as an expansion or organic growth for the firms. Several advantages are achieved through M&A such as; increase in market share, financial growth, operational synergies, economies of scale, tax benefits and elimination of compensation threats. In this study the focus is basically on capital structure and adjustment to target capital structure, therefore the changes in capital structure surrounding the M&A activities are of interest to investigate.

According to the related literature, two different scenarios are observed while considering the adjustment of capital structure and M&A activities. The first is that M&A decisions are made solely for financial motives and the intention of managers is to adjust to target capital structure in the post M&A (Leland 2007; Lewellen, 1971; Scott, 1977; Gugler and Konrad, 2002). While in the second scenario, nonfinancial motives such as; market share growth, operational synergies, economies of scale are the motives behind the M&A decisions (Lintner, 1971, Markham, 1973, Mitchell and Mulherin 1996, Weston 2001, Harford 2005). In such cases, many firms may divert from their target capital structures in post M&A.

In the first scenario, where the motive is financial, a firm may undertake an M&A activity to adjust to the target capital structure by targeting a firm and absorbing

the debt and equity of the acquired firm (Gugler and Konrad, 2002:2). The financial motive help to redistribute the wealth to take maximum financial benefit that is tax advantages, interest rate, and diversification (related to modern portfolio theory). In the pre-M&A scenario, the firm is wide away from their desired optimal capital structure, which if acquire will maximize the cost saving. Therefore, in the pre-M&A scenario the firm will be far away from the target capital structure shown in Figure 3, which after the M&A retrieves toward target capital structure. Hence, in financial motive, the pre and post M&A capital structure are different and a new capital structure is adopted in the post M&A. Leland (2007:766) observes that adjusting to target capital structure may be the primary motive underlying the M&A decisions. At the same time distinguishing between different motives underlying M&A decisions is very difficult. For example, Gugler and Konrad (2002:2) argue that in M&A decisions, the financial motive may be difficult to separate from motives of increasing market power and operational synergy.

In the second scenario, when the underlying motive of M&A is non- financial, firm are mostly at their target capital structure in the pre-M&A scenario. The post-M&A financial structure is expected to change (move away from target capital structure) and according to the tradeoff theory, these firms will start adjusting to target capital structure in post-M&A period (Byoun, 2008:3070). In a financial surplus or deficit, the firms will focus on adjusting their capital structures. Hence, according to Leary and Roberts (2005:2577) state that a large number of firms is actively busy in rebalancing their leverages to sustain their targeted range, similarly the non-financial motive M&A firm are active in rebalancing to target capital structure in post-M&A scenario.

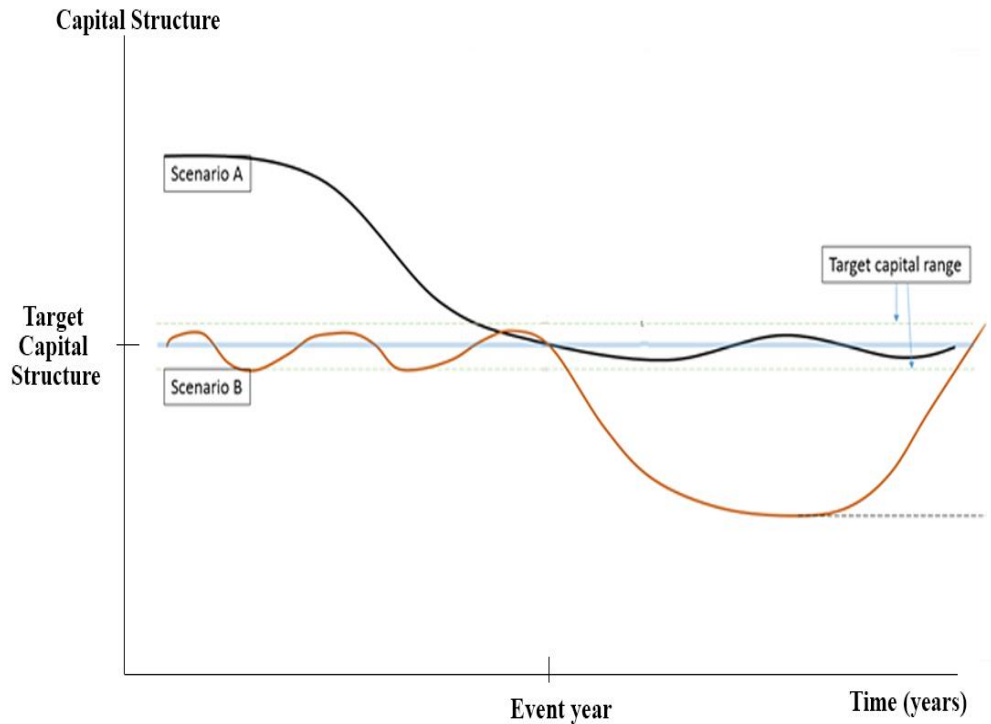
Both of these scenarios are summarized in Figure 3. On the horizontal axis the time period that is measured in years are listed while on the vertical axis the different ratios of capital structure is presented. The event year could be seen at the center of the horizontal axis and the target capital structure is at the middle of the vertical axis of capital structure. The two dashed lines above and below the target capital structure point is the normal range in which target varies. In Scenario-A, the capital structure of the firm is outside of the firms target capital structure range before the M&A event year. As the M&A event year approaches, the capital structure of the firm moves

toward the target capital structure range and will continue to fluctuate in the target capital structure range in post-M&A. While in the Second scenario-B, as shown in Figure 3, the firm has a pre-M&A target capital structure range within which it fluctuates. However, in the post-M&A it depart from its target capital structure and according to the literature adjusts back to the pre-M&A target capital structure. The speed of adjustment in Scenario-B is determined by different cost of adjustment (Fischer et al., 1989:19; Faulkender et al., 2010:1-4).

As shown in Figure 3, the pre-M&A capital structure may differ from the post-M&A capital structure. As discussed previously in this chapter, there is evidence in favor of trade-off theory and optimal capital structure. From Figure 3, the different scenarios that are extracted from the literature show that firms maintain a target capital structure. Graham and Harvey (2001:221) found that 81% of their sample has a target debt-equity ratio or a target range. In which 71% of the firms have a flexible or somewhat tight target ratio or target range while the remaining 10% have a strict target debt ratio. Therefore, in literature it is found that firms adjust back to their target capital structures in post-M&A period if they move away from it during the M&A (Varmaelen and Xu, 2012:25; Jalilvand and Harris, 1984:142; Yang, 2011:1-2; Harford et al., 2009:2-3).

Different studies illustrate that firms adjust towards a target debt ratio; even if they deviate from the target capital structure in the short term, they try to adjust back to the target debt level in the long term (Marsh, 1982:123; Taggart, 1977:1484; Harford et al., 2009:1-3; Oztekin and Flannery, 2012:89). Similarly Fama and French (2002:26) state that the debt ratio of firms adjust slowly and may take a long time to adjust to their long-run mean or target level. Studies have estimated target adjustment models and observed significant adjustment coefficients and provided evidence supporting target capital structure adjustment behavior (Auerbach, 1985; Jalilvand and Harris, 1984; Taggart, 1977; Oztekin and Flannery, 2012; Harford, Sandy and Nathan, 2009; Varmaelen and Xu, 2012; Yang, 2011).

Figure 3: Scenario of pre and post M&A capital structure movements



Modern tests of the trade-off theory recognize that there are a number of adjustment costs that may prevent firms from continuously adjusting to their target capital structures. Myers (1984:587) shows that if the cost of adjustment outweighs the benefits, then firms will wait to recapitalize and will be moving away from their target. Therefore if the rebalancing is costless, or in other words in the absence of adjustment costs, the capital structure of firms will mostly be moving toward an optimal level of leverage (Harford et al., 2009:1-3; Morellec and Zhdanov, 2008:566). In contrast, when such costs are present, firms may not respond immediately to adjust to capital shocks.

In summary this chapter discussed the capital structure theories literature which could be divided into two sections, i) Trade-off based theories literature and ii) Information asymmetry-based theories literature. In the trade-off based theories literature, the different benefits and costs of debt were discussed including tax shield, bankruptcy costs and agency costs/benefits of debt. In the Information asymmetry-based theories literature, the pecking order theory and the market timing theory were discussed. Furthermore, the different motives of M&A are explained and the different

waves or cycles of M&A at different spans of time are illustrated. It was found that the M&A waves were generated due to common motives and ended with different crisis. The M&A and capital structure literature was reviewed and it was absorbed that firms maintain a target capital structure and if it deviates from the target capital structure, they engage in rebalancing. The literature shows that different factors affect the adjustment process of firms toward their target capital structures. Hence the next chapter discusses the target capital structure, measurement of target capital structure and how to calculate the speed of adjustment toward the target capital structure.



CHAPTER TWO

TARGET CAPITAL STRUCTURE AND SPEED OF ADJUSTMENT

In this chapter the models of speed of adjustment (SOA) is discussed. Two different empirical approaches to calculating speed of adjustment to target capital structure are adopted in the literature; a two-step approach (Hovakimian, Opler, and Titman, 2001; Leary and Roberts, 2005; Flannery and Rangan, 2006; Strebulaev, 2007; Byoun 2008; Oztekin and Flannery, 2012; Faulkender et al., 2012) and a single model approach (Aybar-Arias et al., 2012). In the two-step approach, the target capital structure is calculated in the first step and in the second step the speed of adjustment is estimated. While in the single model approach, the determinants of target capital structure and speed of adjustment are estimated together (Dufour, Philippe and Pierre, 2018). In this thesis the two-step approach is adopted and therefore the discussion will focus on it. The chapter is structured as follows: the first section discusses the measurement of target capital structure and the second section explains the estimation of the speed of adjustment toward the target capital structure. In the third section, the previous empirical studies regarding the SOA and target capital structure is discussed. In the final section, the hypotheses of the thesis are formulated based on the literature.

2.1. TARGET CAPITAL STRUCTURE

Target capital structure is an important outcome of the trade-off theories of capital structure, which argue that the firms try to balance the costs and benefits of debt and equity in their financing decisions. As discussed in the previous chapter, the determinants of capital structure include the costs of bankruptcy, the agency costs of debt and equity financing, the costs related to negative signaling, whereas the benefits include tax benefits of debt and benefits of signaling (Modigliani and Miller, 1963; Ross, 1977; Jensen and Meckling, 1976; Myers, 1977; Stulz, 1990). Most of the studies related to target capital structure stem from studies on the determinants of debt ratios and the choice of debt or equity financing (Titman and Wessels, 1988; Rajan and Zingales, 1995; Graham, 1996; Marsh, 1982; Jalilvand and Harris, 1984; Bayless and

Chaplinsky, 1990; MacKie-Mason, 1990; Jung et al., 1996). The firm characteristics that influence capital structure decisions have been identified in the literature as firm size, market-to-book ratio of assets, asset tangibility, profitability, research and development (R&D) intensity and marginal tax rate.

The target capital structure of firms is unobservable (Shyam-Sunder and Myers, 1999). Different empirical studies have identified different variables that can estimate a firm's target capital structure. (Flannery and Rangan, 2006; Kayhan and Titman, 2007; Shyam-Sunder and Myers, 1999). One way to estimate target debt level is to multiply the total capital with the historical mean of the debt level. An alternative way is rolling target based on historical information for each firm that is adjusted based on more than one-year lags (Jalilvand and Harris, 1984; Shyam-Sunder and Myers, 1999). Other studies used different firm specific and macroeconomic data to calculate the target capital structure (Hovakimian, Opler, and Titman, 2001; Leary and Roberts, 2005; Flannery and Rangan, 2006; Strebulaev, 2007; Oztekin and Flannery, 2012).

Bradley, et al. (1984:869) examine optimal capital structure theory by developing a firm specific model by using a sample of 851 firm data during a 20 year period. Their findings support that firms maintain a target leverage level. They identified that financial distress, non-debt tax shields and earnings impact the target capital structure (Bradley, et al., 1984:876). They found that expected costs of financial distress and non-debt tax shields have a negative relation with target debt level while earnings have a significant positive impact on a firm's target capital structure. Kester (1986:5) showed that firm specific variables determine the leverage level, the finding show that in the U.S. and Japanese manufacturing corporations, the relationship between growth and leverage is positive. Rajan and Zingales (1995) investigated different firm factors to estimate the leverage level. The firm specific factors used were tangibility, market to book ratio, net sales and profitability. Their sample consisted of the G7 countries, where the economic development levels are fairly homogeneous. Their findings show that all the variables had consistent correlation with the debt levels within the G7 countries except for firm size. Leverage increases with relation to size in all countries except for Germany (Rajan and Zingales, 1995:1422). Hovakimian (2006:224) also used the same firm specific factors and external finance weighted average market-to-book (EFWAMB) to measure the target leverage.

Flannery and Rangan (2006:476) determined eight different firm characteristics based on previous studies. These include earnings to assets (EBIT_TA), market to book value of assets (MB), depreciation as a proportion of total assets (DEP_TA), log of total assets (LnTA), fixed assets as a proportion of total assets (FA_TA), research and development expenses as a proportion of total assets (R&D_TA), industry median debt ratio (IND_MED), and a dummy variable for firms with missing R&D expenses. In this current thesis, the determinants of target capital structure are determined by adapting the Flannery and Rangan (2006) procedure. Flannery and Rangan (2006) used the market debt ratio to measure leverage but in this thesis, the book debt ratio is also used to investigate any differences between book and market debt ratios (Oztekin and Flannery, 2011).

Hence, the model to calculate the target book leverage, $BLEV^*$, and target market leverage $MLEV^*$, are estimated as follows:

$$BLEV_{i,t+1}^* = \beta X_{i,t} \quad (1)$$

and

$$MLEV_{i,t+1}^* = \beta X_{i,t} \quad (2)$$

where in equation (1) and (2), the $BLEV_{i,t+1}^*$ and $MLEV_{i,t+1}^*$ is the desired book and market leverage ratios respectively for firm i at time $t+1$.

They are calculated as follows:

$$BLEV_{i,t} = \frac{(Long-term\ debt_{i,t} + Short-term\ debt_{i,t})}{Total\ assets_{i,t}} \quad (3)$$

and

$$MLEV_{i,t} = \frac{(Long-term\ debt_{i,t} + Short-term\ debt_{i,t})}{(Total\ assets_{i,t} - Book\ value\ of\ equity_{i,t} + Market\ value\ of\ equity_{i,t})} \quad (4)$$

On the other hand, in equation (1) and (2), the vector $X_{i,t}$ is a set of firm characteristics adapted from Flannery and Rangan (2006), Rajan and Zingales (1995), Hovakimian (2006), Hovakimian et al. (2001), and Fama and French (2002) whereas the β is the coefficient vector. The firm characteristics used in the analysis are profitability, growth opportunities, non-debt tax shield, firm size, tangibility, intangibility, research and development expense, and industry median debt ratio. By substituting these explanatory variables in equation (1) and equation (2), the following equations are used in the analysis.

$$BLEV_{i,t+1}^* = \beta_1 EBIT_TA_{i,t} + \beta_2 MB_{i,t} + \beta_3 DEP_TA_{i,t} + \beta_4 LnTA_{i,t} + \beta_5 FA_TA_{i,t} + \beta_6 R\&D_TA_{i,t} + \beta_7 R\&D_DUM_{i,t} + \beta_8 IND_MED_{i,t} + \varepsilon \quad (5)$$

and

$$MLEV_{i,t+1}^* = \beta_1 EBIT_TA_{i,t} + \beta_2 MB_{i,t} + \beta_3 DEP_TA_{i,t} + \beta_4 LnTA_{i,t} + \beta_5 FA_TA_{i,t} + \beta_6 R\&D_TA_{i,t} + \beta_7 R\&D_DUM_{i,t} + \beta_8 IND_MED_{i,t} + \varepsilon \quad (6)$$

Each of these variable are discussed below:

2.1.1. Profitability

The proxy used for profitability is the earnings before interest and taxes as a proportion of total assets (EBIT_TA). This variable is calculated as shown in equation (7).

$$EBIT_TA_{i,t} = \frac{\text{Operating Income}_{i,t} + \text{Interest and related expense}_{i,t} + \text{Current Income Taxes}_{i,t}}{\text{Total assets}_{i,t}} \quad (7)$$

If the firms with high profitability, EBIT_TA ratio, prefer higher leverage to operate with relatively high cash flows, the firms might reflect and signal a stable financial status in maintaining their ability to meet debt payments (Flannery & Rangan, 2006:476). On the other hand, if they prefer lower leverage, it might be a result of

higher retained earnings which mechanically reduce the chance of borrowing (Asgharian, 1997).

2.1.2. Growth Opportunities

The market to book ratio of assets (MB) is used to measure the growth opportunities of a firm (Hovakimian et al., 2004:527; Baker and Wurgler, 2002:3; Flannery & Rangan, 2006:476). It is calculated as in equation (8).

$$MB_{i,t} = \frac{Long-term\ debt_{i,t} + Short-term\ debt_{i,t} + Preferred\ capital_{i,t} + Market\ Value\ of\ Equity_{i,t}}{Total\ assets_{i,t}} \quad (8)$$

Higher market to book ratio sends a positive signal to the market that more attractive future growth options are available for the firm. Mixed evidence regarding the relationship between growth opportunities and leverage are found in the literature (Myers, 1977; Rajan and Zingales, 1995; Mittoo and Zhang, 2008). Firms face difficulties to access new external financing during their earlier growth stages, therefore they are forced to use retained earnings. Moreover, high debt levels put the future profitable investment opportunities at risk and increase the bankruptcy costs. As discussed earlier, to provide a positive signal to the market, limiting leverage is a trend adopted by firms to portray better growth opportunities (Flannery & Rangan, 2006:476).

2.1.3. Non-debt Tax Shield

Following Fama and French (2002:8), the non-debt tax shield is proxied by depreciation as a proportion of total assets (DEP_TA) which is calculated as in equation (9).

$$DEP_TA_{i,t} = \frac{Total\ Depreciation\ and\ Amortization_{i,t}}{Total\ assets_{i,t}} \quad (9)$$

Depreciation expense also considered as a substitute to interest for tax shield. If the level of depreciation expenses is high then it may reduce the need for debt finance to create a tax shield (Antoniou et al., 2008:64).

2.1.4. Firm Size

Firm size is measured by natural logarithm of total assets (LnTA) as shown in equation (10).

$$\text{LnTA}_{i,t} = \text{Log Total assets}_{i,t} \quad (10)$$

Larger firms having large amounts of total assets are assumed to be highly diversified with less volatile earnings, hence have low default risk and stable cash flows (Hovakimian et al., 2001:7). As a proxy of diversification and default risk, firm size is expected to have a positive relationship with leverage ratio (Rajan and Zingales, 1995:1451; Flannery and Rangan, 2006:482).

2.1.5. Tangibility

Tangibility is measured by the percentage of fixed assets in total assets (FA_TA) as shown in equation (11).

$$\text{FA_TA}_{i,t} = \frac{\text{Fixed assets}_{i,t}}{\text{Total assets}_{i,t}} \quad (11)$$

Firms with greater tangible assets possess a capacity for higher debt (Jensen and Meckling, 1976:342; Rajan and Zingales, 1995:1455). Firms with more fixed assets are normally larger firms; hence the risk of bankruptcy is reduced (Hovakimian et al., 2001:7). In the event of bankruptcy, the tangible assets are easy to collateralize which lead to a smaller loss in value compared to intangible assets.

2.1.6. Intangibility

The intangible assets of the firm is measured by the research and development expenses as a proportion of total assets (R&D_TA) variable which is calculated as in equation (12)

$$R\&D_TA_{i,t} = \frac{\text{Research and Development Expense}_{i,t}}{\text{Total assets}_{i,t}} \quad (12)$$

Firms with higher proportion of intangible assets in the form of R&D expenses will prefer to operate with more equity and thus a lower debt ratio (Flannery and Rangan, 2006:476). According to Uysal (2011:606), firms with higher R&D expenses tend to have higher growth opportunities and are expected to have low leverage. Bankruptcy costs are also expected to be higher for firms with high R&D expenses which also lower the chance of getting debt financing (Titman, 1984:138; Titman and Wessels, 1988:6).

2.1.7. Research and Development Expense

A dummy variable (R&D_DUM) for the existence of R&D activities is included in the analysis. The R&D_DUM variable takes a value equal to one for firms that have not reported any R&D expense and zero for firms that have reported R&D expense in their financial statements. Additionally, R&D_TA variable takes the value zero if the firm did not report any R&D expense (Flannery and Rangan, 2006:477). The reason of the dummy variable is to differentiate the firms that have not reported any R&D expense since firms with high R&D expense are expected to have less debt so firms having no R&D expense would be expected to have higher leverage. Thus the dummy variable is expected to have a positive sign.

2.1.8. Industry Median of Debt Ratio

The industry median debt ratio (IND_MED) is included to capture the industry characteristics that may not be captured by other explanatory variables (Flannery and Rangan, 2006:477). In the literature it is found that, the level of target leverage ratio is dependent on the industries the firms operate in (Smith, Chen and Anderson, 2015:1163; Stoja and Tucker, 2007:2). The classification of the industries is based on the Fama and French (1997:179) industry definitions.

2.2. MODELING THE SPEED OF ADJUSTMENT TOWARD TARGET CAPITAL STRUCTURE

In the analysis, both the “firm book leverage” (BLEV) and “firm market leverage” (MLEV) are analyzed and compared. Therefore the primary step is to estimate the target BLEV* and MLEV*. After estimating the BLEV* and MLEV* the next step is to calculate the speed of adjustment for each. Hence, this section explains the modeling of speed of adjustment to target capital structure.

In a frictionless world, the firms would always be maintaining their target capital structure. However, in the real world, mainly different adjustment costs prevent the firms from adjusting to their target capital structures (Altinkilic and Hansen, 2000:195; Faulkender et al., 2012:633; Zhou et al., 2016:103). In the literature different procedures are used to measure the incompleteness or partial adjustment toward target capital structure based on different methods (Rajan and Zingales, 1995; Hovakimian et al., 2001; Fama and French, 2002; Flannery and Rangan, 2006; Kayhan and Titman, 2007; Byoun, 2008; Öztekin and Flannery, 2012; Warr et al., 2012). The speed of adjustment (SOA) model of the present thesis is constructed in two stages following Flannery and Rangan (2006) methodology. In the first-stage the target capital structure is estimated, while in the second stage the speed of adjustment is estimated using the target capital structure from the first stage. The standard model of speed of adjustment is provided in equation (13)

$$BLEV_{i,t+1} - BLEV_{i,t} = \lambda(BLEV_{i,t+1}^* - BLEV_{i,t}) + \varepsilon_{i,t+1} \quad (13)$$

In equation (13), the " λ " estimates the average speed of adjustment to the target level. Each year the firm closes the gap between the actual and the desired leverage levels. The equation regresses the change in the actual debt to book value of total assets ratio ($BLEV_{i,t+1} - BLEV_{i,t}$) from time t to $(t+1)$ and the difference between the expected debt to book value of total assets ratio and the actual ($BLEV_{i,t+1}^* - BLEV_{i,t}$). If the firms adjust their leverage to their target level completely the value of the coefficient λ will be 1. On the other hand, if the firm does not adjust its leverage level, then the coefficient λ will be zero. The value of the coefficient may be above the value "1", if the firm moves above the target leverage level whereas it will be below the value "0" if the firm diverts in the opposite direction from the target leverage value.

Similar to the "BLEV" the speed of adjustment model for the "MLEV" is below.

$$MLEV_{i,t+1} - MLEV_{i,t} = \lambda(MLEV_{i,t+1}^* - MLEV_{i,t}) + \varepsilon_{i,t+1} \quad (14)$$

In equation 14, the actual change in market leverage $MLEV$ from time t to $t+1$ is regressed with the difference between the target market leverage $MLEV^*$ at time $t+1$ and market leverage $MLEV$ at time t . The speed of adjustment is determined by the coefficient λ and the explanation is similar as that of equation (13). While the target market leverage $MLEV^*$ is estimated by equation (2).

2.3. PREVIOUS STUDIES RELATED TO SPEED OF ADJUSTMENT

In this section, previous studies on the speed of adjustment models in the area of capital structure are discussed. Two different views regarding speed of adjustment can be identified from the literature. One group of researchers identified a fast speed of adjustment toward target capital structure; in contrast, the second group is in support of a slow moving adjustment speed toward the target capital structure.

Jalilvand and Harris (1984) are one of the early researchers using the partial adjustment models. They examined the adjustment of firms to different financial targets post any financial decision. Their sample included 108 companies, 58 of which

were those companies who had been involved in a major M&A and 50 of which were involved in one or two small magnitude acquisitions (Jalilvand and Harris 1984:133). They used different partial speed of adjustment models to measure patterns of adjustment in corporate behavior including long term debt, equity and other behavior. Their findings show that the speed of adjustment on average per year is 56.12% to their target long term debt. Equity adjustment was 10.85%, which was slower compare to long term debt (Jalilvand and Harris 1984:139-140). The study supports that after making any financial decision, firms adjust to long term financial target.

Fama and French (2002) tested the Trade-off and Pecking Order Theory predictions about dividends and debt. They used the Pecking Order Model of Myers (1984) to examine whether the leverage and dividend behavior of companies vary with profitability and investment opportunities. Additionally they also include two partial adjustment equations to investigate the movement of dividends and leverage toward their targets. Their sample included around 3264 firms, more specifically 1618 firms that paid dividends and 1646 firms that are nonpayers (Fama and French, 2002:26). Their findings show that the speed of adjustment of the firms that pay dividends is 7-10% per year and less than the nonpayer firms whose speed of adjustment is around 15-18% (Fama and French, 2002:24). Due to the slow adjustment speed they term that the adjustment speed is at a “snail’s pace” (Fama and French, 2002:24).

Leary and Roberts (2005) primarily illustrated that the presence of adjustment costs has an impact on the corporate financial policy. They criticize Fama and French (2002) and state that the snail’s pace is a model misspecification rather than an accurate description of the adjustment process (Leary and Roberts, 2005:2592). They estimated a partial adjustment model using simulated data from a tradeoff model with the adjustment costs. Their dataset contains unbalanced panel data of 127,308 firm-quarter observations (Leary and Roberts, 2005:2600). Their results showed that the reversion rate for proportional, fixed plus convex, and just fixed adjustment costs were 15%, 17%, and 39% per year respectively (Leary and Roberts, 2005:2592).

The study of Flannery and Rangan (2006) is one of the most cited studies for the speed of adjustment methodology in finance. They estimate the target capital structure based on a group of firm characteristics that were identified in the literature. They show that, typical firms adjust their debt levels rapidly. The sample utilized in

their study has 111,106 firm-year observations including a total of 12,919 firms (Flannery and Rangan, 2006:476). They confirm that firms have a long-term target capital structure and show that the leverage gap between actual and target ratio is reduced more than 30% each year (Flannery and Rangan, 2006:499). The market leverage and the book leverage speed of adjustments were 35.5% and 34.2% respectively per year, suggesting 1.6 years to reduce half the gap of leverage (Flannery and Rangan, 2006:487). Regarding the speed of adjustment model, Flannery and Rangan (2006:471) state that unnecessary assumptions, which effect estimation results, are imposed by the previous research. Their research supports the tradeoff theory and their findings of speed of adjustment is relatively higher than previous findings.

Another most commonly cited study in the area of speed of adjustment is by Kayhan and Titman (2007). They investigate the factors affecting the firm target leverage ratio. Similar to earlier studies, they find that firms maintain a target leverage ratio and the firm leverage ratio tends to revert to its target level over time (Kayhan and Titman, 2007:1). Their findings are consistent with Fama and French's (2002:24) findings that the firms move toward target capital structure at a slow pace. They found that past stock returns impact capital structure and the level of transaction costs for debt financing is the reason behind the slow pace. This study provides evidence in support of the trade-off theory (Kayhan and Titman, 2007:1).

Qian, Tian and Wirjanto (2009) investigated if Chinese publicly listed companies adjust their capital structure toward a target level. They analyzed 650 publicly listed companies from 1999 to 2004 using dynamic panel-data regression using dynamic panel-data generalized methods of moments (DPD-GMM) (Qian, Tian and Wirjanto, 2009:663). They divided the sample into two groups as the "below target sample" and the "above target sample" based on the changes in the leverage ratio (more than 30%). The below target sample is found to adjust 11% per year toward its target level, while in the above target sample the adjustment speed is found to be around 18% per year. This study also observed that the adjustment speed over the longer sample period (1993-2004) is 9% per year while over the shorter sample period (1999-2004) is 11% (Qian, Tian and Wirjanto, 2009:675).

Harford, Sandy and Nathan (2009) investigated the leverage target in the context of large acquisitions. Their sample consists of 1188 takeovers of only those firms that the target firm is at least 20% of the bidder's size (Harford, Sandy and Nathan, 2009:3). They found that firms maintain a target capital structure and managers try not to divert too far from it. Their results indicate that within the first five post-merger years, 75% of the financing effect is reversed. In conclusion, strong support is provided for the argument that target leverage ratios and active capital structure rebalancing exist in M&A deals.

Huang and Ritter (2009:238) illustrated the theories of capital structure and tried to estimate the speed of adjustment for a sample consisting of publicly listed US firms. They suggest that the model developed to measure the speed of adjustment by them is much less biased than conventional GMM estimators. Their findings show that firms slowly adjust toward their leverage target. The speed of adjustment for book leverage was found to be 17.00% per year and market leverage was found to be 23.2% per year (Huang and Ritter, 2009:267). This indicates that it will take 3.7 and 2.6 years respectively to halve of the effect of a shock to target capital structure.

Cook and Tang (2010) investigated the different state of macroeconomic conditions and the speed of adjustment. Their sample consisted of 124,466 and 126,920 firm-year observations for book value and market value leverage analyses, respectively (Cook and Tang, 2010:79). Their results showed that the firm adjustment speed was faster toward target leverage in good states than in bad states. For the book value leverage the speed of adjustment was found to be 46.1 % in good states and 33.7% in bad states, on the other hand the market value leverage adjustment speed was found to be 46.7% and 32.9% in good states and bad states, respectively (Cook and Tang, 2010:82).

Oztekin and Flannery (2012) explored firms' capital structure adjustments and investigated whether legal and financial institutions determine the adjustment speed. Their sample consists of 15,177 firms from 37 different countries (Oztekin and Flannery, 2012:90). Their findings show that the book leverage adjustment speed was 21.11% across all the 37 countries (Oztekin and Flannery, 2012:90). The estimated adjustment speeds vary from countries to countries, starting from 4% (in Columbia) to 41% (in New Zealand) per year (Oztekin and Flannery, 2012:108). Therefore, if a cross

border M&A deal is conducted where the legal and financial institutions are effective then the speed of adjustment is expected to be high because, as stated by Oztekin and Flannery (2012:108), a country's legal and financial institutions significantly affect both the costs and the benefits of moving toward target leverage.

Getzmann et al. (2014:12) investigated 1239 corporations from 11 Asian countries and 8 industries to test the target capital structure and adjustment speed. They found two different groups of variables, common and industry based, that determine the capital structure decisions. The common variables include profitability and tangibility of assets while industry based variables include industry median, size, and non-debt tax shield (Getzmann et al., 2014:7). They illustrate that large companies in Asia follow the same behavior by maintaining a target capital structure as in the US and Europe (Getzmann et al., 2014:3). Their study provide evidence that the trade-off theory holds but the pecking order theory also could not be rejected completely since the signs of profitability and market expectations were in accordance with the arguments of pecking order theory. The annual SOA toward target capital structure was in a range of 24% to 45% and in all the industries, the movement towards target capital structure is observed (Getzmann et al., 2014:27).

Mai, Meng and Ye (2017:290) investigated the speed of adjustment of firms located in different regions of China analyzing 783 firms, which were listed on Shanghai and Shenzhen Stock Exchanges during the period of year 2000-2014. They divided the geographical regions into eastern, middle and western regions. They found that the eastern region outperform the other two regions. The speeds of adjustment in the eastern region, middle region and western region were 0.148, 0.142 and 0.121, respectively (Mai, Meng and Ye, 2017:292). The difference between the eastern and middle regions, as stated in the study, is the higher growth rate of GDP per capita and market oriented environment in the eastern region (Mai, Meng and Ye, 2017:294).

In conclusion, the studies mentioned above could be divided into two based on their findings regarding the speed of adjustment as the ones providing evidence for fast speed of adjustment and the ones providing evidence for slow speed of adjustment. Jalilvand and Harris (1984), Leary and Roberts (2005), Flannery and Rangan (2006), Harford, Sandy and Nathan (2009), Cook and Tang (2010), Oztekin and Flannery (2012) and Getzmann et al. (2014) reported a fast speed of adjustment, while Fama

and French (2002), Kayhan and Titman (2007), Qian, Tian and Wirjanto (2009), Huang and Ritter (2009) and Mai, Meng and Ye (2017) found that firms adjust slowly toward the target leverage level. Cook and Tang (2010), Oztekin and Flannery (2012) and Mai, Meng and Ye (2017) suggest that the macroeconomic conditions such as better legal and financial regulation would lead to faster speed of adjustment due to lower transaction costs. The movement toward target capital structure is also observed in all industries (Getzmann et al., 2014).

2.4. HYPOTHESES

In this section, the hypotheses are developed based on the literature discussed in chapter one and two. Before putting forward the hypotheses, an overview of the discussion of the prior chapter is presented.

In the “theory of capital structure” section, in the previous chapter, the trade-off theories illustrated that capital structure process is the trade-off between the tax advantage of debt and costs of financial distress taking into consideration the investment decisions and restructuring costs. The trade-off theory argues that firms should maintain an optimal capital structure, which is observed from the survey of Graham and Harvey (2001:221), where 81% of their sample admitted that a target debt-equity ratio or a target leverage range is adopted. Once firms divert from their target capital structures, they rebalance to the target capital structure with various SOA rates depending on different adjustment costs (Auerbach, 1985; Jalilvand and Harris, 1984; Taggart, 1977; Oztekin and Flannery, 2012; Harford, Sandy and Nathan, 2009; Varmaelen and Xu, 2012; Yang, 2011). Firms actively rebalance their capital structures surrounding the M&A deals (Harford et al., 2009). In this thesis the focus is on the SOA and M&A, therefore the hypotheses of the thesis are developed based on prior discussion of trade-off theory; target leverage; SOA rate; adjustment cost and M&A deals.

In the first chapter, the different M&A waves were discussed and it was illustrated that M&A activity occurred in cycles or waves, indicating that at a certain period, some common motives may stimulate firms to engage in M&A activity. According to Martynova & Renneboog (2008:2152), all the M&A waves would

emerge under favorable economic and political conditions and end with different crisis. In the crisis years, the economic conditions of the market are weak and literature suggests that macroeconomic conditions effect the SOA toward target capital structure (Cook and Tang, 2010:74; Oztekin and Flannery 2012:108; and Mai, Meng and Ye, 2017:292). Therefore, the first hypothesis could be formulated based on the above arguments as in the crisis years the SOA would be slower than the non-crisis years.

H1: The speed of adjustment is lower in crisis years than non-crisis years.

The second hypothesis is related to the cross border M&A deals and SOA rate. Oztekin and Flannery (2012) found that SOA of firms toward target capital structure varies across different countries. Firms in the countries with strong financial and legal institutions have faster SOA toward target capital structure compared to firms in the countries with weak institutions. These financial and legal institutions significantly influence both costs and the benefits of moving toward target leverage. Hence it can be inferred that the SOA in post-M&A may vary when firms make cross border and cross industry M&A deals. According to Eun, Kolodny and Scheraga (1996:1581), cross border acquisitions are generally wealth creating activities, however net magnitude varies across the countries. Cross border M&A provide larger and diversified markets due to which more profit generating opportunities are achieved. Adjusting to target capital structure will also be faster in cross border M&A as compared to non-cross border M&A. Hence, the second hypothesis is that:

H2: The speed of adjustment is higher in cross border than non-cross border M&A deals.

Along the same lines, the SOA of same industry and cross industry M&A deals may differ from each other. According to the literature, cross industry M&A deals widen the target market, may create imperfectly correlated cash flows, which will reduce bankruptcy costs and will help in making changes in the capital structure (Higgins and Schall, 1975:93; Ghosh and Jain, 2000:380). According to Mai et al. (2017:292), firms having a market orientation environment and surrounded with better

economic conditions move faster toward the target capital structure. The same industry M&A deals have an optimum range in which their capital structure varies (Schwartz and Aronson, 1967:10). Also if diverted from their target capital structure, the firms will move more slowly toward their target capital structure because of the less diversified market as compared to cross industry firms (Mueller, 1977; Amihud and Lev, 1981:614). Therefore, the third hypothesis of the thesis is that firms engaged in cross industry M&A deals will move faster than the firms in same industry M&A deals toward target capital structure. This leads to the third hypothesis, that is:

H3: The speed of adjustment is lower in same industry than cross industry M&A deals.

The fourth hypothesis is related to different regions that is the Europe (EUR), United States (US) and the “rest of the world” (REST). In the literature it was emphasized that different macroeconomic conditions, and financial and legal institutions have foremost impact of the SOA towards target capital structure (Cook and Tang, 2010:74; Oztekin and Flannery 2012:108). Also different crisis that effect the economies of countries for a course of time, creates difficulties for firms to readjust to their target capital structure (Dang, Kim and Shin, 2014:228). Therefore, the firms in different regions that had been affected by economic crisis would have lower SOA as compared to other regions. The M&A dataset of this thesis is from 2000 to 2013, hence in this time period the major crisis that took place was the financial crisis in 2008-2009. This crisis influenced the US at large scale and spilled over to the other countries with slightly lower impact as compared to US (Reinhart and Rogoff, 2008). Therefore, the SOA of US firms would be lower as compared to the EUR and REST region.

H4: The speed of adjustment of US region M&A is lower than EUR and REST region M&A deals.

To test the second, third and fourth hypotheses, BLEV and MLEV equations are tested separately. That is, the BLEV is tested for cross border and non-cross border; similarly, MLEV is compared for cross border and non-cross border deals. This is

extended to test the BLEV and MLEV adjustment rates for same versus cross industry M&A deals and the different region M&A deals also. In the second and third hypotheses, it is argued that the SOA is slower toward target adjustment for non-cross border and same industry deals as compared to cross border and cross industry. While the fourth hypothesis, the US region SOA is lower than the other two region that is EUR and REST M&A deals.

Moving further to the comparison of BLEV and MLEV, the SOA literature argues that the MLEV has more strength and capture the monetary value not just the assets in place, while BLEV has limited association (Borio, 1990:52; Harford et al., 2009:4). Therefore, the SOA rate for the BLEV and MLEV for the same M&A deals would be different and would have a difference gap. In addition to the above hypotheses, the SOA for BLEV and MLEV is also compared for the same M&A deals. That is, the SOA difference of BLEV and MLEV is analyzed for non-cross border, cross border, same industry and cross industry M&A deals separately. The difference gap of BLEV and MLEV is compared between non-cross border and same industry as well as cross border and cross industry. This is also implanted for the different regional M&A deals that is EUR, US and REST. Therefore, based on the above arguments, seven additional hypotheses are developed as follows:

H5: There exists a difference between SOA for BLEV and MLEV for non-cross border M&A.

H6: There exists a difference between SOA for BLEV and MLEV for cross border M&A.

H7: There exists a difference between SOA for BLEV and MLEV for same industry M&A.

H8: There exists a difference between SOA for BLEV and MLEV for cross industry M&A.

H9: There exists a difference between SOA for BLEV and MLEV for EUR M&A deals.

H10: *There exists a difference between SOA for BLEV and MLEV for US M&A deals.*

H11: *There exists a difference between SOA for BLEV and MLEV for REST M&A deals.*

In conclusion, this chapter explained the measurement of target capital structure and the different firm characteristics used to estimate the target capital structure. The model of SOA for both BLEV and MLEV is illustrated. Furthermore, different studies previously conducted in the area of SOA and capital structure are presented. This lead in highlighting the different adjustment costs determining the SOA. At the end, after utilizing the existing literature in this chapter and chapter one, the hypotheses of the thesis are developed. In the next chapter of the thesis, the data and methodology to test these hypotheses are discussed.

CHAPTER THREE

DATA AND METHODOLOGY

This chapter discusses the data and methodology adapted to test the hypothesis of this thesis. In the first part of the chapter, the aim is highlighted in which the main question of the thesis is presented. The second section explains the sample and data collection. The third section presents the model and the variables. The chapter is concluded with the descriptive statistics of the data analyzed in the fourth section.

3.1. AIM OF THE STUDY

The main aim of the thesis is to measure the speed of adjustment (SOA) of firms to their target capital structure (TCS) in post-merger and acquisitions (M&A). As discussed in the first chapter, deciding on a target capital structure for firms has been a major issue for management. As literature shows that most of the firms have a target capital structure range, in which the firm capital structures fluctuate in that range (Graham and Harvey, 2001:211). In the case if firms move outside of the determined range, the process of readjustment is initiated to rebalance back to the initial range (Oztekkin and Flannery, 2012; Harford, Sandy and Nathan, 2009; Varmaelen and Xu, 2012; Yang, 2011). There are different friction or adjustment costs that reduce the rate of the rebalancing process (Faulkender et al., 2010). As stated in the prior chapter, in the absence of the adjustment costs, almost all the firms would be at their optimal capital structure (Harford et al., 2009; Morellec and Zhdanov, 2008).

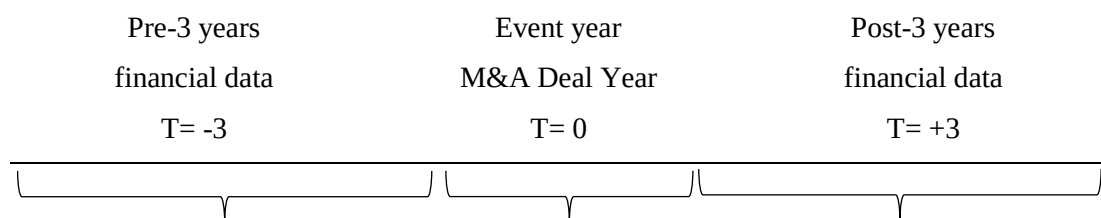
However, in the real world, there are different adjustment costs and events that prevent the firms to immediately adjust to their target capital structures. In this thesis, the focus is on M&A, and the variation of capital structures from their target leverage ranges surrounding the M&A deals. In the first chapter two different scenarios of pre and post M&A capital structure adjustments are displayed. In the first scenario, the change in capital structure is displayed where the motives underlying the M&A deals are financial and in the second scenario nonfinancial motives are illustrated. In the first scenario (financial motives) a new capital structure target is adopted in post-M&A,

while in the second scenario (nonfinancial motives) the capital structure departs from its pre-M&A range and rebalances back in the post-M&A scenario to its initial state. Hence, the aim of this thesis is to measure the SOA toward the target capital structure in post M&A scenario. The SOA is evaluated and compared for different types of M&A deals including, cross border and non-cross borders; same industry and cross industry; crisis and non-crisis years. Therefore, the research question of the thesis is: Do firms maintain a target capital structure and at what SOA rate do they rebalance if they depart from the target range?

3.2. SAMPLE AND DATA COLLECTION

In this section the sample and data collection is discussed. In this thesis two different types of data were required; firstly, the M&A data and secondly, the financial data. The first step was to collect the M&A data then in the second step the financial data was collected for the acquiring firms. As discussed in chapter two, in this thesis the speed of adjustment model that is basically, an adjustment regression model is utilized. Therefore, the dataset time period of M&A deals differ from the financial dataset's time period. The financial data for the sample period is from 1997 to 2016 while the M&A data is from 2000 to 2013 because three-year pre and post financial data is required for the analysis as shown in Figure 4. The cut off year of the financial data was selected as 1997 because majority of the data were missing for most firms prior to 1997. The details of the dataset are outlined in the following section.

Figure 4: Classification of Data for the Study



3.2.1. M&A Data

The M&A deals data was taken from the Securities Data Corporation (SDC). The data set consists of M&A deals from 1970 to 2016 and there were 1,041,401 different M&A deals, whose details are provided in Appendix 1. The M&A deals were filtered based on the following criteria:

- i) Both the acquirer and the target firms are public non-financial firms
- ii) The announcement date and effective date of the deal are in the same year
- iii) M&A deals take place between 2000-2013

After filtering the data based on these criteria, 19,140 M&A deals that satisfied these criteria were determined. The financial data were collected for these 19,140 cases from the Thomson Reuters Eikon database.

3.2.2. Financial Data

The financial data was taken from Thomson Reuters Eikon database for the 19,140 M&A deals. Seven years of financial data was retrieved for each firm, which consists three years pre and post M&A and the event year. The firms which had wide ranges of missing values for different years were removed from the analysis. The number of firms remained after cleaning and removing missing values and outliers was 6,520 firms. The details of this large decrease in the number of firms are discussed in the data cleaning section.

3.2.3. Data Cleaning

A large amount of firms were excluded from the study in the financial data cleaning process. After extracting the M&A deals data from the SDC database, the financial data was searched in Thomson Reuters Eikon database. The firms which had missing “Reuters instrument code” (RIC code), were dropped. The reason to drop these

firms were that without these RIC codes the financial data could not be extracted. After dropping these firms, the number of M&A deals left was 13,643.

The financial data for 13,643 non-financial acquiring firms having successfully completed the M&A deals were collected. After collecting the data, all firms that had missing values in any one of the seven years for firm specific variables were dropped. In the second step, the extreme and outlier values were checked for all variables in the dataset. The variable were arranged ascending and descending to check for outliers, also it was found that some of the firms had FA_TA above 100 percent; hence, all those firms were removed. After removing the missing values and extreme values the total number of firms remaining for analysis was 6,520 firms which was 47.7% of the initial collected data. Hence, a panel data of firm year observations that were included in the analysis was 45,640.

3.3. MODELS AND VARIABLES

In this thesis as discussed in chapter two, the target capital structure is measured by adapting the Flannery and Rangan (2006) procedure. Both book leverage (BLEV) and market leverage (MLEV) ratios are used as leverage measures. The standard model of speed of adjustment discussed earlier is provided in equation (3.1) and (3.2) for BLEV and MLEV.

$$BLEV_{i,t+1} - BLEV_{i,t} = \lambda(BLEV_{i,t+1}^* - BLEV_{i,t}) + \varepsilon_{i,t+1} \quad (3.1)$$

and

$$MLEV_{i,t+1} - MLEV_{i,t} = \lambda(MLEV_{i,t+1}^* - MLEV_{i,t}) + \varepsilon_{i,t+1} \quad (3.2)$$

where $BLEV_{i,t}$ and $BLEV_{i,t+1}$ are the debt to book value of total assets for firm i at time t and $t+1$ respectively for equation (3.1), and $MLEV_{i,t}$ and $MLEV_{i,t+1}$ are the market leverage for firm i at time t and $t+1$ respectively for equation (3.2). In the first step the target capital structure in $BLEV^*$ and $MLEV^*$ equations is calculated through panel regression based on the pre-M&A data as shown in equation 3.3 and 3.4 respectively. The fixed and random effect is determined through the Hausman test. In the second

step the SOA is estimated using equation (3.1) for BLEV and equation (3.2) for MLEV based on post-M&A data. The " λ " estimates the average speed of adjustment to the target level. Each year the firm closes the gap between the actual and the desired leverage level.

The calculations of the different variables used in the analysis are presented in Table 2, whereas the details of each variable are discussed in chapter two. The dependent variable is the firm leverage (BLEV and MLEV are separately used) while explanatory variables are seven firm specific financial variables; profitability, growth opportunities, non-debt tax shield, firm size, tangibility, intangibility, research and development dummy and a control variable, leverage industry median. The determinants of the target capital structure that are the different firm characteristics are regressed against the firm leverage in the first step.

$$BLEV_{i,t+1}^* = \beta X_{i,t} \quad (3.3)$$

and

$$MLEV_{i,t+1}^* = \beta X_{i,t} \quad (3.4)$$

A series of the target capital structure BLEV* is calculated, based on the target capital structure estimators obtained from the regression in the first step. In the next step, the change in actual firm leverage ($BLEV_{i,t+1} - BLEV_{i,t}$) is regressed with the change in the expected firm leverage ($BLEV_{i,t+1}^* - BLEV_{i,t}$), the obtained coefficient " λ " is the SOA rate. This same procedure is followed by using market leverage (MLEV) as the leverage measure also.

Table 2: Definition of Variables

Variable Name	Definition
Firm Leverage	The firm leverage are the book leverage (BLEV) and market leverage (MLEV) $BLEV_{i,t} = \frac{(Long - term\ debt_{i,t} + Short - term\ debt_{i,t})}{Total\ assets_{i,t}}$ $MLEV_{i,t} = \frac{(Long - term\ debt_{i,t} + Short - term\ debt_{i,t})}{(Total\ assets_{i,t} - Book\ equity_{i,t} + Market\ Value\ of\ Equity_{i,t})}$
Profitability	The proxy for profitability, the earnings before interest and taxes as a proportion of total assets (EBIT_TA) $EBIT_TA_{i,t} = \frac{Operating\ Income_{i,t} + Interest\ and\ related\ expense_{i,t} + Current\ Income\ Taxes_{i,t}}{Total\ assets_{i,t}}$
Growth Opportunities	The growth opportunities is measured by market to book ratio of assets (MB) $MB_{i,t} = \frac{Long - term\ debt_{i,t} + Short - term\ debt_{i,t} + Preferred\ capital_{i,t} + Market\ Value\ of\ Equity_{i,t}}{Total\ assets_{i,t}}$
Non-debt Tax Shield	The non-debt tax shield is proxied by depreciation as a proportion of total assets (DEP_TA) $DEP_TA_{i,t} = \frac{Total\ Depreciation\ and\ Amortization_{i,t}}{Total\ assets_{i,t}}$

Firm Size	Firm size is measured by natural logarithm of total assets (LnTA) $\text{LnTA}_{i,t} = \text{Log Total assets}_{i,t}$
Tangibility	Tangibility is measured by the percentage of fixed assets in total assets (FA_TA) $\text{FA_TA}_{i,t} = \frac{\text{Fixed assets}_{i,t}}{\text{Total assets}_{i,t}}$
Intangibility	The intangible assets of the firm is measured by Research and Development expenses as a proportion of total assets (R&D_TA) $\text{R\&D_TA}_{i,t} = \frac{\text{Research and Development Expense}_{i,t}}{\text{Total assets}_{i,t}}$
Research and Development Dummy	A dummy variable for the existence of R&D activities (R&D_DUM) i) R&D_DUM= one, if R&D expenses is not reported, ii) R&D_DUM= zero, if R&D expenses is reported
Industry Median	IND_MED is calculated based on leverage (Separately for BLEV and MLEV)

3.4. DESCRIPTIVE STATISTICS

In this section, in Table 3 the descriptive statistics of all the variables are presented. The samples consists of nonfinancial acquiring firms completing M&A deals in the period 2000 and 2013. The total number of deals included in the thesis is 6,520. The number of firm year observations of the complete final panel dataset is 45,640.

BLEV and MLEV are the dependent variables, which are interchangeably used to calculate the estimator for measuring BLEV* and MLEV*. There are eight different independent variables which proxy different firm characteristics, the IND_MED is calculated separately for BLEV and MLEV. The mean value for dependent variables BLEV and MLEV are 0.1644 and 0.1199, respectively. The minimum value for both are zero while maximum is almost the same, while the standard deviation is .1528 and 0.1304 for BLEV and MLEV respectively.

The highest mean among independent variables is of LN_TA (20.2208) and the lowest mean is of RD_TA (0.0259). MB has the highest maximum value of 64.4936 while EBIT_TA has the lowest value of -17.0152. Five of the independent variables (DEP_TA, R&D_TA, RD_DUM, IND_MED_BLEV, and IND_MED_MLEV) have minimum values of zero.

Table 3: Descriptive Statistics for all Variables

Sample includes all nonfinancial acquiring firms with complete data starting from year 2000 to 2016. Each firm's 7 years of financial data is retrieved, Total: 6,520 firms and 45,640 firm years Observations

	Mean	Median	Maximum	Minimum	Std. Dev.	Obs
BLEV	0.1644	0.1376	0.9137	0.0000	0.1528	45640
MLEV	0.1199	0.0816	0.9136	0.0000	0.1304	45640
EBIT_TA	0.0451	0.0708	4.1823	-17.0152	0.2826	45640
MB	1.7666	1.1848	64.4936	0.0001	2.4319	45640
DEP_TA	0.1505	0.1169	0.8926	0.0000	0.1224	45640
LNTA	20.2208	20.1659	27.4051	11.4080	2.2776	45640
FA_TA	0.3313	0.2747	0.9890	0.0001	0.2382	45640
RD_TA	0.0259	0.0000	0.9484	0.0000	0.0634	45640
RD_DUM	0.6384	1.0000	1.0000	0.0000	0.4805	45640
IND_MED_BLEV	0.1568	0.1376	0.8578	0.0000	0.1337	45640
IND_MED_MLEV	0.1130	0.0818	0.9136	0.0000	0.1158	45640

The correlation matrix of the variables are displayed in Table 4. The results generally show low correlation among the independent variables. The only highest correlation (.775) is between FA_TA and DEP_TA among the dependent variables. The rest of the correlations are low which implies that the problem of multicollinearity will not pose any serious threat to the results.

Table 4: Correlation Matrix of all the Variables

	BLEV	MLEV	EBIT TA	MB	DEP TA	LNTA	FA_TA	RD_TA	RD_DUM	IND_MED BLEV	IND_MED MLEV
BLEV	1.000										
MLEV	0.834	1.000									
EBIT_TA	0.034	0.011	1.000								
MB	-0.113	-0.271	-0.072	1.000							
DEP_TA	0.097	0.070	0.021	-0.063	1.000						
LNTA	0.244	0.177	0.255	-0.114	0.124	1.000					
FA_TA	0.215	0.210	0.056	-0.077	0.775	0.156	1.000				
RD_TA	-0.154	-0.196	-0.326	0.207	0.012	-0.077	-0.109	1.000			
RD_DUM	0.123	0.162	0.086	-0.136	-0.019	-0.120	0.074	-0.543	1.000		
IND_MED BLEV	0.756	0.669	0.047	-0.124	0.112	0.203	0.219	-0.182	0.153	1.000	
IND_MED MLEV	0.589	0.736	0.018	-0.219	0.080	0.122	0.198	-0.196	0.173	0.766	1.000

The sample consists of 6,520 M&A deals, however for the analysis purpose, the M&A deals are divided into three different groups as “cross border M&A deals”, “cross industry M&A deals” and “cross region M&A deals”. The descriptive statistics are illustrated in the Tables 5 to 11 and the graphical representation of number of M&A deals are shown in Figures 5, 6 and 7 for the different groups of M&A deals.

The non-cross border M&A deals statistics are presented in Table 5 and the number of cases are displayed in Figure 5. There are 4,365 acquiring firms and total of 30,555 firm year observation data is available for non-cross border M&A deals. The highest mean for the non-cross borders M&A deals is LNTA (19.9573) while the lowest is RD_TA (0.0262). The standard deviation of all the variable are between zero and one except for MB and LNTA variable. In Figure 5, it could also be seen that there are 4,365 non cross border cases.

Table 5: Descriptive Statistics of Non-Cross Borders M&A Deals

Sample includes all nonfinancial non-cross borders M&A deals with complete data starting from year 2000 to 2016. Each firm’s 7 years of financial data is retrieved, Total: 4,365 firms and 30555 firm years Observations

	Mean	Median	Maximum	Minimum	Std. Dev.	Obs
BLEV	0.1618	0.1300	0.9137	0.0000	0.1557	30555
MLEV	0.1199	0.0767	0.9136	0.0000	0.1352	30555
EBIT_TA	0.0387	0.0672	4.1823	-17.0152	0.3121	30555
MB	1.7993	1.1915	64.4936	0.0001	2.5269	30555
DEP_TA	0.1463	0.1121	0.8926	0.0000	0.1216	30555
LNTA	19.9573	19.8844	27.3404	11.5222	2.2677	30555
FA_TA	0.3318	0.2744	0.9890	0.0001	0.2407	30555
RD_TA	0.0262	0.0000	0.9484	0.0000	0.0653	30555
RD_DUM	0.6456	1.0000	1.0000	0.0000	0.4784	30555
IND_MED_BLEV	0.1529	0.1318	0.8578	0.0000	0.1336	30555
IND_MED_MLEV	0.1119	0.0781	0.9136	0.0000	0.1186	30555

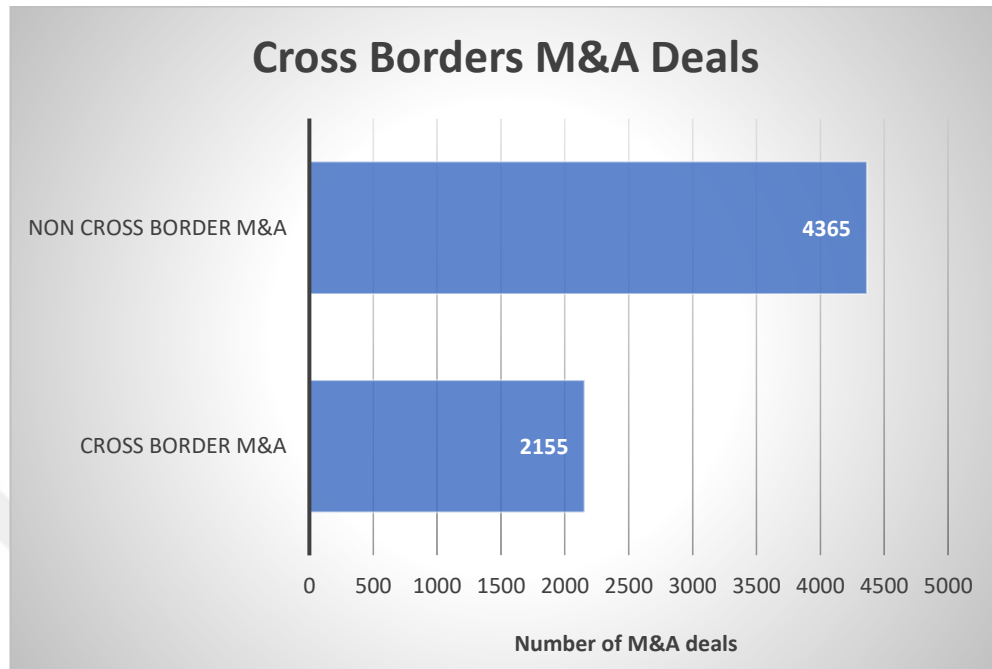
In Table 6, the descriptive statistics of cross border M&A deals are displayed. The Table shows that there are 2155 cross border M&A deals and 15085 firm year observations. The mean value of MB and LNTA variables are 1.7005 and 20.7545 respectively that are above one. While the rest of the variables have mean values between zero and one. The highest maximum value is of MB variable that is 61.2487 and the lowest minimum value is EBIT_TA that is -12.0387. Figure 5, displays the number of cross border deals that is 2155 M&A deals.

Table 6: Descriptive Statistics of Cross Borders M&A Deals

Sample includes all nonfinancial cross borders M&A deals with complete data starting from year 2000 to 2016. Each firm's 7 years of financial data is retrieved, Total: 2,155 firms and 15085 firm years Observations

	Mean	Median	Maximum	Minimum	Std. Dev.	Obs
BLEV	0.1697	0.1500	0.8981	0.0000	0.1467	15085
MLEV	0.1201	0.0900	0.8727	0.0000	0.1203	15085
EBIT_TA	0.0580	0.0764	1.7186	-12.0387	0.2101	15085
MB	1.7005	1.1711	61.2487	0.0001	2.2258	15085
DEP_TA	0.1590	0.1276	0.8399	0.0000	0.1237	15085
LNTA	20.7545	20.8113	27.4051	11.4080	2.2031	15085
FA_TA	0.3302	0.2748	0.9879	0.0002	0.2330	15085
RD_TA	0.0253	0.0000	0.9380	0.0000	0.0593	15085
RD_DUM	0.6239	1.0000	1.0000	0.0000	0.4844	15085
IND_MED_BLEV	0.1646	0.1478	0.8533	0.0000	0.1336	15085
IND_MED_MLEV	0.1152	0.0894	0.8188	0.0000	0.1101	15085

Figure 5: Cross Border and Non Cross Border M&A Deals



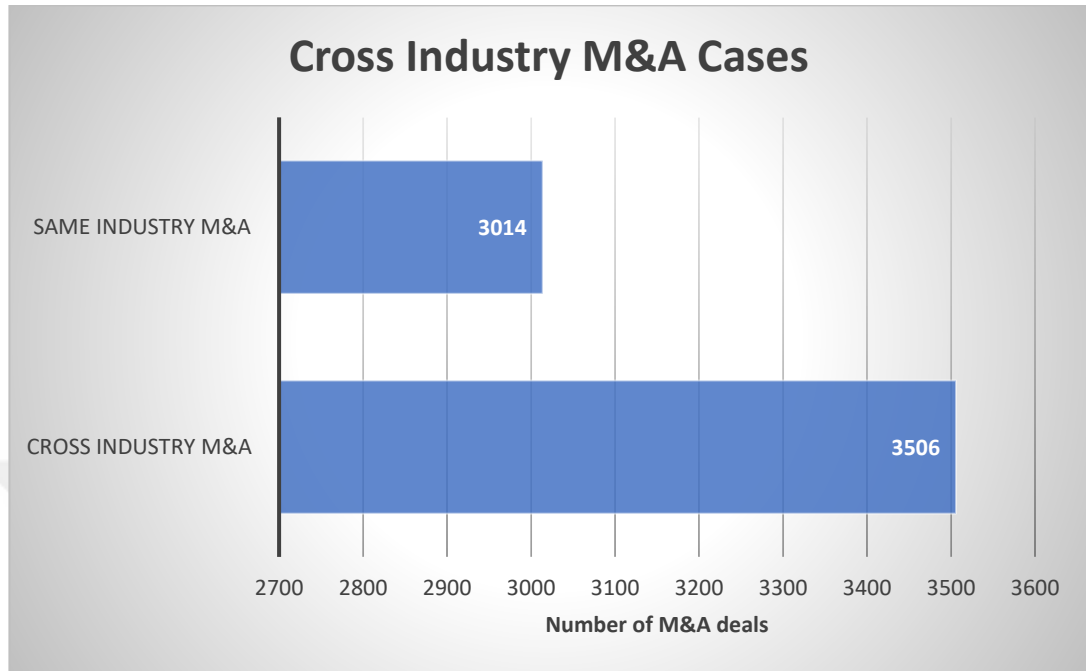
The descriptive statistics of same and cross industry M&A deals are presented in Table 7, while a graphical representation of number of cases are displayed in Figure 6. Table 7 shows that there are 3014 and 3506 M&A deals and 21098 and 24542 firm year observations for same industry and cross industry deals, respectively. Table 7 shows that the mean for all the variables, which are between zero and one except for MB and LNTA variable. The maximum value for all the variables for both same and cross industry are between 0 and 1 except EBIT_TA, MB, LNTA and RD_DUM variable. the RD_DUM is a dummy variable and would have a maximum and minimum of one and zero, respectively. In Figure 6, the graph shows that there are 3014 M&A deals of same industry and 3506 M&A deals of cross industry.

Table 7: Descriptive Statistics of Same and Cross Industry M&A Deals

Sample includes all nonfinancial same and cross industry M&A deals with complete data starting from year 2000 to 2016. Each firm's 7 years of financial data is retrieved, Total: 3,014 & 3,506 firms and 21098 & 24542 firm years Observations for same industry and cross industry respectively

	same industry					cross industry				
	Mean	Median	Max	Min	Std. Dev.	Mean	Median	Max	Min	Std. Dev.
BLEV	0.1671	0.1393	0.9137	0.0000	0.1567	0.1621	0.1365	0.8824	0.0000	0.1493
MLEV	0.1222	0.0831	0.9136	0.0000	0.1337	0.1180	0.0807	0.8727	0.0000	0.1275
EBIT_TA	0.0446	0.0708	1.7186	-12.0387	0.2444	0.0455	0.0708	4.1823	-17.0152	0.3117
MB	1.7470	1.1744	61.2487	0.0001	2.4367	1.7835	1.1924	64.4936	0.0001	2.4276
DEP_TA	0.1472	0.1132	0.8926	0.0000	0.1234	0.1533	0.1203	0.8399	0.0000	0.1215
LNTA	20.1340	20.1552	26.8231	11.4080	2.1894	20.2955	20.1773	27.4051	11.5906	2.3483
FA_TA	0.3422	0.2805	0.9890	0.0001	0.2492	0.3219	0.2686	0.9889	0.0001	0.2278
RD_TA	0.0241	0.0000	0.9380	0.0000	0.0635	0.0275	0.0000	0.9484	0.0000	0.0632
RD_DUM	0.6681	1.0000	1.0000	0.0000	0.4709	0.6128	1.0000	1.0000	0.0000	0.4871
IND_MED_BLEV	0.1577	0.1377	0.8578	0.0000	0.1366	0.1560	0.1376	0.8533	0.0000	0.1311
IND_MED_MLEV	0.1124	0.0819	0.9136	0.0000	0.1161	0.1134	0.0818	0.8272	0.0000	0.1156

Figure 6: Cross and Same Industry M&A Deals



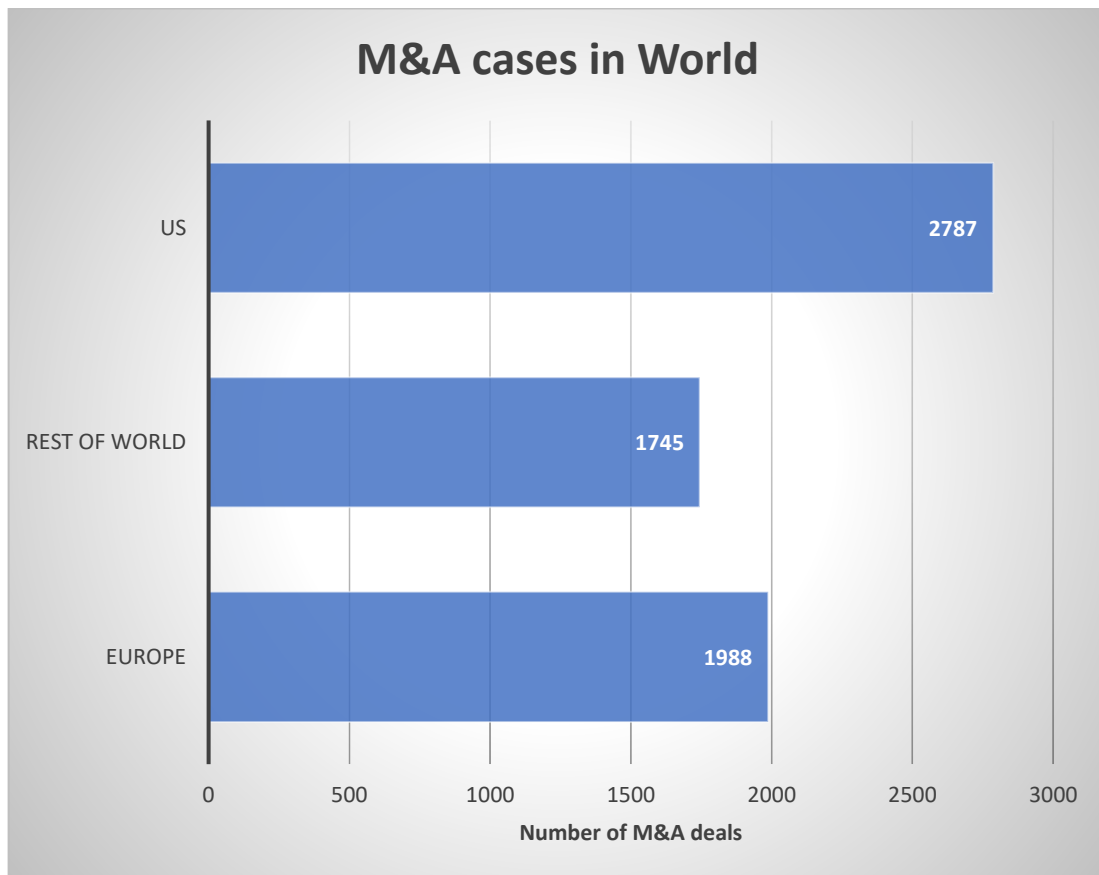
In Tables 8, the descriptive statistics on M&A deals in different regions, namely US, EUR and REST M&A deals are shown. Out of the total M&A deals, the US region consists of 2787 deals, REST region consists of 1745 deals and EUR region consists of 1988 deals. The table show that the mean value of US are higher for the BLEV, MB, LNTA and RD_TA variables than the REST and EUR M&A deals. The mean value of variables MLEV and IND_MED of the REST M&A deals are the highest. While for EUR M&A deals the EBIT_TA, DEP_TA, FA_TA and RD_DUM have the highest mean values. Figure 7 displays the graphical representation of the number of M&A deals for the different regions.

Table 8: Descriptive Statistics of US, EUR and REST Regional M&A Deals

Sample includes all nonfinancial same and cross industry M&A deals with complete data starting from year 2000 to 2016. Each firm's 7 years of financial data is retrieved, Total: 3,014 & 3,506 firms and 21098 & 24542 firm years Observations for same industry and cross industry respectively

	US M&A Deals					EUR M&A Deals					REST M&A Deals				
	Mean	Median	Max	Min	Std. Dev.	Mean	Median	Max	Min	Std. Dev.	Mean	Median	Max	Min	Std. Dev.
BLEV	0.1681	0.1412	0.9126	0.0000	0.1631	0.1575	0.1332	0.8824	0.0000	0.1388	0.1665	0.1369	0.9137	0.0000	0.1507
MLEV	0.1119	0.0722	0.8727	0.0000	0.1301	0.1143	0.0872	0.9136	0.0000	0.1120	0.1392	0.0906	0.8272	0.0000	0.1473
EBIT_TA	0.0316	0.0771	1.3792	-17.0152	0.3668	0.0662	0.0755	0.7783	-3.8763	0.1304	0.0425	0.0564	4.1823	-12.0387	0.2517
MB	2.1133	1.4673	61.2487	0.0001	2.7691	1.3950	1.0426	44.9375	0.0132	1.4976	1.6363	0.9241	64.4936	0.0144	2.6325
DEP_TA	0.1488	0.1167	0.8707	0.0000	0.1183	0.1587	0.1235	0.8460	0.0000	0.1276	0.1438	0.1122	0.8926	0.0000	0.1223
LNTA	20.5955	20.6377	27.4051	11.4080	2.3337	20.3384	20.2332	26.8231	12.9817	2.2391	19.4884	19.4248	25.5685	12.3430	2.0487
FA_TA	0.3118	0.2515	0.9890	0.0001	0.2253	0.3227	0.2567	0.9879	0.0001	0.2433	0.3723	0.3464	0.9889	0.0001	0.2471
RD_TA	0.0465	0.0044	0.9484	0.0000	0.0810	0.0122	0.0000	0.9380	0.0000	0.0447	0.0086	0.0000	0.7468	0.0000	0.0326
RD_DUM	0.4809	0.0000	1.0000	0.0000	0.4996	0.7872	1.0000	1.0000	0.0000	0.4093	0.7205	1.0000	1.0000	0.0000	0.4488
IND_MED_BLEV	0.1508	0.1380	0.8533	0.0000	0.1282	0.1587	0.1347	0.8578	0.0000	0.1350	0.1641	0.1409	0.8294	0.0000	0.1401
IND_MED_MLEV	0.0945	0.0691	0.8188	0.0000	0.1030	0.1162	0.0901	0.9136	0.0000	0.1078	0.1388	0.1015	0.8272	0.0000	0.1369

Figure 7: Regional M&A Deals of US, EUR and REST



In summary, this chapter presented the data and methodology of the thesis. The aim of the thesis was highlighted that is to measure the SOA rate for firms in post M&A period. The sample set of 6520 M&A deals was displayed in the sample and data collection section. The models and variables used in the thesis were outlined. The chapter was concluded with the descriptive statistics of the variables for the whole sample and all subsamples. The next chapter focuses on the empirical findings and discussion of the results in light of the literature.

CHAPTER FOUR

EMPIRICAL RESULTS AND DISCUSSION

This chapter presents the empirical results of the thesis. The first section 4.1, illustrates the SOA of all firms for both BLEV and MLEV. Section 4.2 and 4.3 present SOA for cross border and non-cross border M&A deals and SOA for cross industry and same industry M&A deals, respectively. In section 4.4, the SOA for different regional M&A deals including Europe, US and rest of the world are displayed. The section 4.5 presents the discussion, in which the results are compared with the hypothesis and the chapter is concluded with the overall summary.

4.1. SPEED OF ADJUSTMENT FOR ALL FIRMS

In this section, the BLEV* and MLEV* regression estimators and SOA for BLEV and MLEV are presented for the entire firms and all years. The Tables 9 and 11 present the regression estimators for BLEV* and MLEV* respectively. In the first column the time (years) are presented, there are 14 years and the whole period identified as “all”. Regressions were run for all the years as shown in first row and then for each separate year. The 2nd to 9th column show the coefficients of the regression equations starting with the intercept (alpha) and the eight variables. After the variables column the fixed effect, observation (Obs), R squared, F statistics and Hausman test column are displayed.

In Tables 13 and 15, the speed of adjustment for BLEV and MLEV is displayed respectively for all the firms for the entire period, which includes 14 years and all combined years. Both tables show the post-M&A 1st, 2nd and 3rd year SOA separately, the average SOA and number of years to readjust to the target capital level.

Table 9 shows that based on the Hausman test the fixed effects regression was run for all the years except five years; which are 2000, 2001, 2003, 2004 and 2011. Table 9 exhibits that EBIT_TA is statistically significant and negatively associated with leverage in all the years except in 2004, 2010 and 2013. The coefficients range from -0.0538 to 0.0137. The MB variable has a very low effect on the BLEV as the coefficients range between -0.0021 and 0.0069 and they are not statistically significant except for the whole

period, and six years. The relationship is found negative in five years and positive in nine. The DEP_TA variable is negatively associated with the dependent variable for all the years except for 2010. LNTA and FA_TA variable are all positively associated with BLEV for all years except 2010. RD_TA variable is negatively associated for 5 years while for the rest of the years including all combine it is positively associated. The IND_MED variable is positively and significant associated for all year including the combine years. The magnitude of RD_DUM variable are mostly positive associated except for 2001, 2005, 2008 and 2011. The F statistics are all significant while the R square is high for years having high number of observations and normal for low observation.

Table 9: Target Capital Regression Estimators for BLEV* for all Firms

The target book leverage (BLEV*) estimators are displayed for all the years. The measurement of variables are (i) EBIT_TA=(Operating Income + Interest and related expense + Current Income Taxes)/(Total assets), (ii) MB=(Long-term debt +Short-term debt + Preferred capital + Market Value of Equity)/(Total assets), (iii) DEP_TA=(Total Depreciation and Amortization)/(Total assets), (iv) LnTA=Log Total assets, (v) FA_TA=(Fixed assets)/(Total assets), (vi) R&D_TA=(Research and Development Expense)/(Total assets), (vii) IND_MED: Industry median, (ix) R&D_DUM: Research and development dummy variable. The fixed effect, observation (Obs), R squared, F statistics and Hausman Test are displayed. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

	C	EBIT_TA	MB	DEP_TA	LNTA	FA_TA	RD_TA	IND_MED	RD_DUM	Fixed effect	Obs	R squared	F	Hausman Test
ALL	-0.1902*** (0.000)	-0.0079*** (0.003)	0.0011*** (0.000)	-0.0792*** (0.000)	0.0103*** (0.000)	0.0574*** (0.000)	0.1275*** (0.000)	0.8560*** (0.000)	0.0034 (0.330)	Yes	19560	0.927	25.363***	0.000
2000	-0.1048*** (0.003)	-0.0262*** (0.003)	-0.0009** (0.024)	-0.0980** (0.028)	0.0056*** (0.001)	0.0782*** (0.001)	0.0704 (0.108)	0.8712*** (0.000)	0.0083 (0.342)	No	1107	0.583	191.854***	0.7362
2001	-0.0698 (0.116)	-0.0512** (0.018)	0.0010 (0.146)	-0.1919*** (0.001)	0.0060*** (0.005)	0.1073*** (0.000)	-0.1293* (0.060)	0.7972*** (0.000)	-0.0149 (0.172)	No	993	0.551	150.886***	0.1244
2002	-0.0223 (0.903)	-0.0538*** (0.007)	-0.0003 (0.755)	-0.0841 (0.400)	0.0014 (0.873)	0.0437 (0.443)	0.3473*** (0.001)	0.8853*** (0.000)	0.0212 (0.366)	Yes	822	0.895	16.388***	0.0154
2003	-0.0327 (0.431)	-0.0165** (0.044)	-0.0002 (0.806)	-0.0969** (0.038)	0.0028 (0.161)	0.0441 (0.151)	0.0773* (0.090)	0.8952*** (0.000)	0.0007 (0.940)	No	1023	0.535	145.987***	0.7992
2004	-0.1341*** (0.003)	0.0022 (0.806)	0.0010 (0.331)	-0.0368 (0.433)	0.0081*** (0.000)	0.0240 (0.355)	0.0366 (0.485)	0.8254*** (0.000)	0.0206* (0.067)	No	1266	0.429	118.265***	0.4187
2005	-0.6314*** (0.000)	-0.0434*** (0.005)	0.0069*** (0.000)	0.0502 (0.435)	0.0326*** (0.000)	0.0576 (0.125)	0.3130*** (0.000)	0.7356*** (0.000)	-0.0261 (0.153)	Yes	1689	0.930	26.215***	0.0000
2006	-0.1913* (0.072)	-0.0283* (0.099)	-0.0021** (0.018)	-0.0559 (0.388)	0.0117** (0.027)	0.0317 (0.366)	0.1575** (0.027)	0.8024*** (0.000)	0.0017 (0.914)	Yes	1752	0.888	15.492***	0.0500

	C	EBIT_TA	MB	DEP_TA	LNTA	FA_TA	RD_TA	IND_MED	RD_DUM	Fixed effect	Obs	R squared	F	Hausman Test
2007	-0.3160*** (0.000)	-0.0249** (0.032)	0.0004 (0.604)	-0.1019** (0.030)	0.0165*** (0.000)	0.0601** (0.025)	0.4916*** (0.000)	0.8544*** (0.000)	0.0141 (0.162)	Yes	2304	0.938	29.952***	0.0002
2008	-0.0950 (0.283)	-0.0376*** (0.005)	0.0015** (0.042)	-0.2713*** (0.000)	0.0067 (0.115)	0.1054*** (0.001)	-0.0739 (0.134)	0.8985*** (0.000)	-0.0132 (0.299)	Yes	1962	0.924	23.838***	0.0012
2009	-0.4096*** (0.000)	-0.0213 (0.117)	0.0030*** (0.000)	-0.0689 (0.132)	0.0199*** (0.000)	0.0960*** (0.000)	-0.0402 (0.318)	0.9190*** (0.000)	0.0104 (0.374)	Yes	1239	0.940	30.557***	0.0116
2010	0.1606 (0.104)	0.0027 (0.807)	0.0008 (0.428)	0.0015 (0.973)	-0.0077 (0.105)	-0.0068 (0.784)	0.0922 (0.302)	0.9449*** (0.000)	0.0153 (0.121)	Yes	1560	0.945	33.486***	0.0026
2011	-0.0955*** (0.005)	-0.0135 (0.235)	0.0007 (0.273)	-0.0914*** (0.007)	0.0061*** (0.000)	0.0353** (0.029)	-0.0232 (0.656)	0.8868*** (0.000)	-0.0084 (0.205)	No	1251	0.677	324.998***	0.1751
2012	-0.5703*** (0.000)	-0.0094** (0.010)	0.0019** (0.010)	-0.0683* (0.075)	0.0280*** (0.000)	0.0984*** (0.000)	-0.2358*** (0.003)	0.8571*** (0.000)	0.0134* (0.092)	Yes	1365	0.955	41.222***	0.0000
2013	-0.1159 (0.272)	0.0137 (0.496)	-0.0002 (0.796)	-0.1239** (0.032)	0.0067 (0.189)	0.0474 (0.181)	0.0870 (0.163)	0.8781*** (0.000)	0.0023 (0.729)	Yes	1227	0.959	45.759***	0.0224

In Table 10 the speed of adjustment for BLEV all the value for each years are significant. All 6520 firms for all the 14 years combine the average SOA is 36.03%, showing that it will take approximately 2.77 number of year to readjust to target level. In the first year the SOA was 39.96% while it gradually decreased to 32.30 in 3rd year. The highest average SOA is for the firms that had adopted M&A deals in 2011, while the slowest average SOA rate was for firms in 2005 that was 25.55%. Most of the average SOA rate range is from 30% to 40%, for the BLEV. The lowest SOA rate in a single year is the 3rd year of the firms going into a merger in 2007, which is 14.68%. The highest for a single year is for M&A firms in 2011 in 2nd year that is 54.26%. In Figure 8, the pattern of the movement of SOA for all firm for BLEV is displayed. On the x-axis the years and on the y-axis the percent of readjustment to target capital structure is presented. The graph can be cluster into three group.

- i) A mix pattern from 2000 to 2005, in which the SOA for each years (1st, 2nd and 3rd year) is different as compared to previous year.
- ii) The second cluster if from 2006 to 2009, in which post 1st year the SOA is high and gradually decreases in a descending order until 3rd year.
- iii) The third cluster is also a mix pattern from 2010 to 2013. In which no certain order could be determined.

The average SOA line trend in Figure 8 for BLEV is mix for all the firm in the years from 2000 to 2007. From 2007 to 2011, the average SOA steadily increase each year. The last three years starting from 2011 the average SOA decreases for each years until 2013 M&A deals.

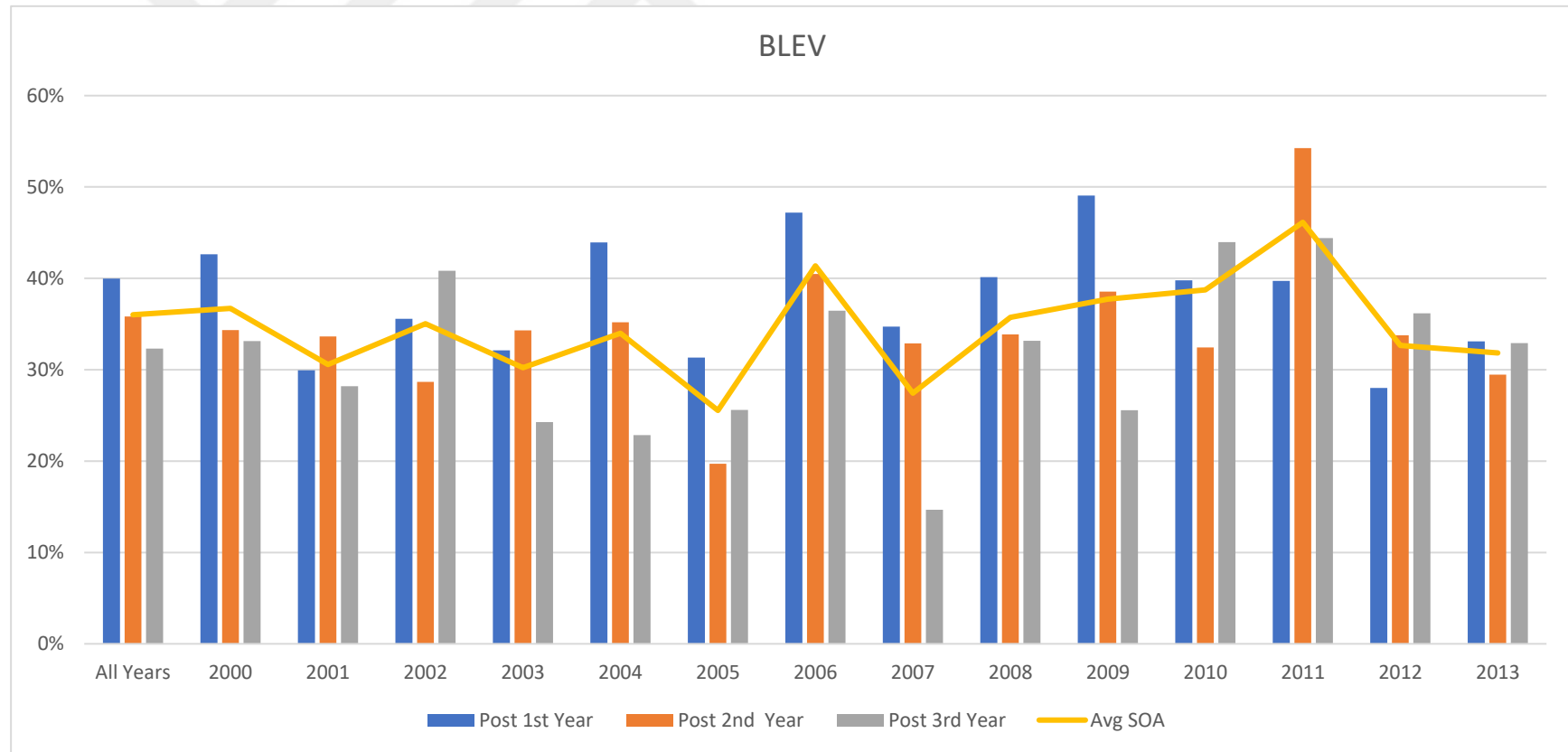
Table 10: Speed of Adjustment for BLEV for all firms

The Speed of Adjustment (SOA) for each year post-M&A are displayed for all the firms. The Average SOA and number of years to readjustment to their target capital structure is presented. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
All Years	Adj_speed	0.3996*** (0.000)	0.3583*** (0.000)	0.3230*** (0.000)	0.3603	2.775
	Observations	6520	6520	6520		
	R-squared	0.295	0.256	0.225		
2000	Adj_speed	0.4263*** (0.000)	0.3435*** (0.000)	0.3314*** (0.000)	0.3671	2.724
	Observations	369	369	369		
	R-squared	0.326	0.244	0.264		
2001	Adj_speed	0.2994*** (0.000)	0.3363*** (0.000)	0.2818*** (0.000)	0.3058	3.270
	Observations	331	331	331		
	R-squared	0.229	0.245	0.198		
2002	Adj_speed	0.3558*** (0.000)	0.2867*** (0.000)	0.4084*** (0.000)	0.3503	2.855
	Observations	274	274	274		
	R-squared	0.247	0.186	0.250		
2003	Adj_speed	0.3212*** (0.000)	0.3431*** (0.000)	0.2427*** (0.000)	0.3024	3.307
	Observations	341	341	341		
	R-squared	0.223	0.238	0.128		
2004	Adj_speed	0.4392*** (0.000)	0.3519*** (0.000)	0.2284*** (0.000)	0.3398	2.943
	Observations	422	422	422		
	R-squared	0.353	0.214	0.143		
2005	Adj_speed	0.3132*** (0.000)	0.1972*** (0.000)	0.2559*** (0.000)	0.2555	3.915
	Observations	563	563	563		
	R-squared	0.189	0.130	0.195		

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
2006	Adj_speed	0.4720*** (0.000)	0.4049*** (0.000)	0.3645*** (0.000)	0.4138	2.417
	Observations	584	584	584		
	R-squared	0.330	0.269	0.291		
2007	Adj_speed	0.3471*** (0.000)	0.3287*** (0.000)	0.1468*** (0.000)	0.2742	3.647
	Observations	768	768	768		
	R-squared	0.230	0.316	0.082		
2008	Adj_speed	0.4013*** (0.000)	0.3385*** (0.000)	0.3318*** (0.000)	0.3572	2.800
	Observations	654	654	654		
	R-squared	0.399	0.237	0.245		
2009	Adj_speed	0.4906*** (0.000)	0.3855*** (0.000)	0.2556*** (0.000)	0.3773	2.651
	Observations	413	413	413		
	R-squared	0.352	0.253	0.181		
2010	Adj_speed	0.3979*** (0.000)	0.3245*** (0.000)	0.4397*** (0.000)	0.3874	2.581
	Observations	520	520	520		
	R-squared	0.320	0.211	0.329		
2011	Adj_speed	0.3973*** (0.000)	0.5426*** (0.000)	0.4440*** (0.000)	0.4613	2.168
	Observations	417	417	417		
	R-squared	0.298	0.414	0.280		
2012	Adj_speed	0.2801*** (0.000)	0.3376*** (0.000)	0.3616*** (0.000)	0.3264	3.063
	Observations	455	455	455		
	R-squared	0.233	0.249	0.271		
2013	Adj_speed	0.3310*** (0.000)	0.2947*** (0.000)	0.3290*** (0.000)	0.3183	3.142
	Observations	409	409	409		
	R-squared	0.257	0.215	0.277		

Figure 8: Speed of Adjustment Graph for BLEV for all Firms



In Table 11 the regression estimators for MLEV* show that the fixed effect for all the years have been adopted except 2002 and 2003. The EBIT_TA variable is negative associated to MLEV for firms adopting M&A deals in all the years. Eight of coefficients have a significant value and the highest negative significant association is for 2013 that is -0.0486. For the MB variable, most of the years (10 years) the value are negatively related to MLEV while only for 5 years it is positively associated. The highest association is 0.0019 which is positively significant associated, while -0.0033 is significant negatively associated with MLEV. The DEP_TA negatively affect the MLEV for all years except for 2001. All of the LNTA variable have a positive impact on MLEV. The highest significant positive association is 0.0588 while the lowest is 0.0025 for the year 2012. The FA_TA is also positively associated except for two years (2001 and 2010) that have negative value. The RD_TA variable have a mix association for different years with MLEV. However, the IND_MED variable have all significant positive association with MLEV. The highest impact on MLEV is 0.9333, showing that 1 unit change in IND_MED will bring a 0.9333 unit change in the MLEV for all the firms that adopted M&A deals in 2010. The RD_DUM variable have a mix of positive and negative relation with MLEV, eight of the years are negatively associated while seven of the variable a positive related.

Table 11: Target Capital Regression Estimators for MLEV* for all Firms

The target market to leverage (MLEV*) estimator are displayed for all the year. The measurement of variables are (i) EBIT_TA=(Operating Income + Interest and related expense + Current Income Taxes)/(Total assets), (ii) MB=(Long-term debt +Short-term debt + Preferred capital + Market Value of Equity)/(Total assets), (iii) DEP_TA=(Total Depreciation and Amortization)/(Total assets), (iv) LnTA=Log Total assets, (v) FA_TA=(Fixed assets)/(Total assets), (vi) R&D_TA=(Research and Development Expense)/(Total assets), (vii) IND_MED: Industry median, (ix) R&D_DUM: Research and development dummy variable. The fixed effect, observation (Obs), R squared, F statistics and Hausman Test are displayed. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

	C	EBIT_TA	MB	DEP_TA	LN_TA	FA_TA	RD_TA	IND_MED	RD_DUM	Fixed effect	Obs	R-squared	F	Hausman Test
ALL	-0.2536*** (0.000)	-0.0093*** (0.000)	-0.0010*** (0.000)	-0.1103*** (0.000)	0.0140*** (0.000)	0.0547*** (0.000)	0.0225* (0.068)	0.8178*** (0.000)	-0.0014 (0.612)	Yes	19560	0.929	26.265***	0.000
2000	-0.0322 (0.252)	-0.0205*** (0.002)	-0.0012*** (0.000)	-0.1433*** (0.000)	0.0025* (0.053)	0.0738*** (0.000)	-0.0315 (0.330)	0.8735*** (0.000)	0.0030 (0.657)	Yes	1107	0.608	213.017***	0.1730
2001	-0.0620 (0.533)	-0.0229 (0.127)	-0.0004 (0.448)	0.0285 (0.639)	0.0057 (0.235)	-0.0366 (0.257)	-0.0210 (0.700)	0.8795*** (0.000)	-0.0204 (0.148)	Yes	993	0.962	48.365***	0.0462
2002	-0.0789** (0.033)	-0.0298** (0.015)	-0.0008 (0.109)	-0.0954** (0.045)	0.0050*** (0.004)	0.0663*** (0.008)	-0.0495 (0.363)	0.8467*** (0.000)	0.0007 (0.935)	No	822	0.529	114.193***	0.2207
2003	-0.0378 (0.154)	-0.0092* (0.078)	-0.0011** (0.018)	-0.0407 (0.175)	0.0030** (0.021)	0.0038 (0.850)	-0.0008 (0.978)	0.9224*** (0.000)	0.0016 (0.784)	No	1023	0.675	263.375***	0.4545
2004	-0.1706* (0.064)	-0.0083 (0.211)	-0.0015** (0.050)	-0.0781* (0.082)	0.0109** (0.017)	0.0056 (0.827)	0.0535 (0.208)	0.8926*** (0.000)	-0.0120 (0.460)	Yes	1266	0.931	26.379***	0.0442
2005	-0.2260*** (0.002)	-0.0110 (0.244)	-0.0016*** (0.003)	-0.0564 (0.155)	0.0132*** (0.000)	0.0357 (0.123)	0.1039** (0.012)	0.8378*** (0.000)	-0.0214* (0.058)	Yes	1689	0.933	27.225***	0.0001
2006	-0.1712** (0.014)	-0.0296*** (0.009)	-0.0028*** (0.000)	-0.0640 (0.132)	0.0106*** (0.002)	0.0120 (0.602)	-0.0749 (0.108)	0.8580*** (0.000)	-0.0009 (0.931)	Yes	1752	0.907	19.043***	0.0028

	C	EBIT_TA	MB	DEP_TA	LNTA	FA_TA	RD_TA	IND_MED	RD_DUM	Fixed effect	Obs	R- squared	F	Hausman Test
2007	-0.1943*** (0.000)	-0.0223*** (0.004)	-0.0022*** (0.000)	-0.0871*** (0.005)	0.0108*** (0.000)	0.0629*** (0.000)	0.0684** (0.046)	0.8488*** (0.000)	-0.0021 (0.758)	Yes	2304	0.941	31.278***	0.0012
2008	-0.3693*** (0.000)	-0.0393*** (0.000)	0.0004 (0.506)	-0.2303*** (0.000)	0.0195*** (0.000)	0.1113*** (0.000)	-0.0487 (0.200)	0.8974*** (0.000)	-0.0043 (0.659)	Yes	1962	0.931	26.428***	0.0000
2009	-0.5734*** (0.000)	-0.0190 (0.132)	0.0000 (0.953)	-0.0400 (0.348)	0.0283*** (0.000)	0.0624*** (0.007)	0.0333 (0.377)	0.8899*** (0.000)	0.0207* (0.057)	Yes	1239	0.931	26.433***	0.0000
2010	-0.0504 (0.502)	-0.0081 (0.334)	0.0000 (0.960)	-0.0269 (0.417)	0.0035 (0.326)	-0.0197 (0.296)	0.0536 (0.433)	0.9333*** (0.000)	0.0048 (0.524)	Yes	1560	0.954	40.582***	0.0008
2011	-0.0610 (0.332)	-0.0097 (0.286)	0.0001 (0.790)	-0.1375*** (0.000)	0.0049 (0.103)	0.0138 (0.404)	-0.0109 (0.794)	0.8928*** (0.000)	-0.0074 (0.278)	Yes	1251	0.970	62.141***	0.0068
2012	-1.1529*** (0.000)	-0.0038 (0.379)	0.0019** (0.029)	-0.0354 (0.441)	0.0588*** (0.000)	0.0692** (0.021)	0.0417 (0.664)	0.3717*** (0.000)	0.0066 (0.489)	Yes	1365	0.900	17.479***	0.0000
2013	-0.4950*** (0.000)	-0.0486** (0.035)	-0.0033*** (0.000)	-0.2943*** (0.000)	0.0288*** (0.000)	0.1576*** (0.000)	0.0088 (0.902)	0.0699* (0.053)	0.0082 (0.277)	Yes	1227	0.915	20.970***	0.0023

The next Table 12 displays the SOA for the MLEV for the firm's announcing and effective the M&A deals in specific years. The table show that for all the years for all firms the average SOA is 35.46%, showing that each firm adjust to target capital structure in 2.820 years. The firm adopting an M&A deal in 2011 years had the highest average SOA that is 53.76% and readjust to target capital structure in approximately 1.860 years. The lowest average adjustment speed toward capital structure was 8.54% for the firm adopting M&A in 2012.

The SOA for MLEV is displayed in Figure 9, showing that in the year 2011 the SOA in the post 2nd year is the highest SOA that is 64.12%. The lowest SOA for single year is post 1st year that is 5.13% for firms in 2012. There is continues pattern in the MLEV graph between year 2001 to 2008, except for the year 2005. The first post year of the M&A the SOA is the highest while it gradually decreasing till the third post M&A year. The 2012 and 2013 shows a deep decrease as compared to the other years.

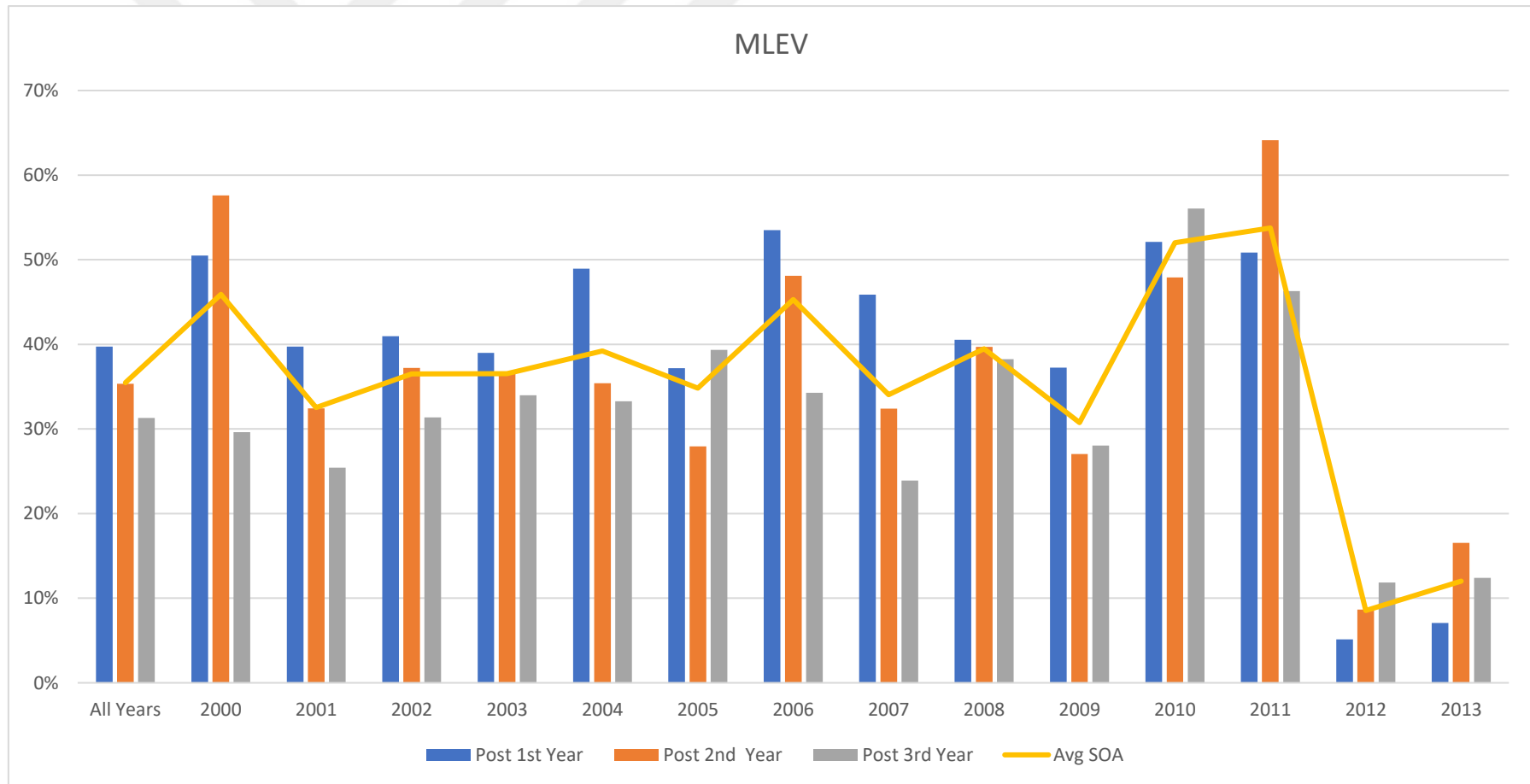
Table 12: Speed of Adjustment for MLEV for all Firms

The Speed of Adjustment (SOA) for each year post-M&A are displayed for all the firms. The Average SOA and number of years to readjustment to their target capital structure is presented. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
All Years	Adj_speed	0.3974*** (0.000)	0.3534*** (0.000)	0.3129*** (0.000)	0.3546	2.820
	Observations	6520	6520	6520		
	R-squared	0.289	0.252	0.221		
2000	Adj_speed	0.5048*** (0.000)	0.5759*** (0.000)	0.2964*** (0.000)	0.4590	2.178
	Observations	369	369	369		
	R-squared	0.326	0.594	0.161		
2001	Adj_speed	0.3973*** (0.000)	0.3242*** (0.000)	0.2542*** (0.000)	0.3252	3.075
	Observations	331	331	331		
	R-squared	0.411	0.240	0.140		
2002	Adj_speed	0.4096*** (0.000)	0.3723*** (0.000)	0.3137*** (0.000)	0.3652	2.738
	Observations	274	274	274		
	R-squared	0.333	0.220	0.149		
2003	Adj_speed	0.3900*** (0.000)	0.3661*** (0.000)	0.3398*** (0.000)	0.3653	2.737
	Observations	341	341	341		
	R-squared	0.298	0.236	0.196		
2004	Adj_speed	0.4895*** (0.000)	0.3541*** (0.000)	0.3326*** (0.000)	0.3920	2.551
	Observations	422	422	422		
	R-squared	0.387	0.210	0.151		
2005	Adj_speed	0.3717*** (0.000)	0.2794*** (0.000)	0.3934*** (0.000)	0.3482	2.872
	Observations	563	563	563		
	R-squared	0.220	0.108	0.393		
2006	Adj_speed	0.5350*** (0.000)	0.4810*** (0.000)	0.3428*** (0.000)	0.4529	2.208
	Observations	584	584	584		
	R-squared	0.287	0.380	0.292		

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
2007	Adj_speed	0.4586*** (0.000)	0.3241*** (0.000)	0.2389*** (0.000)	0.3405	2.937
	Observations	768	768	768		
	R-squared	0.430	0.299	0.165		
2008	Adj_speed	0.4053*** (0.000)	0.3969*** (0.000)	0.3825*** (0.000)	0.3949	2.532
	Observations	654	654	654		
	R-squared	0.405	0.309	0.286		
2009	Adj_speed	0.3724*** (0.000)	0.2704*** (0.000)	0.2803*** (0.000)	0.3077	3.250
	Observations	413	413	413		
	R-squared	0.242	0.150	0.204		
2010	Adj_speed	0.5210*** (0.000)	0.4790*** (0.000)	0.5606*** (0.000)	0.5202	1.922
	Observations	520	520	520		
	R-squared	0.425	0.381	0.484		
2011	Adj_speed	0.5085*** (0.000)	0.6412*** (0.000)	0.4630*** (0.000)	0.5376	1.860
	Observations	417	417	417		
	R-squared	0.440	0.520	0.338		
2012	Adj_speed	0.0513*** (0.003)	0.0864*** (0.000)	0.1186*** (0.000)	0.0854	11.706
	Observations	455	455	455		
	R-squared	0.020	0.050	0.075		
2013	Adj_speed	0.0706*** (0.010)	0.1655*** (0.000)	0.1239*** (0.000)	0.1200	8.331
	Observations	409	409	409		
	R-squared	0.016	0.110	0.072		

Figure 9: Speed of Adjustment Graph for all the MLEV for all Firms



4.2. SPEED OF ADJUSTMENT FOR CROSS BORDER AND NON-CROSS BORDER M&A

In this section the SOA for cross border and non-cross border M&A deals for both BLEV and MLEV are discussed. In Tables 13 and 15, the BLEV* and MLEV* respectively, regression estimators for both cross border and non-cross border M&A deals are displayed. In the first column the variable are listed, second column the cross border and in third column the non-cross border M&A deals estimators are displayed.

In Table 13 the result show that the direction of the association for both cross border and non-cross border are same except for RD_DUM variable. The RD_DUM variable has negative coefficient for cross border M&A deals while for non-cross border the magnitude is positively associate with BLEV. The EBIT_TA variable as negative significant association, that is -0.0111 and -0.0073 for both cross border and non-cross border type of M&A deals respectively. DEP_TA also have a significant negative relation with the dependent variable for both M&A case. The LNTA and FA_TA have a significant positive association and display that if one unit changes occurs in the LNTA or FA_TA will have 0.0049 and 0.722 (0.0124 and 0.0541) increase respectively in cross border (non-cross border) M&A deals. The RD_TA has a non-significant positive association of 0.0259 and a significant positive relation of 0.1644 in cross border and non-cross border M&A deals respectively. The IND_MED has a significant positive relationship of 0.8965 (0.8360) with dependent variable for cross border (non-cross border) M&A deals.

Table 13: Pre M&A Estimators BLEV for Cross Border and Non Cross Borders

The target book leverage (BLEV*) estimator are displayed here. The column (1) presents the BLEV* estimators for the cross border M&A, column (2) presents the non-cross border M&A. The measurement of variables are (i) EBIT_TA=(Operating Income + Interest and related expense + Current Income Taxes)/(Total assets), (ii) MB=(Long-term debt +Short-term debt + Preferred capital + Market Value of Equity)/(Total assets), (iii) DEP_TA=(Total Depreciation and Amortization)/(Total assets), (iv) LnTA=Log Total assets, (v) FA_TA=(Fixed assets)/(Total assets), (vi) R&D_TA=(Research and Development Expense)/(Total assets), (vii) IND_MED: Industry median, (ix) R&D_DUM: Research and development dummy variable. The fixed effect, observation (Obs), R squared, F statistics and Hausman Test are displayed. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively

	Cross Borders	Non-Cross border
C	-0.0786 (0.094)	-0.2306*** (0.000)
EBIT_TA	-0.0111** (0.026)	-0.0073** (0.022)
MB	0.0005* (0.089)	0.0013*** (0.000)
DEP_TA	-0.1517*** (0.000)	-0.0562*** (0.005)
LNTA	0.0049** (0.025)	0.0124*** (0.000)
FA_TA	0.0722*** (0.000)	0.0541*** (0.000)
RD_TA	0.0259 (0.303)	0.1644*** (0.000)
IND_MED	0.8965*** (0.000)	0.8360*** (0.000)
RD_DUM	-0.0014 (0.783)	0.0054 (0.247)
Fixed effect	Yes	Yes
Observations	6465	13095
R-squared	0.950	0.917
F	37.966***	22.025***
Hausman Test	0.0001	0.000

The SOA finding for cross border and non-cross border are displayed in Table 14. The results show that the cross border M&A cases have a faster average SOA rate that is 41.40% as compare to non-cross border, which is 33.79%. In Figure 10, it could be observed that the SOA for cross border M&A deals are higher in the first post year while the second year it decreases and in third year it increases back. The non-cross border M&A deals has a descending order from first post M&A year to third post M&A year. The average SOA line moving downward when shifting from cross border to non-cross border.

Table 14: Speed of Adjustment of BLEV for Cross Border and Non Cross Borders

The Speed of Adjustment (SOA) for each cross border and non-cross border M&A cases are displayed for all the firms. The Average SOA and number of years to readjustment to their target capital structure is presented. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
Cross Border	Adj_speed	0.4303 ***	0.3978 ***	0.4140 ***	0.4140	2.4152
		(0.000)	(0.000)	(0.000)		
	Observations	2155	2155	2155		
	R-squared	0.349	0.291	0.314		
Non- Cross Border	Adj_speed	0.3864 ***	0.3426 ***	0.2848 ***	0.3379	2.9593
		(0.000)	(0.000)	(0.000)		
	Observations	4365	4365	4365		
	R-squared	0.274	0.243	0.189		

Figure 10: Cross Border and Non-Cross Border, M&A Cases BLEV* Graph

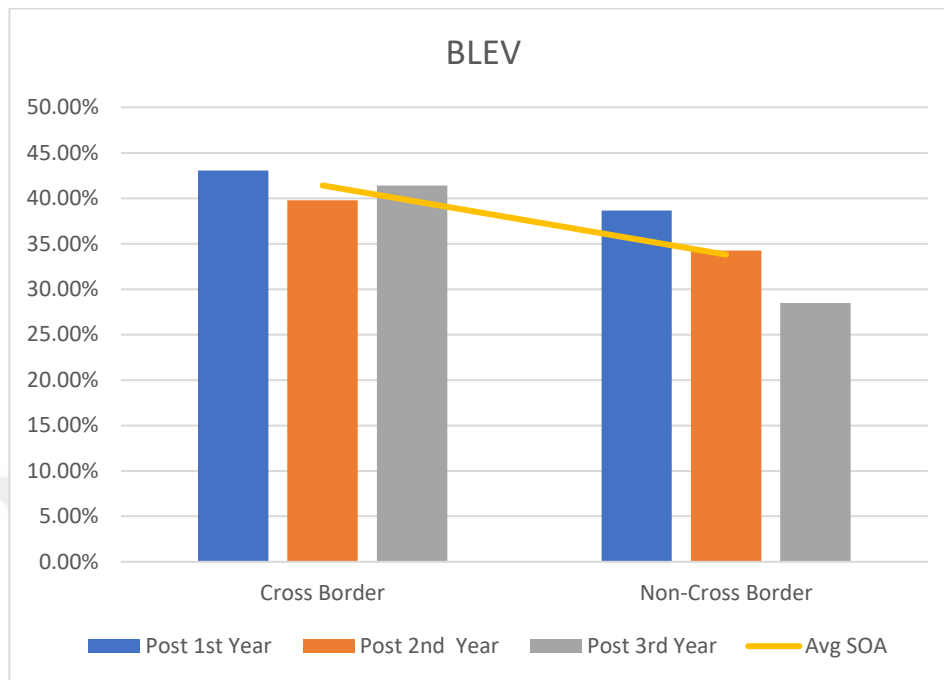


Table 15 present the MLEV* regression estimator for cross border and non-cross border M&A deals. Fixed effect regression analysis was adopted for both M&A cases. Three of the variables (EBIT_TA, MB and DEP_TA) have negative significant association, while RD_DUM have a non-significant negative association for both the M&A deals. RD_TA as the non-significant positive relation in cross border M&A deals while a significant positive relation for the non-cross border M&A cases. The LNTA, FA_TA and IND_MED have a positive significant association (0.0100, 0.0320 and 0.8545 respectively) for cross border and (0.0155, 0.0608 and 0.8011 respectively) non-cross border M&A deals.

Table 15: Pre M&A Estimators MLEV for Cross Border and Non Cross Borders

The target market to leverage (MLEV*) estimator are displayed here. The column (1) presents the BLEV* estimators for the cross border M&A, column (2) presents the non-cross border M&A. The measurement of variables are (i) EBIT_TA=(Operating Income + Interest and related expense + Current Income Taxes)/(Total assets), (ii) MB=(Long-term debt +Short-term debt + Preferred capital + Market Value of Equity)/(Total assets), (iii) DEP_TA=(Total Depreciation and Amortization)/(Total assets), (iv) LnTA=Log Total assets, (v) FA_TA=(Fixed assets)/(Total assets), (vi) R&D_TA=(Research and Development Expense)/(Total assets), (vii) IND_MED: Industry median, (ix) R&D_DUM: Research and development dummy variable. The fixed effect, observation (Obs), R squared, F statistics and Hausman Test are displayed. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively

	Cross Borders	Non Cross border
C	-0.1790*** (0.000)	-0.2785*** (0.000)
EBIT_TA	-0.0159*** (0.000)	-0.0075*** (0.002)
MB	-0.0005** (0.036)	-0.0011*** (0.000)
DEP_TA	-0.0833*** (0.000)	-0.1162*** (0.000)
LNTA	0.0100*** (0.000)	0.0155*** (0.000)
FA_TA	0.0320*** (0.004)	0.0608*** (0.000)
RD_TA	0.0008 (0.964)	0.0302* (0.053)
IND_MED	0.8545*** (0.000)	0.8011*** (0.000)
RD_DUM	-0.0034 (0.370)	-0.0005 (0.894)
Fixed effect	Yes	Yes
Observations	6465	13095
R-squared	0.946	0.923
F	34.928***	24.018***
Hausman Test	0.000	0.000

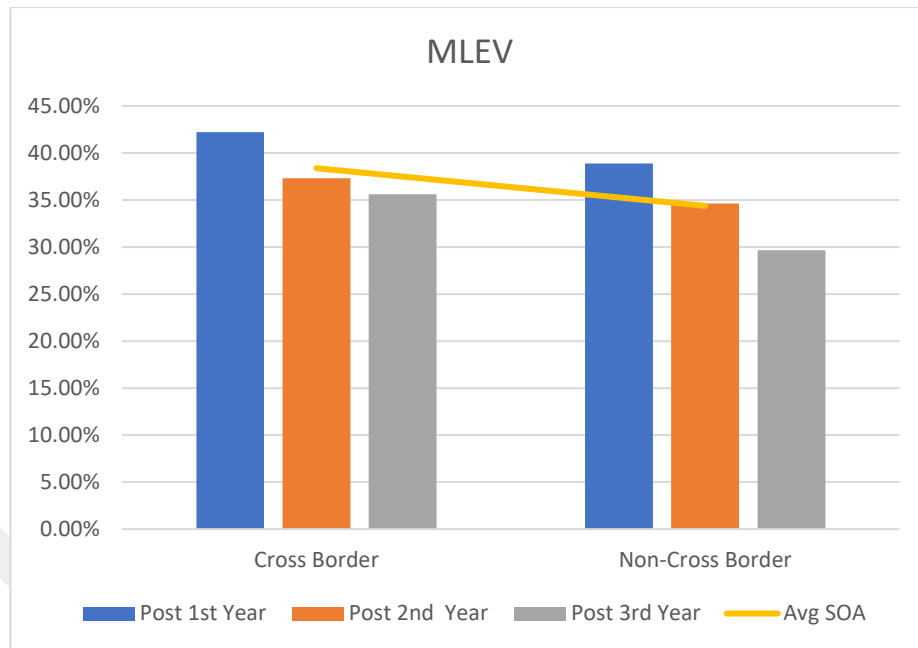
The average SOA for cross border M&A deals is faster (38.39%) as compared to non-cross border M&A deals (34.38%). The number of year to fully readjust to target capital structure is 2.605 (2.909) years for cross border (non-cross border) M&A deals. The Figure 11 show that show that SOA pattern of post M&A per year is same for both cases. The post first M&A year both of the cases have highest readjustment rate of 42.23% and 38.87% for cross border and non-cross border M&A deals. This rate decreases in second post M&A year and further decreases the third year.

Table 16: Speed of Adjustment for MLEV for Cross Border and Non Cross Borders

The Speed of Adjustment (SOA) for each cross border and non-cross border M&A cases are displayed for all the firms. The Average SOA and number of years to readjustment to their target capital structure is presented. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
Cross Borders	Adj_speed	0.4223***	0.3732***	0.3561***	0.3839	2.6051
		(0.000)	(0.000)	(0.000)		
	Observations	2155	2155	2155		
	R-squared	0.320	0.282	0.269		
Non-Cross Borders	Adj_speed	0.3887***	0.3461***	0.2964***	0.3438	2.9090
		(0.000)	(0.000)	(0.000)		
	Observations	4365	4365	4365		
	R-squared	0.279	0.240	0.203		

Figure 11: Cross Border and Non-Cross Border, M&A Cases MLEV* Graph



4.3. SPEED OF ADJUSTMENT FOR CROSS INDUSTRY AND SAME INDUSTRY M&A

The SOA for cross industry and same industry M&A deals for both BLEV and MLEV are discussed in this section. Table 17 and 19, presents the regression estimators for BLEV* and MLEV* respectively, for cross industry and same industry M&A deals. As earlier tables, the first column have the variable, second column and third column displays the cross industry and same industry M&A deals respectively.

The results in Table 17 show that the fixed effect regression model was adopted based on the Hausman test. The EBIT_TA and DEP_TA variables are negatively significant associate with BLEV for both cross industry and same industry M&A deals. All the other six variables have a significant positive relationship with BLEV except for RD_DUM variable, which is non-significant but positive.

Table 17: Pre M&A Estimators BLEV for Cross Industry and Same Industry

The target book leverage (BLEV*) estimator are displayed here. The column (1) presents the BLEV* estimators for the cross Industry M&A, column (2) presents the same industry M&A. The measurement of variables are (i) EBIT_TA=(Operating Income + Interest and related expense + Current Income Taxes)/(Total assets), (ii) MB=(Long-term debt +Short-term debt + Preferred capital + Market Value of Equity)/(Total assets), (iii) DEP_TA=(Total Depreciation and Amortization)/(Total assets), (iv) LnTA=Log Total assets, (v) FA_TA=(Fixed assets)/(Total assets), (vi) R&D_TA=(Research and Development Expense)/(Total assets), (vii) IND_MED: Industry median, (ix) R&D_DUM: Research and development dummy variable. The fixed effect, observation (Obs), R squared, F statistics and Hausman Test are displayed. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively

	Cross Industry	Same Industry
C	-0.1540*** (0.000)	-0.2348*** (0.000)
EBIT_TA	-0.0052* (0.081)	-0.0123** (0.019)
MB	0.0005* (0.078)	0.0020*** (0.000)
DEP_TA	-0.0839*** (0.000)	-0.0801*** (0.001)
LN_TA	0.0081*** (0.000)	0.0131*** (0.000)
FA_TA	0.0751*** (0.000)	0.0389*** (0.003)
RD_TA	0.1361*** (0.000)	0.1077*** (0.000)
IND_MED	0.8668*** (0.000)	0.8395*** (0.000)
RD_DUM	0.0035 (0.439)	0.0032 (0.570)
Fixed effect	Yes	Yes
Observations	10518	9042
R-squared	0.932	0.922
F	27.433***	23.482***
Hausman Test	0.000	0.0001

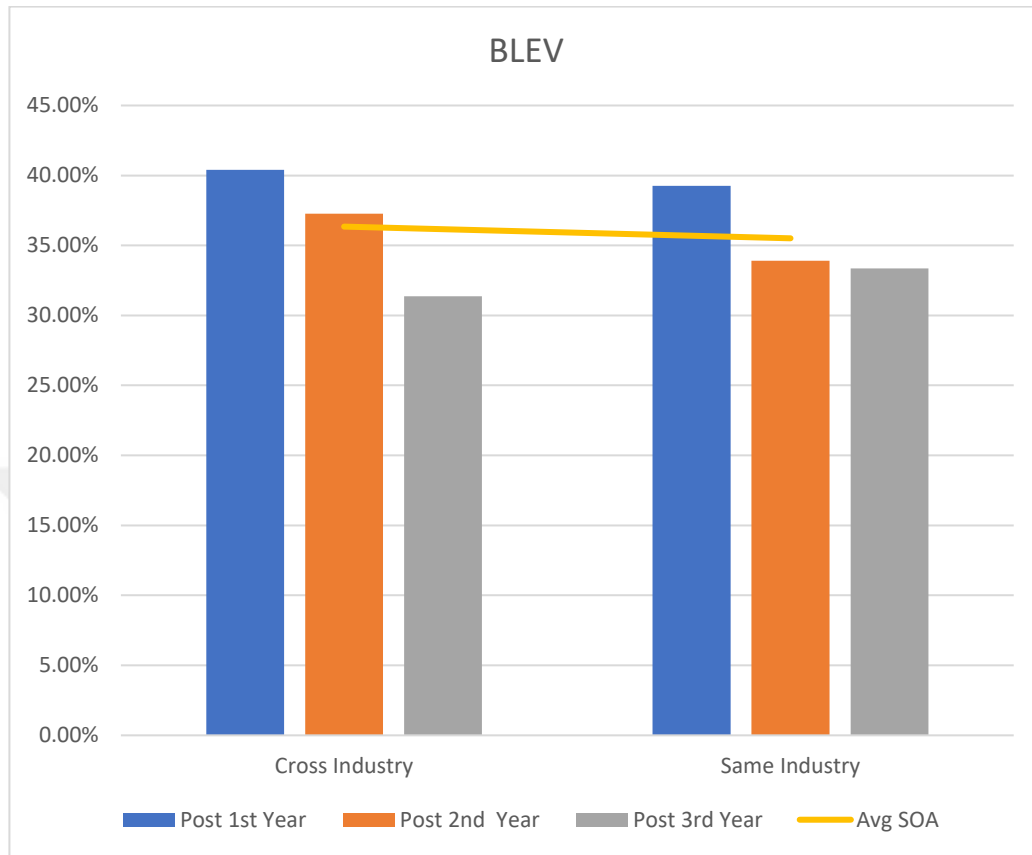
The SOA is displayed in Table 18, which show that the cross industry SOA (31.36%) is almost 1% faster than the same industry SOA (35.51%). According to results, the time to take to readjust back to it pre M&A capital structure for cross border is 2.751 years while for the same industry is 2.816 years. In Figure 12, the graph of three post-M&A SOA for each year and average SOA line is presented. The graph show that each year post M&A the SOA has been decreasing from previous year. The average SOA line is a slightly moving downward while comparing cross industry to same industry because there is a small difference of SOA.

Table 18: Speed of Adjustment for BLEV for Cross Industry and Same Industry

The Speed of Adjustment (SOA) for each cross industry and same industry M&A cases are displayed for all the firms. The Average SOA and number of years to readjustment to their target capital structure is presented. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
Cross Industry	Adj_speed	0.4041***	0.3727***	0.3136***	0.3635	2.751
		(0.000)	(0.000)	(0.000)		
	Observations	3506	3506	3506		
	R-squared	0.295	0.268	0.221		
Same Industry	Adj_speed	0.3927***	0.3390***	0.3337***	0.3551	2.816
		(0.000)	(0.000)	(0.000)		
	Observations	3014	3014	3014		
	R-squared	0.293	0.240	0.229		

Figure 12: Cross Industry and Same Industry, M&A cases BLEV* Graph



In Table 19, the fixed effect regression is run for both cross industry and same industry M&A cases. The coefficient of EBIT_TA, MB, DEP_TA and RD_DUM are -0.0056, -0.0011, -0.1526 and -0.0024 (-0.0184, -0.0009, -0.0783 and -0.0007) respectively for cross industry (same industry) which are all significant except for RD_DUM. The rest of variable are all positive significant for both M&A cases except for RD_TA, which are non-significant positive associated with MLEV. The highest association is for IND_MED in both the cases, which is 0.8288 and 0.8027 for Cross industry and same industry respectively.

Table 19: Pre M&A Estimators MLEV for Cross Industry and Same Industry

The target market to leverage (MLEV*) estimator are displayed here. The column (1) presents the BLEV* estimators for the cross Industry M&A, column (2) presents the same industry M&A. The measurement of variables are (i) EBIT_TA=(Operating Income + Interest and related expense + Current Income Taxes)/(Total assets), (ii) MB=(Long-term debt +Short-term debt + Preferred capital + Market Value of Equity)/(Total assets), (iii) DEP_TA=(Total Depreciation and Amortization)/(Total assets), (iv) LnTA=Log Total assets, (v) FA_TA=(Fixed assets)/(Total assets), (vi) R&D_TA=(Research and Development Expense)/(Total assets), (vii) IND_MED: Industry median, (ix) R&D_DUM: Research and development dummy variable. The fixed effect, observation (Obs), R squared, F statistics and Hausman Test are displayed. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively

	Cross Industry	Same Industry
C	-0.2416*** (0.000)	-0.2727*** (0.000)
EBIT_TA	-0.0056** (0.015)	-0.0184*** (0.000)
MB	-0.0011*** (0.000)	-0.0009*** (0.000)
DEP_TA	-0.1526*** (0.000)	-0.0783*** (0.000)
LN_TA	0.0130*** (0.000)	0.0155*** (0.000)
FA_TA	0.0926*** (0.000)	0.0222** (0.022)
RD_TA	0.0141 (0.395)	0.0262 (0.155)
IND_MED	0.8288*** (0.000)	0.8027*** (0.000)
RD_DUM	-0.0024 (0.495)	-0.0007 (0.869)
Fixed effect	Yes	Yes
Observations	10518	9042
R-squared	0.934	0.925
F	27.995***	24.672***
Hausman Test	0.0000	0.000

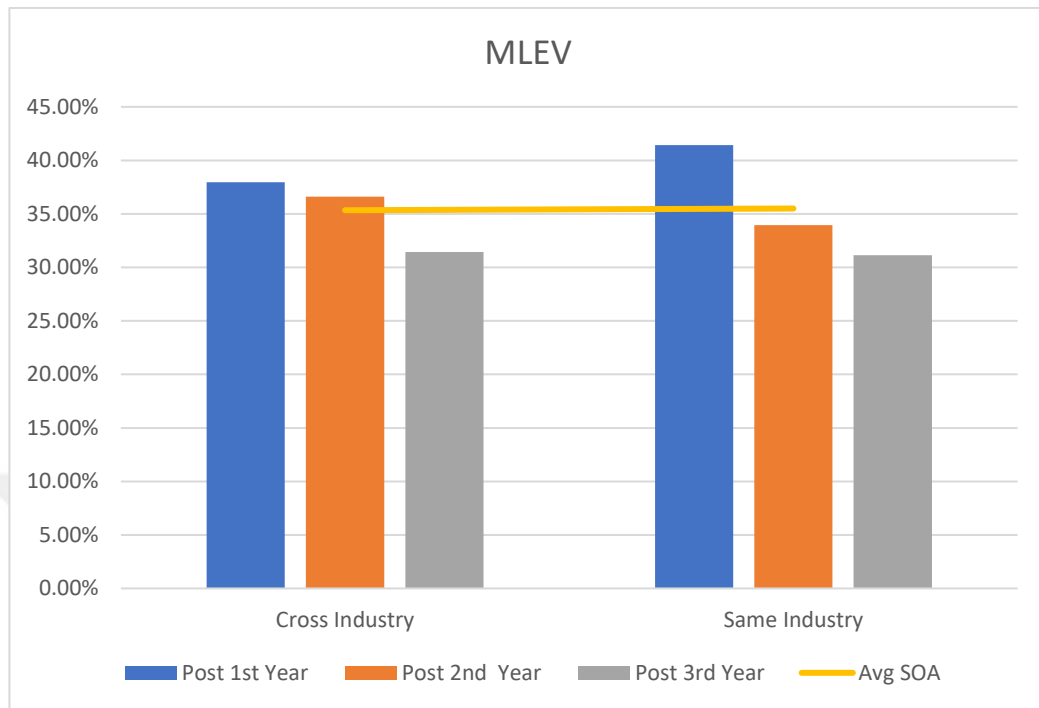
The SOA for the cross industry and same industry for MLEV is displayed in the Table 20. The difference between the average SOA of both the group is too small (0.16%). From the graph in Figure 13, it could be observed that while comparing SOA on yearly base, in post 1st year the SOA for cross industry is 37.95% less than same industry is 41.42%. While in the second year the cross industry SOA is higher than the same industry, however in the third post year the SOA is almost same. The Figure 13 present that the SOA rate is decreasing each year from both cases.

Table 20: Speed of Adjustment for MLEV for Cross Industry and Same Industry

The Speed of Adjustment (SOA) for each cross industry and same industry M&A cases are displayed for all the firms. The Average SOA and number of years to readjustment to their target capital structure is presented. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
Cross Industry	Adj_speed	0.3795***	0.3663***	0.3144***	0.3534	2.830
		(0.000)	(0.000)	(0.000)		
	Observations	3506	3506	3506		
	R-squared	0.270	0.258	0.229		
Same Industry	Adj_speed	0.4142***	0.3394***	0.3115***	0.3550	2.817
		(0.000)	(0.000)	(0.000)		
	Observations	3014	3014	3014		
	R-squared	0.308	0.246	0.212		

Figure 13: Cross Industry and Same Industry, M&A cases MLEV* Graph



4.4. SPEED OF ADJUSTMENT FOR EUROPE, US AND REST OF WORLD M&A DEALS

This section illustrates the SOA for the different regional that is Europe (EUR), United State (US) and Rest of the World M&A behaviors. Table 21 and 23 present the regression estimators for BLEV* and MLEV* respectively. Each table has four column, the first column includes the different independent variable while the other three column displays the regression estimators for EUR, US and rest of world sequentially. The SOA results are presented in Tables 22 and 24 for BLEV and MLEV respectively. The table present the SOA of each post M&A year, the average SOA and the number of years to take to readjust to target capital structure.

Table 21: Pre M&A Estimators BLEV* for EUR, US and Rest of World

The target book leverage (BLEV*) estimator are displayed here. The column (1) presents the BLEV* estimators for the EUR M&A, column (2) presents US M&A and (3) Rest of World M&A. The measurement of variables are (i) EBIT_TA=(Operating Income + Interest and related expense + Current Income Taxes)/(Total assets), (ii) MB=(Long-term debt +Short-term debt + Preferred capital + Market Value of Equity)/(Total assets), (iii) DEP_TA=(Total Depreciation and Amortization)/(Total assets), (iv) LnTA=Log Total assets, (v) FA_TA=(Fixed assets)/(Total assets), (vi) R&D_TA=(Research and Development Expense)/(Total assets), (vii) IND_MED: Industry median, (ix) R&D_DUM: Research and development dummy variable. The fixed effect, observation (Obs), R squared, F statistics and Hausman Test are displayed. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively

	(1) EUR	(2) US	(3) Rest of World
C	-0.1659*** (0.000)	-0.2366*** (0.000)	-0.1027*** (0.005)
EBIT_TA	-0.0278*** (0.000)	-0.0071* (0.079)	-0.0011 (0.834)
MB	0.0013*** (0.000)	0.0015*** (0.000)	0.0003 (0.340)
DEP_TA	0.0268 (0.164)	-0.1018*** (0.002)	-0.1246*** (0.000)
LN_TA	0.0083*** (0.000)	0.0134*** (0.000)	0.0057*** (0.002)
FA_TA	-0.0075 (0.521)	0.0799*** (0.000)	0.0618*** (0.000)
RD_TA	0.0582** (0.041)	0.1521*** (0.000)	0.0073 (0.840)
IND_MED	0.9172*** (0.000)	0.7460*** (0.000)	0.9275*** (0.000)
RD_DUM	0.0080* (0.085)	-0.0044 (0.643)	0.0026 (0.476)
Fixed effect	Yes	Yes	Yes
Observations	5964	8361	5235
R-squared	0.969	0.890	0.957
F	61.543***	16.103***	44.261***
Hausman Test	0.000	0.000	0.011

In Table 21 the result for the M&A deals for different region, show that the fixed effect regression models was used for all the groups. The results show that EBIT_TA, MB, LNTA, RD_TA and IND_MED variables are all associated in the same direction but magnitude are different across the regional group. EBIT_TA variables is negatively associated, and non-significant for “rest of the world” group, while significant for EUR and US. The MB, LNTA, RD_TA and IND_MED variables are all significantly positively associated but only for the “rest of the world” group MB and RD_TA is non-significant. DEP_TA variable is positively non-significant for EUR group while significantly associated for the other two regional group. The RD_DUM variable is non-significant but negatively and positively associated for US and “rest of the world” respectively. While in the case of EUR M&A deals, it is positively significantly associated with the BLEV.

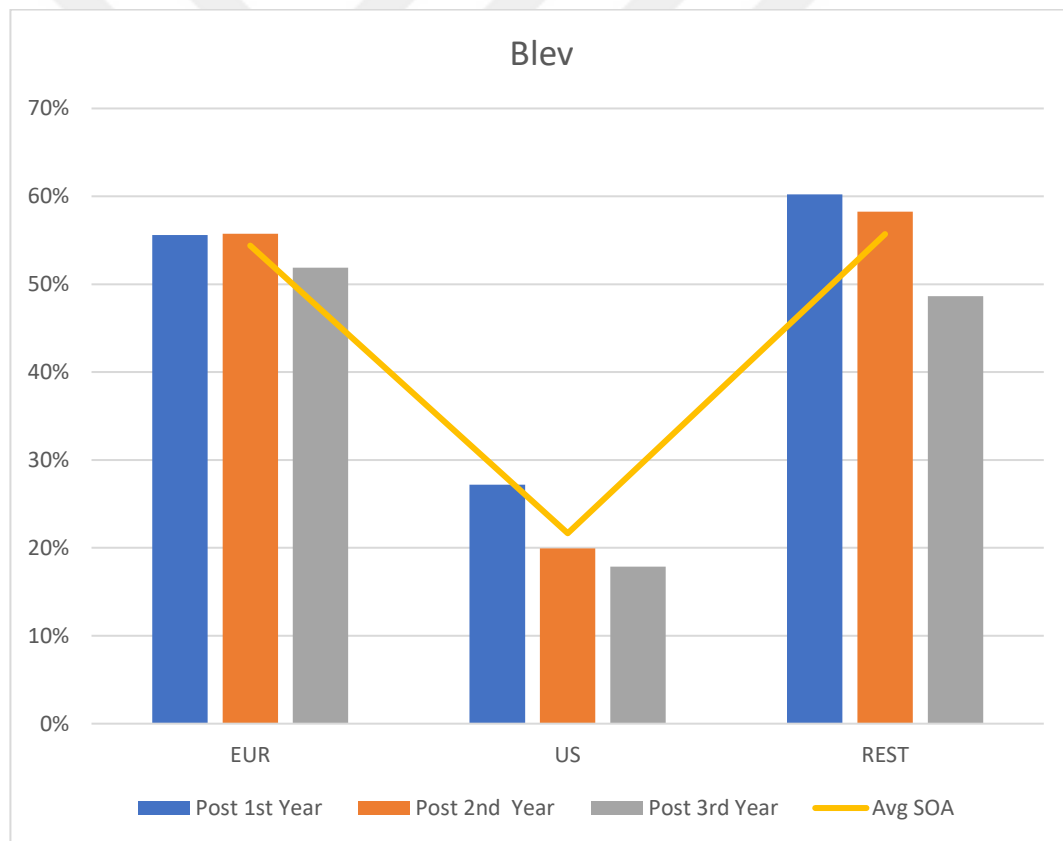
Table 22: Speed of Adjustment for BLEV for EUR, US and Rest of World

The Speed of Adjustment (SOA) for each cross industry and same industry M&A cases are displayed for all the firms. The Average SOA and number of years to readjustment to their target capital structure is presented. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
EUR	Adj_speed	0.5560*** (0.000)	0.5574*** (0.000)	0.5187*** (0.000)	0.5440	1.8381
	Observations	1988	1988	1988		
	R-squared	0.423	0.466	0.453		
US	Adj_speed	0.2718*** (0.000)	0.1996*** (0.000)	0.1785*** (0.000)	0.2166	4.6162
	Observations	2787	2787	2787		
	R-squared	0.179	0.111	0.092		
Rest	Adj_speed	0.6021*** (0.000)	0.5827*** (0.000)	0.4863*** (0.000)	0.5570	1.7952
	Observations	1745	1745	1745		
	R-squared	0.510	0.483	0.389		

The SOA is presented in the Table 22 for the BLEV for the different regions. The average SOA for the rest of the world region is the highest (55.70%) of all the regional M&A deals. The US regional average speed of adjustment is the lowest that is 21.66%. While the EUR regional average SOA is 54.40%. From the Figure 14 it could be observed that the for all the regional group for BLEV the SOA in the first post M&A is higher than the other two years. The average SOA line is at the lowest place in case of US as shown in the Figure 14.

Figure 14: Speed of Adjustment Graph for BLEV for EUR, US and Rest of World M&A Cases



In the case of MLEV for all the regional the analysis are displayed in Table 23 and 27 for regression estimators and SOA respectively. In Table 23 the MLEV* estimators are displayed showing that EBIT_TA, MB and DEP_TA variables have negative association with the MLEV for all the regional group M&A deals. The EBIT_TA and DEP_TA has a non-significant negative association for “rest of the world” and EUR region respectively. The LNTA and IND_MED have positive significant association with MLEV for all the region. The FA_TA variable has a non-significant association of -0.0052 for the EUR region while a positive significant relation of 0.0717 and 0.0712 for US and “rest of the world” M&A deals. The RD_DUM variable has a negative significant relationship of -0.0116 for US region M&A deals while non-significant positive relationship for other two regional groups.

Table 23: Pre M&A Estimators MLEV* for EUR, US and Rest of World

The target market to leverage (MLEV*) estimator are displayed here. The column (1) presents the MLEV* estimators for the EUR M&A, column (2) presents US M&A and (3) Rest of World M&A. The measurement of variables are (i) EBIT_TA=(Operating Income + Interest and related expense + Current Income Taxes)/(Total assets), (ii) MB=(Long-term debt +Short-term debt + Preferred capital + Market Value of Equity)/(Total assets), (iii) DEP_TA=(Total Depreciation and Amortization)/(Total assets), (iv) LnTA=Log Total assets, (v) FA_TA=(Fixed assets)/(Total assets), (vi) R&D_TA=(Research and Development Expense)/(Total assets), (vii) IND_MED: Industry median, (ix) R&D_DUM: Research and development dummy variable. The fixed effect, observation (Obs), R squared, F statistics and Hausman Test are displayed. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively

	(1) EUR	(2) US	(3) Rest of World
C	-0.1427*** (0.000)	-0.2337*** (0.000)	-0.3231*** (0.000)
EBIT_TA	-0.0209*** (0.000)	-0.0086*** (0.002)	-0.0080 (0.135)
MB	-0.0010*** (0.001)	-0.0009*** (0.000)	-0.0010*** (0.001)
DEP_TA	-0.0046 (0.771)	-0.1458*** (0.000)	-0.1393*** (0.000)
LNTA	0.0079*** (0.000)	0.0137*** (0.000)	0.0176*** (0.000)
FA_TA	-0.0052 (0.586)	0.0717*** (0.000)	0.0712*** (0.000)
RD_TA	0.0408* (0.082)	0.0160 (0.343)	0.0356 (0.336)
IND_MED	0.8653*** (0.000)	0.7411*** (0.000)	0.8395*** (0.000)
RD_DUM	0.0015 (0.687)	-0.0116* (0.073)	0.0032 (0.392)
Fixed effect	Yes	Yes	Yes
Observations	5964	8361	5235
R-squared	0.957	0.898	0.946
F	44.501***	17.610***	34.880***
Hausman Test	0.000	0.000	0.000

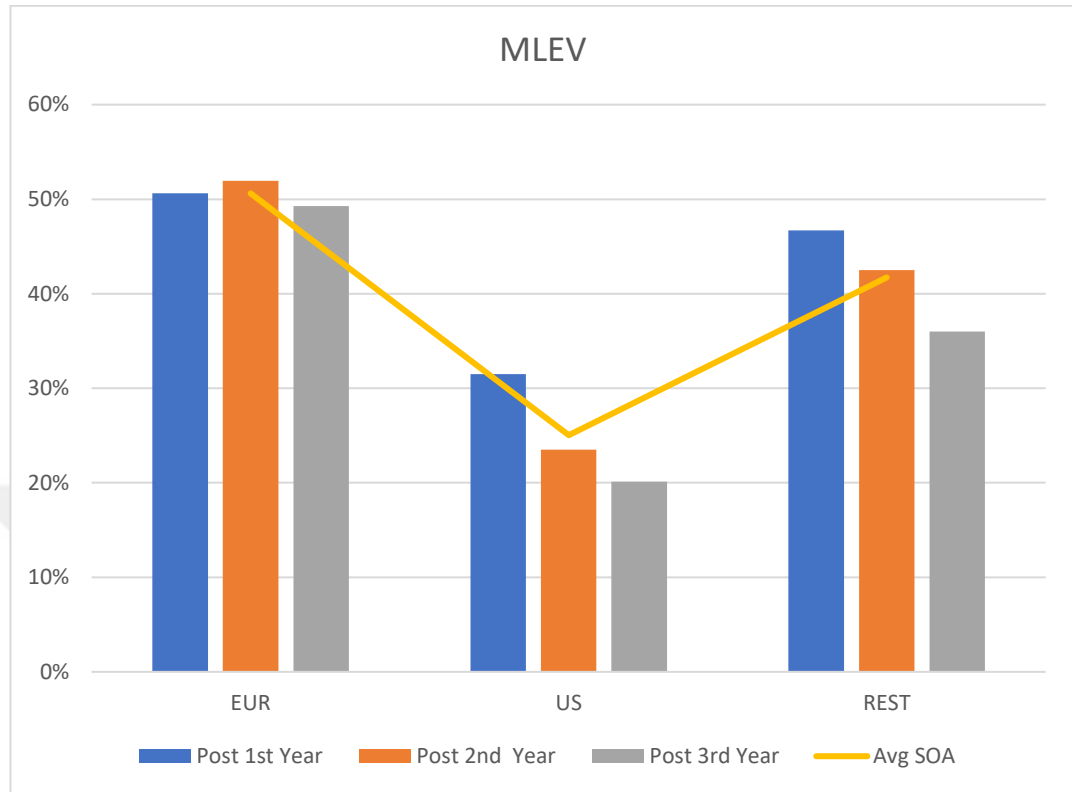
The SOA analysis details for MLEV are available in Table 24, which show that the average SOA for EUR is the highest that is 50.61% from the other two region. The US M&A deals has the lowest (25.04%) SOA of all the region. The number of years to readjust to the target capital structure in post M&A scenario is 1.9757, 3.9941 and .3962 for the EUR, US and REST respectively. The Figure 15 represent the graph of MLEV for the post three years of SOA. The graph show that for the EUR, the first post year SOA is lower as compare to the second post year of M&A. The US and “rest of the world” M&A deals illustrate that the first years has a higher SOA in the first post M&A year while gradually decreases in the following post second and third post M&A year.

Table 24: Speed of Adjustment for MLEV for EUR, US and Rest of World

The Speed of Adjustment (SOA) for each cross industry and same industry M&A cases are displayed for all the firms. The Average SOA and number of years to readjustment to their target capital structure is presented. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

		Post 1st Year	Post 2nd Year	Post 3rd Year	Avg SOA	No. of Years
EUR	Adj_speed	0.5061*** (0.000)	0.5196*** (0.000)	0.4927*** (0.000)	0.5061	1.9757
	Observations	1988	1988	1988		
	R-squared	0.379	0.430	0.409		
US	Adj_speed	0.3149*** (0.000)	0.2351*** (0.000)	0.2011*** (0.000)	0.2504	3.9941
	Observations	2787	2787	2787		
	R-squared	0.208	0.138	0.113		
REST	Adj_speed	0.4669*** (0.000)	0.4250*** (0.000)	0.3601*** (0.000)	0.4173	2.3962
	Observations	1745	1745	1745		
	R-squared	0.368	0.325	0.279		

Figure 15: Speed of Adjustment Graph for MLEV for EUR, US and Rest of World M&A Case



4.5. DISCUSSION

In this section the hypothesis will be revisited one by one and compared with the results.

4.5.1. Hypothesis 1

The first hypothesis states that the SOA is lower in the crisis years than the non-crisis years. The main crisis period that the thesis dataset cover, includes the financial crisis of 2008-2009. The SOA for all the years are displayed in Table 10 and as discussed earlier, the lowest average SOA is in 2005 and the second lowest is in 2007 for the BLEV for all M&A deals. The lowest per year SOA is for the third year of the 2007 M&A deals, which is 14.68%. This can be interpreted as the M&A deals that took place in 2007 may not have estimated a serious financial crisis forthcoming.

If the firms have made the M&A deals in 2007 then the third post M&A year is 2010, hence, the effect of 2008-2009 financial crisis is felt more in the world at that stage of time. Therefore, a post-M&A third year lowest SOA may show that the financial crisis would have disturbed the world economy and created a panic in financial market. The second post M&A year (2009) for the 2007 M&A deals, show that the SOA is around 32.87% but jumps to its lowest (14.68%) almost half the SOA rate compared to 2nd year. The average SOA of 2008 M&A deals is normal (35.72%), as the firms making M&A deals in the year 2008 may have made calculated decision because they would have observed the financial crisis. The results support the literature that in the crisis years, the economic conditions of the market are weak and unpredictable (Cook and Tang, 2010). One of the possibilities may be that the government of different countries have intervened to decrease tension and introduce different decision to uplift the economy. Therefore, the improvement observed in the 2009 to 2011 M&A deals average SOA may be due to the government policies to decrease the economics problem. The pattern of the readjustment also changed in the years onward to 2010. The readjustment SOA in the first post-M&A year decreased as compared to the third post-M&A year. The results provide support for the first hypothesis stating that the SOA is lower in non-crisis years.

The results for the MLEV for all the firms for all years partially support the hypothesis-1. In the SOA Table 12 for the MLEV, the table show that 2012 and 2013 M&A cases had the lowest rate. The M&A deals taken place a year or two before the financial crisis of 2008-2009 would have the maximum chance of been effected by the crisis. The 2006 and 2007 M&A cases took place before the financial crisis and the readjustment to target capital structure may be effected due to crisis. The thesis results also reflect the same that the third post-M&A year for the 2007 M&A deals is the lowest from 2000 to 2011 M&A deals. The average speed of 2009 is also low as compared to the other average SOA between the 2000 to 2011 M&A cases. As discussed earlier the government may have intervene in the crisis period to control the economic situation would have create business condition favorable. The impact of the government intervene is reflected in the average SOA for 2010 and 2011 M&A deals for both BLEV and MLEV cases.

4.5.2. Hypothesis 2

The second hypothesis that is the SOA is higher for the cross border than non-cross border M&A deals, is supported by the results discussed in the section 4.2. This can be attributed to different countries having different legal and financial structures, which influence the SOA, as also argued by Oztekin and Flannery (2012). If the legal and financial structures are well established, the SOA will be high as compared to M&A deals in countries with weak legal and financial structures. Additionally, literature shows that firms operating in countries having high growth rates of GDP per capita has high SOA rate (Mai et al., 2017). The findings provide evidence that the cross border M&A deals have higher SOA rates compared to non-cross border M&A deals for both BLEV and MLEV. The reason for this finding can be attributed to the fact that the acquiring firm's country may have strong legal and financial structures and better macroeconomic conditions. Hence, the findings of SOA toward target BLEV and MLEV support hypothesis-2 that the SOA is higher in cross border than non-cross border M&A cases.

4.5.3. Hypothesis 3

The third hypothesis is that the SOA is lower in same industry as compared to cross industry M&A deals. The SOA analysis results for same industry and cross industry M&A deals in section 4.3, do not provide supporting evidence to hypothesis 3. In the BLEV analysis, there is an approximately 0.8% difference in the SOA for same industry and cross industry M&A deals as shown in Table 18. The movement toward target BLEV* in cross industry M&A deals move slightly faster than same industry M&A deals. In contrast, for the MLEV analysis as shown in Table 20, the average SOA of same industry is 0.2% higher than cross industry M&A deals. This shows that there is mixed results for SOA for the same and cross industry for BLEV and MLEV. Therefore, the second hypothesis that the speed of adjustment is lower in same industry than cross industry M&A deals, could not be accepted because the SOA is almost the same for both the same and cross industry M&A deals.

4.5.4. Hypothesis 4

The fourth hypothesis states that the SOA for US region M&A deals are lower than EUR and REST region M&A deals. The discussion in section 4.4 shows support to the fourth hypothesis for both BLEV and MLEV cases. Table 22 shows that average SOA for US is lower than the EUR and REST M&A deals. Although the financial and legal institution of US are strong but at the same time, the US had been affected with different major crisis through the period of 2000 to 2013. Dang, Kim and Shin (2014) argues that due to crisis, difficulties are created for firms to readjust to their target capital structures. In accordance with the hypothesis, the average SOA for the US is lower (21.66%) while the REST has 55.70% and EUR region is 55.74% for the BLEV cases. The same pattern is observed for the MLEV in Table 24. The average SOA for US in the MLEV cases is 25.04% but lower than the EUR and REST M&A deals. The results are in favor with the findings of Reinhart and Rogoff, (2008) that the US was influenced at a large scale by the financial crisis as compared to the other regions.

4.5.5. Hypotheses 5 to 11

The hypotheses 5 to 11, in which the average SOA for BLEV and MLEV is compared for different cases, state that there exists a difference in the SOA for BLEV and MLEV. While comparing the SOA for BLEV and MLEV across the seven M&A deals (cross border; non-cross border; cross industry; non-cross industry; EUR; US; and REST M&A deals), it is observed that the SOA rate trend is almost the same for BLEV and MLEV in non-cross border and same industry M&A deals. For example, for non-cross border M&A deals, the average SOA for BLEV is 33.79% as shown in Table 14, while MLEV is 34.38% as reported in Table 16, the difference is 0.59%. Similar average SOA pattern is observed for the same industry deals, where BLEV is 35.51% and MLEV is 35.50%, and the difference is 0.01%. This result shows that the gap between BLEV and MLEV in non-cross border and same industry M&A deals is narrow. In contrast, the difference in cross border M&A deals is wider between BLEV and MLEV, in which the BLEV (41.40%) moves 3.01% faster toward target capital structure compared to MLEV (38.39%). On the other hand the gap between BLEV and

MLEV in the cross industry M&A deals is also wider. The BLEV adjustment speed is 36.35% while MLEV is 35.34%, indicating that the BLEV moves 1.01% faster than MLEV. The results indicate that hypothesis 5 and 7 could not be accepted while hypothesis 6 and 8 may be accepted.

In the regional M&A deals, the difference in the SOA between BLEV and MLEV could be observed for all the regions at Tables 25 and 27, respectively. For instance, the EUR M&A deals the average SOA for BLEV is 54.40% while for the MLEV it is 50.661%, a difference of 3.79%. In the US M&A deals, SOA for BLEV is slower (21.66%) than the MLEV deals (25.04%). The MLEV readjusts almost 3.38% faster than the BLEV. The difference in the REST M&A deals is very high between the BLEV and MLEV. The BLEV readjustment speed for REST M&A deals are 55.70% and for the MLEV the SOA is 41.73%, demonstrating that there is a 13.97% difference in speed. Hence, it could be stated that the results are in supported in the hypothesis 9, 10 and 11.

In the end the overall average SOA rate for all the cases for both BLEV and MLEV show that majority of the M&A deals have the SOA rate above 32% per year. These results are consistent with the findings of Cook and Tang (2010), Flannery and Rangan (2006) Leary and Roberts (2005) and Oztekin and Flannery (2012) studies which consider it as a fast speed of adjustment.

In conclusion, in this chapter the empirical findings of the thesis were discussed. The results were classified into four main sections. The first section 4.1 illustrated the SOA for all the firms for different years; second section 4.2 presented the SOA for cross border and non-cross border M&A deals; third section 4.3 exhibited the SOA for cross industry and same industry; and the last section 4.4 highlighted the different region including EUR, US and REST M&A deals. Following these four sections, the fifth section 4.5 provided a discussion of the empirical results in light of the hypotheses of the thesis.

CONCLUSION

In this thesis, the SOA of firms to their target capital structure in post-M&A for different types of M&A deals were investigated. Literature shows that most of the firms have a “target capital structure” range, when firms move outside of the determined range the process of readjustment is initiated. Different adjustment costs that slow the SOA and in their absence mostly all the firms would be at their optimal capital structure. Two different scenarios of pre & post M&A capital structure movements were identified, showing that in the first scenario (financial motives) a totally new capital structure target is adopted in post-M&A, while in the second scenario (nonfinancial motives) the capital structures depart from their pre-M&A range and rebalance back in the post-M&A scenario to their initial state. Hence, the aim of the thesis was to investigate, if firms maintain a target capital structure and at what SOA do they rebalance if they depart from the target range in post M&A activities.

The sample consisted of 6,520 M&A deals for the period of 2000 to 2016. The BLEV and MLEV were used in the analysis to measure leverage. Three-year pre and post financial data were utilized in the analysis. The panel regression modeling were utilized for determining the target leverage estimators. The dependent variable consisted of firm leverage while the independent variable included; Profitability, Growth Opportunities, Non-debt Tax Shield, Firm Size, Tangibility, Intangibility, Research and development dummy and Industry median. Whereas, for estimating the SOA the adjusted regression modeling techniques were adopted. The model regresses the change in the actual firm leverage value of total assets ratio and the change in the expected firm leverage value of total assets ratio. The M&A deals were analyze based on four different types; i) yearly; ii) cross border and non-cross border; iii) cross industry and same industry; and iv) different regions including EUR, US and REST.

The thesis consisted of 11 hypotheses; i) the first hypothesis (H1) is related to the SOA in the crisis year-the literature show that in the time of crisis in which economic activities are slow down the SOA will be low.

The second hypothesis (H2) states that the SOA between cross border M&A and non-cross border M&A would have different Speed. The cross border M&A deals

would have a more faster SOA than non-cross border M&A because cross border M&A deals provide larger and diversified markets achieving more profit generating opportunities.

The third hypothesis (H3) addresses the SOA between same and cross industry M&A deals. The hypothesis developed states that the SOA in same industry M&A deals will be slower than the cross industry M&A deals. The hypothesis is build on the literature which states that the cross industry M&A widen the target market, may create imperfectly correlated cash flows, helping in the rebalancing to target capital structure faster than same industry M&A deals.

Fourth hypothesis (H4) is concern with different region that is US, EUR and REST M&A deals. According to literature different macroeconomic conditions, and financial and legal institutions have foremost impact of the SOA, based on which US would have same or faster SOA than other region. However, the sample dataset included the years of different crisis hitting US that negatively influence the SOA of US M&A deals. Hence, the H4 states that the SOA for the US region M&A deals is lower than EUR and REST region M&A deals.

The hypotheses 5 to 11 is covering speed difference of SOA for BLEV and MLEV for the different M&A deals. Literature is mostly in support of using MLEV rather than BLEV. In literature, it is stated that the MLEV has more strength and capture the monetary value not just the assets in place. Therefore, the hypothesis suggest that the BLEV and MLEV would have different SOA for each group of M&A deals including i) non-cross border, ii) cross border, iii) same industry, iv) cross industry, v) EUR, vi) US and vii) REST M&A deals.

The findings of the study support that the SOA for BLEV is lower in crisis years than the non-crisis years in contrast to MLEV which provided partial support for hypothesis one. The empirical evidence support the H2 that in the cross border M&A deals the SOA is faster compared to the non-cross border M&A deals. While the same industry M&A deals and cross industry M&A deals experience almost the same SOA rate for both BLEV and MLEV. The results also show support for the hypothesis that the SOA for US is lower than the other regions. For the H5 to H11, regarding differences between the SOA of BLEV and MLEV, the empirical findings provide mixed support depending on the M&A deals. The SOA of BLEV and MLEV are

almost same for non-cross border and same industry deals; hence hypothesis 5 and hypothesis 7 could not be accepted. On the other hand, there exists differences in SOA between BLEV and MLEV for cross border and cross industry deals; therefore the hypotheses 6 and 8 are accepted. The magnitude of SOA between BLEV and MLEV for each region EUR, US and REST are different, in this regard hypotheses 9 to 11 may be accepted. The results also show that the overall SOA is consistent with the fast speed of adjustment for all the M&A cases similarly as the findings of Cook and Tang (2010), Flannery and Rangan (2006) Leary and Roberts (2005) and Oztekin and Flannery (2012).

The thesis also confront with two main limitations that are; firstly, accessing complete financial data was a problem. As mentioned in prior chapters, the financial data was taken from Thomson Reuters Eikon database. There were large amounts of missing values in the dataset so many M&A cases had to be dropped. Therefore, it would of interest for future study to collect data from other databases such as Compustat.

The second limitation was the time period of the study. The study was an event study, hence pre & post three year financial data was needed for the analysis. When the data collection was conducted, the cut off year was 2012 for the M&A deals, and 2015 for financial data. However, since the cleaning and the analysis of data prolonged into the year 2017 and then later another year was added to the analysis. Therefore, the cut off year was updated to 2013 for M&A deals, and 2015 for financial data. In the future, if the sample period is updated further it would be of great interest.

As future research, investigation of the effect of harmonization of accounting rules on the SOA in M&A deals may be of interest to managers and policy makers. Since financial statement data is used in the models the effect of using different accounting standards may play an important role in the findings and especially on SOA. Therefore investigating the effect of different reporting standards on the SOA in post-M&A would be a valuable contribution to literature.

A number of contributions are made in this thesis to the existing literature of M&A, target capital structure and SOA. To the best of my knowledge, this study is one of the first studies illustrating the SOA in the post M&A period. As all the previous studies on SOA have a general focus and even if they focus on M&A, their focus is on

pre-M&A capital structure status. Therefore, the first contribution of this study to the literature is the investigation of post-M&A scenario of target capital structure and SOA.

The second contribution is that, the thesis critically reviews the literature of target capital structure and SOA focusing on M&A. The studies related to the target capital structure and SOA generally focus on firm's behavior not related to the domain of M&A. In this study, different theories of capital structure are reviewed and combined with the SOA literature, based on which, a pre and post M&A capital structure movement's scenario framework is developed. The framework highlight two scenario based on a financial motive and nonfinancial motive. These different scenario highlight the pre and post M&A movement of capital structure and adjustment to target capital structure for the different motives. Hence, this framework of movement towards capital structure changes is a contribution to the literature.

Thirdly, the dataset that was used for the study is also a major contribution, because it covered all the complete public to public M&A that took place from 2000 to 2013 regardless of a specific region. There were 6,520 different M&A deals and 45,640 total firm year observations. This is one of the first studies which such a large number of M&A deals and firm year observations are investigated in a SOA study. The large dataset helps in structuring the analysis of the study and help in contributing to the SOA literature in differentiation M&A deals based on different criteria as i) the cross border and non-cross border M&A and ii) cross industry and same industry M&A deals. In previous studies, such detailed analysis is not found, also for all the above cases the SOA were estimated and compared for both BLEV and MLEV.

Fourthly, the SOA was also analyzed for M&A deals for different regions that is EUR, US and REST comparatively. Majority of the previous studies focus on a single region and pre-M&A SOA. Therefore, this study is a comprehensive study for the researchers and managers who are interested in the area of M&A and SOA.

These contributions will aid researchers and managers in exploring and measuring the capital structure, target capital structure and SOA in the domain of M&A. The thesis identifies that the target capital structure appears to be an important aspect of managerial decision in the post M&A situation. Since the empirical finding show that in every type of M&A deals the firm, readjust to the target capital structure.

The thesis provide support to the trade-off theory that firm are conscious to the target capital structure that provide cost saving advantages. The manager targeting cross border or cross industry target firms may have the chance to deviate wider from their target capital structure, because due to the diversification of market the SOA is faster. In contrast, in same industry and non-cross border M&A deals the manager may take in to consideration the target capital structure, as the SOA is slower as compared to cross industry and cross border M&A deals. The study will help managers to make better estimation of target capital structures and SOA for future M&A plans. In summary the thesis contributed to the existing literature on two fronts; i) the pre-M&A deviation position from target capital structure; and ii) post-M&A readjustment behavior to target capital structure.

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APPENDIX



Appendix 1: Summary of M&A deals from 1970 to 2016

The Appendix-1 includes the summary of M&A cases from 1970 to 2016 taken from the database of SDC.

1- Status of Deals	
Completed	771,094
Pending	122,609
Status Unknown	42,549
Seeking Buyer	34,520
Intended	33,834
Withdrawn	29,747
Dismissed Rumor	2,045
Seeking Buyer Withdrawn	1,998
Rumor	1,292
Intent Withdrawn	974
Unconditional	452
Seeking Target	259
Partially Completed	14
Pending Regulatory	14
	1,041,401

2- Form of Transaction	
Acquisition Of Assets	443,253
Acquisition Of Partial Interest	201,010
Merger	180,907
Acquisition Of Majority Assets	120,743
Buyback	47,294
Acquisition Of Remaining Interest	35,383
Acquisition Of Certain Assets	6,890
Acquisition	4,107
Exchange Offer	1,610
Recapitalization	204
	1,041,401

3- Type of Deals	
Friendly	905,826
Hostile	1,847
Neutral	60,129
No Applicable	71,513
Unsolicited	2,086
	1,041,401

4- Firms Status				
Acquirer Status			Target Status	
Government	6,599		Government	11,901
Investor	22,937		Investor	1
Joint Venture	7,967		Joint Venture	19,604
Mutual	382		Mutual	302
Private	381,461		Private	456,168
Public	423,385		Private Subsidiary	19
Public Subsidiary	1		Public	184,601
Subsidiary	198,013		Subsidiary	368,684
	1,040,745			1,041,280

5- Classification of M&A deals based on Nations			
Acquirer Nation		Target Nation	
Argentina	1,821	Argentina	4,029
Australia	32,455	Australia	38,686
Austria	5,016	Austria	5,135
Bahamas	192	Bahamas	194
Bahrain	357	Bahrain	244
Belgium	5,883	Belarus	310
Bermuda	1,200	Belgium	6,790
Bolivia	92	Bermuda	776
Bosnia and Herzegovina	71	Bolivia	279
Botswana	65	Bosnia and Herzegovina	251
Brazil	6,889	Brazil	11,350
British Virgin Islands	1,364	British Virgin Islands	680
Bulgaria	814	Bulgaria	1,942
Canada	53,201	Cambodia	201
Cayman Islands	621	Canada	52,790
Chile	1,669	Cayman Islands	313
China (Mainland)	41,825	Chile	3,048
Colombia	962	China (Mainland)	54,162

Costa Rica	100	Colombia	1,946
Croatia	444	Costa Rica	293
Cyprus	2,702	Croatia	1,054
Czech Republic	2,059	Cyprus	946
Denmark	6,677	Czech Republic	3,937
Ecuador	106	Denmark	7,558
Egypt	814	Ecuador	383
Estonia	734	Egypt	1,690
Finland	8,217	Estonia	1,316
France	35,186	Finland	8,837
Georgia	83	France	41,380
Germany	36,617	Georgia	210
Gibraltar	78	Germany	44,103
Greece	2,369	Ghana	267
Guernsey	706	Greece	2,807
Hong Kong	18,719	Guernsey	215
Hungary	1,401	Hong Kong	16,397
Iceland	577	Hungary	3,332
India	13,047	Iceland	343
Indonesia	2,513	India	19,846
Ireland	4,089	Indonesia	5,534
Isle of Man	311	Ireland	4,250
Israel	2,655	Israel	3,361
Italy	14,608	Italy	19,406
Jamaica	76	Japan	45,899
Japan	46,139	Jersey	239
Jersey	456	Jordan	749
Jordan	545	Kazakhstan	784
Kazakhstan	311	Kenya	369
Kenya	161	Kuwait	735
Kuwait	834	Latvia	849
Latvia	383	Lithuania	1,193
Lebanon	162	Luxembourg	1,114
Liechtenstein	106	Macedonia	221
Lithuania	606	Malaysia	17,765
Luxembourg	2,235	Mauritius	238
Malaysia	16,590	Mexico	4,940
Malta	141	Mongolia	232
Mauritius	683	Morocco	542
Mexico	2,439	Namibia	200
Morocco	252	Netherlands	14,980
Netherlands	15,800	New Zealand	6,296

New Zealand	4,378	Nigeria	634
Nigeria	309	Norway	9,318
Norway	8,120	Oman	370
Oman	280	Pakistan	679
Pakistan	287	Panama	393
Panama	274	Papua New Guinea	335
Papua New Guinea	108	Peru	2,016
Peru	849	Philippines	3,680
Philippines	2,302	Poland	8,597
Poland	4,809	Portugal	3,605
Portugal	2,355	Puerto Rico	506
Puerto Rico	192	Qatar	224
Qatar	458	Romania	1,955
Romania	577	Russia	28,588
Russia	21,107	Saudi Arabia	762
Saudi Arabia	755	Serbia	1,033
Serbia	216	Singapore	9,498
Seychelles	73	Slovakia	846
Singapore	11,361	Slovenia	792
Slovakia	346	South Africa	7,873
Slovenia	496	South Korea	16,150
South Africa	6,422	Spain	20,950
South Korea	12,570	Sri Lanka	742
Spain	15,278	Sweden	16,097
Sri Lanka	428	Switzerland	9,970
Sweden	16,083	Taiwan	4,581
Switzerland	11,237	Tanzania	255
Taiwan	3,963	Thailand	6,185
Thailand	4,219	Tunisia	313
Trinidad and Tobago	64	Turkey	3,985
Tunisia	95	Ukraine	3,766
Turkey	2,306	United Arab Emirates	1,331
Ukraine	1,558	United Kingdom	87,269
United Arab Emirates	1,532	United States	305,682
United Kingdom	73,814	Uruguay	347
United States	291,418	Uzbekistan	211
Uruguay	100	Venezuela	870
Venezuela	429	Vietnam	4,631
Vietnam	2,630	Zambia	241
Zimbabwe	151	Zimbabwe	338

6- Classification of M&A deals based on Industry			
Acquirer Industry		Target Industry	
Advertising & Marketing	11,859	Advertising & Marketing	13,913
Aerospace & Defense	4,868	Aerospace & Defense	5,263
Agriculture & Livestock	6,485	Agriculture & Livestock	10,773
Alternative Energy Sources	1,789	Alternative Energy Sources	3,719
Alternative Financial Investments	31,010	Alternative Financial Investments	2,481
Apparel Retailing	2,025	Apparel Retailing	3,749
Asset Management	20,818	Asset Management	14,066
Automobiles & Components	14,826	Automobiles & Components	19,983
Automotive Retailing	3,889	Automotive Retailing	5,222
Banks	38,008	Banks	37,004
Biotechnology	3,092	Biotechnology	4,748
Broadcasting	6,984	Broadcasting	9,115
Brokerage	68,634	Brokerage	10,637
Building/Construction	26,517	Building/Construction	37,517
Cable	3,398	Cable	4,532
Casinos & Gaming	1,378	Casinos & Gaming	1,478
Chemicals	18,730	Chemicals	22,912
City Agency	64	City Agency	76
City Government	407	City Government	33
Computers & Electronics Retailing	1,861	Computers & Electronics Retailing	2,891
Computers & Peripherals	10,956	Computers & Peripherals	12,327
Construction Materials	10,746	Construction Materials	13,277
Containers & Packaging	5,849	Containers & Packaging	8,149
Credit Institutions	4,526	Credit Institutions	6,580
Discount and Department Store Retailing	2,877	Discount and Department Store Retailing	3,377
Diversified Financials	784	Diversified Financials	1,035
E-commerce / B2B	3,442	E-commerce / B2B	4,232
Educational Services	3,290	Educational Services	5,120
Electronics	12,792	Electronics	15,762
Employment Services	4,441	Employment Services	5,132
Food & Beverage Retailing	11,783	Food & Beverage Retailing	18,380
Food and Beverage	29,915	Food and Beverage	39,462
Government Sponsored Enterprises	130	Government Sponsored Enterprises	99
Healthcare Equipment	13,027	Healthcare Equipment	17,394
Healthcare Providers	11,067	Healthcare Providers	14,993
Home Furnishings	3,804	Home Furnishings	6,389

Home Improvement Retailing	1,405	Home Improvement Retailing	2,465
Hospitals	3,837	Hospitals	5,378
Hotels and Lodging	6,543	Hotels and Lodging	16,500
Household & Personal Products	3,642	Household & Personal Products	4,437
Industrial Conglomerates	369	Industrial Conglomerates	23
Insurance	19,581	Insurance	21,124
Internet and Catalog Retailing	2,232	Internet and Catalog Retailing	3,455
Internet Software	15,824	Internet Software	22,830
IT Consulting & Services	20,777	IT Consulting & Services	26,212
Legal Services	2,107	Legal Services	2,285
Machinery	21,807	Machinery	29,658
Metals & Mining	43,122	Metals & Mining	55,038
Motion Pictures / Audio Visual	6,353	Motion Pictures / Audio Visual	8,854
National Agency	1,151	National Agency	179
National Government	699	National Government	24
Non Residential	2,255	Non Residential	19,487
Oil & Gas	30,938	Oil & Gas	38,167
Other Consumer Products	16,656	Other Consumer Products	23,646
Other Energy & Power	3,297	Other Energy & Power	4,324
Other Financials	184,390	Other Financials	40,302
Other Government and Agencies	20	Other Government and Agencies	19
Other Healthcare	51	Other Healthcare	19
Other High Technology	742	Other High Technology	567
Other Industrials	14,497	Other Industrials	20,799
Other Materials	3,309	Other Materials	5,762
Other Media & Entertainment	270	Other Media & Entertainment	429
Other Real Estate	14,869	Other Real Estate	17,145
Other Retailing	6,831	Other Retailing	11,284
Other Telecom	1,148	Other Telecom	1,465
Paper & Forest Products	7,043	Paper & Forest Products	9,155
Petrochemicals	2,555	Petrochemicals	3,189
Pharmaceuticals	11,299	Pharmaceuticals	13,021
Pipelines	1,116	Pipelines	2,063
Power	12,495	Power	15,998
Professional Services	35,381	Professional Services	50,155
Public Administration	613	Public Administration	662
Publishing	16,946	Publishing	20,206
Real Estate Management	6,805	Real Estate Management	7,886
Recreation & Leisure	3,614	Recreation & Leisure	8,568
Regional Agency	250	Regional Agency	88

Regional Government	294	Regional Government	15
REITs	17,467	REITs	5,533
Residential	949	Residential	3,800
Semiconductors	7,986	Semiconductors	10,240
Software	23,691	Software	36,398
Space and Satellites	349	Space and Satellites	479
Supranational	691	Supranational	37
Telecommunications Equipment	6,772	Telecommunications Equipment	7,791
Telecommunications Services	10,612	Telecommunications Services	11,810
Textiles & Apparel	11,192	Textiles & Apparel	17,376
Tobacco	854	Tobacco	937
Transportation & Infrastructure	21,888	Transportation & Infrastructure	32,717
Travel Services	3,419	Travel Services	4,604
Water and Waste Management	6,454	Water and Waste Management	8,655
Wireless	5,212	Wireless	6,203