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Impact of Covid-19 on Capital Structure Speed of Adjustment of Listed Non-financial firms of Pakistan

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Fall -2021

FINAL PROJECT/THESIS APPROVAL SHEET

Viva-Voce Examination

Viva Date _21_/02__/2022____

Topic of Research: **Impact of Covid-19 on Capital Structure Speed of Adjustment of Listed Non-financial firms of Pakistan**

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Abstract

Purpose

This thesis aims to evaluate the impact of firm-specific, industry-specific and macroeconomic determinants on the speed of capital structure adjustment and to see if COVID-19 had any impact on these relationships.

Methodology & Design

This research involves the secondary data of all of the listed non-financial firms in Pakistan ranging from the periods of 2016 to 2021. The data is collected from the financial reports on the Stock Exchange of Pakistan (PSX) websites and Thomson Reuters DataStream. Some macroeconomic data was collected from the Pakistan Bureau of Statistics as well. Dynamic panel data estimator like GMM was used on the data collected, and the information was analyzed based on quantitative methods. Tests measuring values of correlation and regression were also performed in order to analyze the results obtained from the data.

Findings

The findings obtained from the results of panel data state that the speed of Pakistani firms' capital structure is 16.7% per quarter. It was reported that Covid does not directly affect the adjustment speed. Rather, adjustment speed was more influenced by the significant interaction of the leverage with some firm-specific determinants like profitability, growth and ratio between target capital structure and some macroeconomic determinants like GDP growth. Other determinants that usually show impact on the capital structure did not show any significance.

Limitations

This research thesis had only a few quarters where COVID-19 started to show its effect on the economy. The association can be further explored down the line if the effects of COVID-19 persist for a longer period.

Recommendations

The findings suggest the investors who are interested in making investments should see information about the firms regarding the determinants that are significant in this study. Furthermore, management maintains the levels of the liquid assets, growth and profitability, and also pay attention towards the values of macroeconomics determinants as well

Keywords

Capital Structure, Speed of Adjustment, COVID-19, Non-financial firms

Acknowledgement

First of all, I would like to thank Allah Almighty for giving me the strength and motivation to complete this research thesis. I would also like to sincerely thank my supervisor, Sir Dr. Khalil Ullah Mohammad, for guiding me throughout my thesis. His encouragement, suggestions, and support enabled me in every difficulty I faced regarding my thesis. I would like to express my gratitude towards my family and friends for becoming a source of motivation throughout the completion of this thesis.

I also want to express my sincere gratitude to everyone who has supported me throughout my thesis work with their continuous guidance and friendly advice.

Dedication

This research thesis is dedicated to my parents and my teachers. They guided me in the completion of my research thesis. In addition, they supported me in completing my thesis project. They motivated me at every step and became the source of encouragement which greatly helped me complete my thesis.

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List of Abbreviations

SOA	Speed of Adjustment
CS	Capital Structure
TOT	Trade-off theory
POT	Pecking Order Theory
ROA	Return on Assets
LEV	Leverage
IML	Industry Median Leverage
AM	Asset Maturity
GDP	Gross domestic product
GDPG	Gross domestic product Growth
MRC	Market Capitalization ratio
HHI	Herfindahl –Hirschman index
DIST	Distance between capital structure and target
NDTS	Non-debt Tax Shield
LIQ	Liquidity
STDL	Short term debt to total debt ratio
GMM	Generalized method of moments

Chapter 1: Introduction:

1.1 Background

The studies done for the development of capital structure theorem by Modigliani and Miller (1958) serve as the basis for the development of several theories relating to capital structures of firms. Some of the earliest pioneering theories involving capital structure decision making are the static trade-off model, the Market timing model and the pecking order model. The underlying idea of static trade-off states that at least a target level of leverage (usually associated with the debt ratio) is required to establish identification between the existing capital structure of that firm and the valuation of that firm (Kraus & Litzenberger, 1973) . The theory regarding the pecking order model expresses the notion that there is a hierarchical structure in all firms regarding financing decision making (Myers, 1984) .Through these particular structures, firms try to establish the methods through which the internal financing of the firm is given special preference over the external source of financing. Only in the cases where internal financing is not available, firms try to finance themselves through debt or issuing equity. So as far as the firms have strong internal financing sources, the theory cannot give a clear answer about a firm's debt ratio(Black, 1996) . The market timing model states the notion that the major determinant regarding the usage of the corporate structure is not the choice of financing sources; rather, it is the timing of financial funding conditions (Baker & Wurgler, 2002).

Over the course of years, a lot of competition existed among the researchers about figuring out the best capital structure theory among the ones already available. There seems to be a competition to prove one best theory. The results gathered through these theories can garner different inferences from each other. Still, through these detailed studies, the researchers have been very close to obtaining the most suitable theory that can explain the corporate capital structure of almost any firm. It has been established that a multitude of factors plays a role in determining the corporate capital structure decisions, making the whole process of finding the best theory quite complicated. Many significant studies also put forth the notion that both the assumptions of the pecking order model and static trade-off model have a serious problem (Fama and French, 2005).

Fischer, Heinkel and Zechner, (1989) introduced another capital structure model that was quite distinctive from the existing ones. The term "dynamic" was used to explain this phenomenon. This theory states that notion that the deviation from the target corporate capital structure in any firm is quite systematic in nature. This systematic nature can explain the contradictory assumptions of the two major capital structure theories in a more simultaneous manner.

A lot of researchers also used various distinct approaches for finding the connection between the two variables. However, one common approach that was prevalent in many of these studies was the use of determinants of target leverage as endogenous variables. This little adjustment made the researchers examine the adjustment speed of leverage more precisely. Researchers who were quite active in investigating this perspective of capital structure target are (Fama and French, 2002; Frank and Goyal, 2004; Hovakimian, Hovakimian and Tehranian., 2004; Leary and Roberts, 2005; Ozkan, 2001).

Drobetz and Wanzenried (2006) were considered the pioneer researchers when they used the partial adjustment model for their research study. Through this particular method, they were able to substitute the functions considered scalar values regarding leverage adjustment speed. They reported the findings that whenever there is a significant impact exhibited between a particular determinant and the lagged value of the leverage, it can be inferred that that determinant has an effect on the values of the adjustment speed of the leverage. Fama and French (2002) reported that in developed nations, the adjustment speed is relatively slow (somewhere among 7-18% per year). On the other hand, another study reported a faster speed of adjustment that was observed in the USA, which was around 25% annually (Lemmon et al., 2008). Flannery and Rangan (2006) stated in their research regarding their study in the USA brought forward an even more rapid estimated speed of adjustment, which was around 35.5% annually for the leverage associated with the funding and 34.2% associated with the book leverage. Ozkan (2001) reported that the speed of adjustment is roughly 57% annually in the firms of the United Kingdom. Deesomsak, Paudyal and Pescetto (2004) did their research specifically in the firms belonging to the Asian Pacific regions and reported the findings that both the macroeconomic and the firm-specific factors have the capability to significantly impact the leverage's adjustment speed.

In the context of Pakistan, similar types of studies with the same setting have been done on a few occasions. In Pakistan, firms usually adjust almost 60% on a per-year basis towards their optimal capital structure, and for a firm to fully readjust its capital structure, it needs at least an average period of 2 years or more (Memon, Rus, Ghazali, 2015).

In another research study, it was identified that various types of variables could have a significant impact on ratios of leverage and the overall rate of a firm's leverage adjustment (Amjed and Amir Shah, 2016). This research measured the adjustment speed of various firms belonging to the distinct sectors and operational activities. After the measurements, the results were reported that the rate of leverage adjustment is very dependent on the nature of industries and their operational functionalities. For instance, the rate of adjustment was reported to be the highest in the firms belonging to the textile industry of the Pakistani economy and, in the same veins, it was reported to be the lowest in the firms belonging to Pakistan's sugar industry. In this study, firms could adjust 33% on an annual basis towards their desired capital structure. It requires an average tenure of 3 years or more for the firms to fully make an adjustment towards the optimal capital structure.

Various factors can impact the decision of capital structure (CS). Different theories associate different factors with resolving the issues involved in the practical studies and research of capital structure decisions. Researchers are still finding out new determinants that can pose an influence on the decisions of a firm's rate of leverage adjustment. Furthermore, it is a difficult task to make a unique set of new variables and distinct time periods for innumerable industries and sectors.

Shah and Khan (2007), in their research, were focused on the identification of issues that could impact the choices regarding target capital structure, made under different circumstances by various firms did their research on the textile sectors and industries of Pakistan and found out microeconomic aspects that could influence the strategies developed for capital formation. The factors thus identified were growth potential, size, tangibility and profitability. Some other factors were also considered, but many of them were found to be insignificant towards the capital structure adjustment speed. A research study investigated various determinants for evaluating the rate of leverage adjustment regarding the firms of Pakistani economy as well to see whether any other factor that usually affects the adjustment speed of firms in other countries has any significance over the adjustment speed of firms in Pakistan (Masnoon, Maryam; Abiha, 2014).

There was a lot of similarity in firm-specific factors that impacted the SOA of firms belonging to the regions of Pakistan in various studies such as growth potential, profitability, size, liquidity. Some industry-specific factors like market concentration and macro-economic factors like GDP Growth rate have also been found to have a significant impact on the rate of leverage adjustment. All of these factors could have a significant impact on the determination of the desired capital structure in the firms. Chang et al. (2014) brought forward the research which also utilized the partial adjustment model to determine the rate of leverage adjustment, reported the findings that the firms which are under-levered adjust quite rapidly towards their desired rate of adjustment in comparison to the firms which are over-levered.

In this research thesis, we also inquire about the changes in the rate of leverage adjustment under the presence of a global pandemic of COVID-19, which has been considered as a major macroeconomic determinant. This thesis is studied and analyzed using a diverse sample of national and public listed firms in the Pakistani economy. The effects resulting from COVID-19 have brought forward a massive paradigm shift in the working of various economic shifts all across the globe, and the effects of these shifts have started a trickle-down effect onto various economies in different manners. However, the effect is not the same for all countries equally. Some nations have been affected massively by this pandemic, while some economies do show any significant difference due to COVID-19. Moreover, another unique thing is that within the same economy of a nation, COVID-19 has impacted differently in different sectors, where some sectors still performed better in countries where the impact of COVID-19 was high.

The empirical question that this thesis is focusing on is whether the economic crisis of COVID-19 affected the rate of leverage adjustment, and if that is the case, we want to evaluate the extent or conditions to which the crisis impacted the overall non-financial firms in Pakistan. The

significance of this study is very evident from the fact that decision making regarding capital structure also plays a significant role in all the other firm's strategies.

As of right now, there is very limited research done about finding the association between the rate of leverage adjustment and the macroeconomic variable of COVID-19, especially within the context of developing nations. Furthermore, this might be the first study that discusses this association within the context of the Pakistani economy.

The findings of the above studies were found to be in accordance with the results that reported that the rate of leverage adjustment is quite rapid when it comes to developing nations when comparing them to developed nations. These results are quite different from other studies regarding the examination of capital structure dynamics in various countries. The results of this thesis are in accordance with the results posted within the context of other international economies, t also contradict the reporting of studies that inquired about the dynamism of capital structure across other developing nations.

It is also essential to examine the rate of leverage adjustment of non-financial firms in the Pakistani economy, which are listed in the PSX. Utami and Inanga (2011), in a research thesis, stated the notion that in order to increase the levels of productivity and profitability, non-financial firms should give prioritization to financing their financial deficit or even new projects. In order to make better financial investments, it is quite essential for firms to carefully choose their capital structure.

1.2: Problem Statement

The primary objective of this thesis is to study, evaluate and analyze the impact caused by various determinants of different nature like Profitability, Size, growth potential, short-term loan, the ratio between capital structure and its desired target, maturity of assets, Industry Median Leverage, Non-Debt Tax Shield, market Concentration, Liquidity, Market capitalization and GDP growth rate are the determinants picked for the study of the rate of leverage adjustment during the periods of a global pandemic like COVID-19 acting as an economic crisis. This research has not been widely done in Pakistan yet. This research thesis uses the quarterly and secondary data ranging from the time period 2016-2021 in the form of financial reports from non-financial firms of Pakistan listed in PSX (Pakistan Stock Exchange)

1.3: Research Gap:

As COVID-19 is a recent pandemic, this has left its impact on every sector. It is a global pandemic that has created economic stagnation in various sectors of the economies. Till now, there have been very few studies regarding the impact of COVID-19 on the rate of leverage adjustment, especially within the context of the Pakistani economy. Shafi, Ren and Liu (2020) recently did a study on the impact of COVID on Pakistan's small and medium-sized enterprises. The results have shown quite mixed effects of COVID-19 on different sectors of Pakistan. Because of the specific nature of this situation, it is yet to be studied whether the adjustment speed of capital structure stays constant or would it also change under the impacts of COVID. Therefore, there is a need to study about effects of COVID-19 on the determinants involving the rate of leverage adjustment of firms in Pakistan. Another major gap was that not a lot of rate of leverage adjustment studies in Pakistan use the dynamic trade-off model for estimating the associations, so this thesis will be based on "dynamic trade-off theory", where both the above-mentioned theories are evaluated simultaneously.

1.4: Research Questions

The current investigation has addressed questions about how well non-financial Pakistani firms could optimize their capital structure in times of pandemic situations. Quarterly data has been used for analysis. During this thesis, the following questions have been brought forward through research:

1. What is the impact of profitability on the rate of leverage adjustment?
2. What is the impact of non-debt tax shields on the rate of leverage adjustment?
3. What is the impact of the size of the firm on the rate of leverage adjustment?
4. What is the impact of the growth potential of the firm on the rate of leverage adjustment?
5. What is the impact of GDP growth rate on the rate of leverage adjustment?
6. What is the impact of liquidity on the rate of leverage adjustment?
7. What is the impact of the market capitalization ratio on the rate of leverage adjustment?
8. What is the impact of the ratio between capital structure and its desired target on the rate of leverage adjustment?
9. What is the impact of asset maturity on the rate of leverage adjustment?
10. What is the impact of COVID-19 on the rate of leverage adjustment?

1.5: Research Objectives

Following are the research objectives that this research study wants to achieve

1. To explore the impact of profitability on the rate of leverage adjustment.

2. To explore the impact of non-debt tax shields on the rate of leverage adjustment.
3. To explore the impact of the firm on the rate of leverage adjustment.
4. To explore the impact of the growth potential of the firm on the rate of leverage adjustment.
5. To explore the impact of GDP growth rate on the rate of leverage adjustment.
6. To explore the impact of liquidity on the rate of leverage adjustment.
7. To explore the impact of the market capitalization ratio on the rate of leverage adjustment.
8. To explore the impact of the ratio between capital structure and its desired target on the rate of leverage adjustment.
9. To explore the impact of asset maturity on the rate of leverage adjustment.
10. To explore the impact of COVID-19 on the rate of leverage adjustment.

1.6: Significance of the Study

Due to the COVID-19 pandemic, firms all over the world are facing a lot of issues. Most firms are trying to come up with new and different methods to recover their losses from crisis. For this, they are also examining all the necessary possibilities to adjust their rate of leverage adjustment and the rate to which optimization can be maintained within the structures. This thesis will help policymakers and decision-makers devise different strategies that can be helpful in order to overcome the effects of this crisis, especially for firms that are highly affected by this pandemic. This study also facilitates them regarding the preparation to adjust capital structure in pandemic situations and make better planning and decision-making by predicting the impact of change in the earliest stages.

1.7: Organization of the Thesis

This research study is conducted with the primary objective of examining the influence of various determinants on the rate of leverage adjustment structure during the periods of COVID-19. This research thesis is distributed in five major chapters and concluded with a list of references regarding the studies used for this thesis.

Chapter 1 – Introduction

The main things that this portion of the research thesis will discuss are the basic introduction of the research and all the background related to the thesis topic. The other contents of this chapter will comprise the problem statement, the research gap, descriptions of research questions, research objectives and the significance of the thesis.

Chapter 2 – Literature Review

The contents that are included in this portion of the research thesis is all the empirical and research studies that have been done on the topic of the research. This will include the literature theories regarding capital structure decision-making, the determinants that are involved in those studies and the development of hypotheses on the basis of interactions those determinants have with each other.

Chapter 3 – Research Methodology

The contents that are included in this portion of the research thesis are the types of methodology and approaches that are involved with this research. This will include research approach and type, research design, the panel data analysis, the research population, data collection and sample size, data analyses method, research model and variables.

Chapter 4 – Results and Discussions

The contents that are included in this portion of the research thesis are the results of the analysis and model testing. This chapter will also include the discussions on these analyses and the hypothesis testing summary.

Chapter 5 –Recommendations and Conclusions

The final portion of the research thesis will include the conclusion to the whole research and recommendations regarding future research.

Chapter 2: Literature Review

Some of the earliest pioneering theories involving capital structure decision making are the static trade-off model, the Market timing model and the pecking order model. The underlying idea of static trade-off states that at least a target level of leverage (usually associated with the debt ratio) is required to establish identification between the existing capital structure of that firm and the valuation of that firm. The theory regarding the pecking order model expresses the notion that there is a hierarchical structure in all firms regarding financing decision making. Through these particular structures, firms try to establish the methods through which the internal financing of the firm is given special preference over the external source of financing. The firms strive to finance themselves through debt or issuing equity only in the scenarios when there is an unavailability of an internal source of financing. So as far as the firms have strong internal financing sources, the theory cannot give a clear answer about a firm's debt ratio. The market timing model states the notion that the major determinant regarding the usage of the corporate structure is not the choice of financing sources; rather, it is the timing of financial funding conditions.

The impacts of the COVID-19 pandemic have been so severe on a global scale that it has managed to impact almost all aspects of human lives, especially the world of business and commerce. A lot of businesses all over the world are on the brink of bankruptcy. The impacts of this pandemic are quite visible in the developing economies where lack of resources and restrictions is causing a lot of obstacles in economic events and prosperity (Bavel, Baicker, Boggio and Capraro 2020). Even well-established franchises in developed nations are not safe from the impacts of COVID-19 (Donthu and Gustafsson, 2020). It is very difficult to estimate the influence of pandemics while we are in the mid of this COVID-19 crisis. The research about the impacts of such crises on cultural, economic and social aspects is very restricted, even though the globe has faced many such pandemics in the past, especially when it comes to capital structure decision studies.

2.1: Static Trade-off Theory Model

This theory's main concept is the minimization of the cost of capital by assigning an appropriate level of equity and debt financing. The point of the theory is that all firms try to maintain a mixed type of funding that can balance out the advantages and limitations of both sorts of external financing (debt and equity funding). In that way, they can avail the tax benefit from the debt funding and try to mitigate the debt costs

In another paper written after 1958 one, Modigliani and Miller (1963) examined the decisions of corporate capital structure that involve taxes, especially the ones where the payment of the interest on the overall debt is tax-exempt, provided that profits and dividends are excluded from this discussion. Kraus and Litzenberger (1973) stated in their research thesis that when it comes to the rate of leverage adjustment, the static trade-off provides the most consistent results. Bradley et al, (1984a) brought forward evidence in a report study for this as well. In that report, it was stated the firms belonging in different sectors keep increasing the levels of the debt up to a point where of values of tax-shield becomes equal to the marginal debt costs. This also includes the entire premium that has to be paid off for increasing the possibility of funding defaults or any sort of financial distress. Therefore, the goal of reaching this static optimal debt level becomes the primary objective of every firm.

Bris et al. (2006), in a research study, stated that the tax shields values increase with lower levels of depreciations, higher levels of taxes and levels of profitability. This report also estimated the financial distress costs ranging to almost 20% of assets. This result of this study was also in line with the study done on the costs related to financial distress for assets (Andrade and Kaplan, 1998). Jalilvand and Harris (1984) also made extensions to this study by examining all other sorts of variables involved in any form of market imperfections. Therefore, the corporate capital structure may not sometimes correspond exactly towards the target. A positive significance observed in the levels of profitability results in declines in the levels of debt and an increment in the levels of equity. Other reports stated that 10% of European and North American firms have a very stringent target debt ratio, and a lot of other firms belonging to the same regions follow a desired leverage ratio pattern (Brounen et al. 2006; Graham and Harvey, 2001).

The involvement of transaction costs leads to some other questions like determination of adjustment speed towards the desired capital structure or how much deviation from the target set by firms can be caused by transaction costs. This further led to researchers examining other forms of theories for capital structure

But there are several studies that criticize the static trade-off model. Fama and French (2002), in their study, criticized the model by stating that the corporate interest payment deductions generally lead the firms towards high target leverage. The higher rate of personal tax on the firm debts compared to the equity forces the firms towards less leverage. An increment in the levels of debt ultimately leads towards high bankruptcy costs and create an optimal CS (capital structure). Myers (1984), another strong critic of static trade-off theory, referred to these financial costs of financial distress as well in his study research. It was stated that these costs include indirect agency costs as well as contracting and monitoring costs instead of bankruptcy costs. The presence of these costs ultimately demands high-interest rates in order to compensate for the financial risk. Due to high debt costs, firms may turn over any conventional projects, which constitute any sort of opportunity costs. Myers also stated the concept of static trade-off theory is not for every company observed leverage ratio. The reason for this is due to adjustment

costs that cause the firms to experience a lag in processes relating to the adjustment towards the optimal capital structure.

Lambrinoudakis (2016) stated that adjustment costs also consist of the security issuance costs and are expected to be much higher in the events of the financial crisis. He also argued that risks faced by the firms are measured through checking the volatility of stock returns, and this is positively associated with adjustment costs. Welch (2004), in a study, argued that the impact of stock prices shocks could not be undone by the firms as they should under the assumptions of basic trade-off theory.

2.2: Pecking Order Theory Model

This model framework is referred to the pioneering works of Myers (1984), who developed this theory due to his criticisms of trade-off theory.

This theoretical framework is very crucial regarding the studies of capital structure because this theory acknowledges the assumption that the information provided to new stakeholders is quite asymmetrical in nature, and also the choice of choosing the funding source is also a complicated process. This theory presents the view that retained earnings of any firm are more appropriate than debt financing. This theory also expresses the notion that if the firms ever require funding for those operations, then the option of an internal source of financing through the retained earning must always be their first priority choice, and after that, they should refer to debt financing. Financing through external sources is least preferred due to the reason that equity cost is considered higher by most firms than the debt cost. This theory puts forth the idea of firms utilizing the levels of their internal resources in their financing decision-making.

This theory presents the notion that the firms must always give prioritization to their retained earnings, i.e. the internal source of financing. The major advantage that a firm can avail by using internal funding resources is that by using a firm's own resources, the firms do not have to get bound to special conditions or disclosure requirements by external stakeholders. Another big upside to this theory is that by using an internal source of financing, the cost of floatation remains zero for the firms.

However, this model framework also has its fair share of limitations. One of them is the inability to factor in any sort of causal association with the taxes, problems relating to the agency, financial distress relating to the opportunities involved with the investments and cost of new securities issuance. Another big issue with this was that this theory overlooks the limitations that were associated with the decisions of top financial management regarding the accumulation of so much financial slack that they get safeguarded from market discipline. Due to these issues, most

researchers view the Pecking Order hypothesis as being quite complementary to the assumptions of basic trade-off theory rather than being a clear substitute.

2.3: Market Timing Hypothesis Model

Baker and Wurgler (2002) stated in their thesis study that market timing is an essential component that can become a huge proponent in shaping up the decision-making aspects of any corporate structure. This study also expressed the notion that most firms discard this determinant while strategizing about the preference of financing regarding the capital structure. This thesis also put emphasis on the notion that whenever a business's share prices are high and estimated above the normal levels, it results in that business issuing equity. On the other hand, whenever the share prices of the firm are undervalued, it would result in the business repurchasing equity (Luigi and Sorin, 2009).

Hovakimian (2006) expressed the notion that considering market timing as the main determinant for developing a capital structure does not indicate any significant effect on a firm's preference for the source of funding. The same was later also confirmed in other studies as well, which stated any significant impact caused by considering the determinant of market timing for a firm's consideration of debt, and equity choice does not last more than two years, and hence the findings of this study do have very long-lasting effects. Furthermore to this, this theory also does not explain some of the other factors that are majorly involved regarding the studies of corporate leverage.

2.4: Dynamic Trade-off Theory Model

Fischer, Zechner and Heinkel (1989) were the group of pioneering researchers who worked on this earliest version of this model framework. When comparing it with the older static trade theory, it was found that through the comparison of a dynamic theory of trade-off with that of a static model, it was found that dynamic theory of trade-off put a lot more emphasis on time variables that were usually not considered by the static trade-off theory or by most models that rely on single time period. This framework also puts a lot of emphasis on the fact that there is no ideal situation when we think about capital structure. One of the major reasons for this emphasis is the presence of time-bound determinants. The fluctuations in these variables will keep the leverage adjustment shift away from the optimum levels. But one unique thing about the time-specific determinants is that most of them deviate much more systematically.

Hovakimian et al. (2002) put forth his findings in his study that the dynamic trade-off framework is, in actuality, a compromise between the assumptions of both the pecking order framework and the static trade-off theory. Hence, the new model requires more dynamism in its operations. The essence of the dynamic model is that a firm's leverage can easily deviate away from the desired level or target for a short period, and when it is more convenient, management can easily shift the rate of the leverage back to its original target. This thesis also brings the association of the previous theories in such a way that whenever a firm has to worry about the rate of leverage adjustments in the short run, it can use the elaborations provided by the pecking order framework and vice versa, for the long run, it can use the assumptions provided by the static trade-off theory. Most of the contemporary studies in the developing economies are done, keeping the dynamic model as the framework for the research, as evident by the multitude of the contemporary studies (Faulkender and Petersen, 2006; Flannery and Rangan, 2006; R. Huang and Ritter, 2009; Leary and Roberts, 2005). Furthermore, the potential of this framework is shown when the different results of the studies represent the distinct nature of industrial and economic differences of various nations. Most of the later literature studies express the notion that the explanations regarding the preference of rate of leverage adjustment and an optimal corporate capital structure are much easily provided by the dynamic trade-off model (Fama and French, 2002; Rangan and Flannery, 2006; Titman and Kayhan, 2007; Ritter and Huang, 2009).

One of the biggest core limitations that the dynamic trade-off model has mitigated, according to most contemporary research, is the elimination of the restructuring of target leverage due to the deviations in asset valuations over the course of time.

Elsas and Florysiak (2011), reported that the theory of dynamic trade model gives an assessment of the orderly shift of rate of leverage adjustment from desired targets, and this would also include some sort of adjustment cost. In an environment without any sort of financial frictions or obstructions, firms can quickly shift their rate of leverage adjustment towards the desired levels without incurring any sort of costs relating to the transactions (Heshmati, 2001).

Furthermore, the factors relating to the market like costs of adjustments, financial imperfections in the firm's disclosures and other costs relating to financial distress and frictions in the market shifts the desired capital structure levels of a firm back toward their optimal levels (Ghazouani, 2013). In reality, there are a lot of future and contingent obligations on firms that they have to settle on a timely basis, and for that, most firms require a necessary amount of funding. Hence, this theory also puts a lot of emphasis on selecting financing needs for particular periods of time in the future. Furthermore, the Dynamic theory of trade-off puts a lot of emphasis on the measurement of the speed of leverage adjustment (SOA) by altering the firm's capital structure framework more towards their desired target (Abdeljawad, Mat-Nor, Ruzita 2013).

2.5: Determinants of Capital Structure SOA

2.5.1: Firm-specific Variables

Following are the firm-specific determinants that were picked for this study

Growth Potential

Growth potential is also one of those determinants that reports mixed results depending on the nature of the theoretical framework being used. Studies that were completed on the basis of assumptions of trade-off theory reported a negative association of the determinant with the leverage of the firm. This is due to the reason that growth is considered as a form of an intangible asset, and on a general basis, the generation of loans on the basis of collaterals for the firm's intangible assets is very little.

On the contrary, other research that was completed on the basis of assumptions of the Pecking Order Model reported a positive association of growth potential with the leverage of the firms because, in general, a lot more investment is required for the growth of the firm and more external sources of financing are utilized for this by the firms. For this, different literature studies utilize different proxies or methods to measure the value of the growth potential of the firms.

Drobetz and Wanzenried (2006) stated in their research thesis that if the firms have a high ceiling regarding their growth potential, then this will facilitate those firms in adjusting their rate of leverage with the careful selection of their preferred source of financing. Firms that do not exhibit a higher potential for their growth characteristics can only shift their rate of leverage through the external source of financing, which could lead to some very unproductive consequences due to the presence of asymmetric information. This, consequently, leads to firms losing their valuation in the market. The firms which have a very high potential for growth can retain those values even with the assumptions of asymmetrical information. These findings were in accordance with a lot of other similar studies like the one done by Elsas and Florysiak (2011) in non-financial firms of America, studies of Mukherjee and Mahakud (2010) done in the firms of India. Similar results were also evident in the literature research done in the non-listed firms of the Spanish economy as well. (Aybar-Arias, José, Alejandro 2012). Ali,Qasim and Nawab .(2016) reported the same results in the non-listed firms of the Pakistani economy regarding the association existing among the determinants of the growth potential of the firms and the rate of leverage adjustment, whereas other studies done in Pakistan by Safdar, Awan, Ahmed (2016) and Hossain and Hossain (2015) expressed the notion that an inverse association exist among the leverage ratios and the firm's long term debt ratios. This study was based on the basis of the

static trade-off theory. Hence, this means that the firms with a higher ceiling for their potential regarding growth usually have a negative association with the rate of leverage adjustment because they use a limited amount of debt. The greater rate of growth potential is an excellent indicator of identifying healthy business performance. The higher the growth potential of a firm, the higher access it will get to getting sources of finance in a competitive market, especially in the era of the COVID-19 pandemic.

Profitability

A lot of literature studies and research based on the pecking order model report that firms that generate higher levels of profitability have the easy option of switching to the firm's retained earnings regarding the formulation of capital structure strategies Myers (, 1984).

On the contrary, firms that generate lower levels of profitability and hence have lower levels of internal financing sources have to face many issues and obstacles regarding leverage that prevent the firms from adjusting to new target levels. A study by Lemma and Negash (2014) done in nine developing nations present in the region of South Africa regarding the rate of target leverage adjustment exhibited a significant association regarding the firm-specific determinant of profitability and rate of target leverage adjustment. This thesis study also expressed that firms with the capability to generate higher profits have a lot of access and options regarding their capital structure flexibility with better rates. Other literature studies on the listed non-financial firms of the United States of America by Hankins et al. (2008) and the listed firms of developing economies of Malaysia by Haron et al. (2013) also reported a positive and significant association of determinant of profitability on the rate of target leverage.

Dang et al. (2012) expressed that firms with higher levels of profitability have access to higher levels of an internal source of financing that facilitate them issuing more securities with lower costs and avoid a lot of factors that can lead to financial issues and constraints to the firms.

Most of the studies exhibited that there are no consistent predictions regarding researching the impacts of firm-specific determinants of profitability on the rate of target leverage adjustment. However, most studies made under the assumptions of trade-off theory or done in the developing countries have reported the results that profitability usually exhibits a positive association with the leverage ratios of the firm. Moreover, this association was found to be quite consistent in many contemporary and historical studies on this determinant (Hovakimian, 2006; Petersen and Rajan, 1994; Roden and Lewellen, 1995).

On the contrary, Most empirical research studies also exhibit a negative association among the firm's ratios leverage and levels of profitability of the firm (Demirgüç-Kunt and Maksimovic,

1996; Tomak,2013; Zingales and Rajan, 1995; Song and Huang, 2006; Titman and Wessels, 1988).

Studies done by Hadlock and James (2002) stated in their findings that a lot of firms prefer debt financing to receive higher returns. Still, this use of debt ultimately creates a lot of agency issues between the creditors and stakeholders, leading to leverage having a negative relationship with the firm's profitability. Abor (2005) reported in a study that a positive impact is observed between the firm-specific determinant of short-term debt and the firm's leverage. So overall results regarding these associations have been mixed.

Firm Size

Earlier literature studies have expressed the notion that the firm's size exhibits a positive influence over the ratios of leverages of a firm. Some research studies state that firms that are quite large in their operations and size have the advantage of getting easier access to high levels of long-term debts. (Marsh, 1982) Furthermore, the firms also gain the advantage of gaining higher bargaining power on prospective clients and have higher economies of scale. This positive interaction is also in conformance with the results of a lot of other empirical studies (Deesomsak et al., 2004; G. Huang and Song, 2006; Jung, Kim and Stulz, 1996)

However, another study that investigates this association through cross-country examination reported the findings that this association brings forward different results in different regions and economies. The research in the firms of America, United Kingdom, France and Japan exhibited positive association, while on the other hand, German firms exhibited negative association.

Some contemporary studies also stated the same positive interaction in multiple developing nations as well.(Ahmad and Etudaiye-Muhtar, 2017; Uçma, 2012; Zerriaa and Noubbigh, 2015)

Another reason for the significant association was reported in a study that firms with large sizes usually have fewer costs regarding the asymmetric information, thus making the access of equity sources of financing quite easy (Drobetz and Wanzenried, 2006). Another study reported the findings that a huge amount of fixed cost is needed by any firm to shift the framework of its capital structure, and this cost is inversely proportional to the size of the firm. This explains the ability of larger firms to easily re-adjust their ratios of target leverage (Heshmati, 2001).

However, a lot of empirical studies have reported the findings that size also shows negative interaction with ratios of leverage as well, which is in conformance with the literature associated with the Pecking Order Model. These results were also found to be consistent with some contemporary studies as well (Alipour et al., 2015; Uçma, 2012).

The reason for the negative interaction is that the assumptions of Pecking order theory state that large firms have to disclose their financial information to the prospective stakeholders. This results in larger firms having lower levels of information asymmetry between the top management and those prospective stakeholders who are responsible for making equity more desirable towards financing (G. Huang and Song, 2006; Keng et al., 2016; Rajan and Zingales, 1995)

NDTS (Non-debt tax shield)

The association present between the firm's taxation and the rate of target leverage also has different interpretations depending on the nature of the framework being used for the research. The literature studies that used the framework trade-off theory to study the association reported a negative interaction of non-debt tax shield with the rate of target leverage adjustment.

One of the major factors for this association is that firms that have usually higher values of NDTS exhibit much lower levels of debt ratio. A lot of previously existing literature agrees with these results findings as well. (Susanto and Cortez; de Jong, Kabir, Nguyen, 2008; Bradley et al., 1984; 2012; Memon et al., 2015; Wessels and Titman, 1988; Rani et al., 2020) . In the above literature studies, the one presented by Titman and Wessels (1988) expressed the notion that the old theories run into problems while measuring the association of taxation shield or integrating the effects of both corporate and personal taxation on the leverage and thus a more optimal design capital structure model is required. Thus, in short, all the firms that exhibit have levels of NDTS as compared to the levels of the expected cash flows have a tendency towards the inclusion of the lower debt levels in their corporate structure.

On the contrary, the results of some empirical research were reported to contradict the findings on the basis of assumptions of static trade-off theory. Bradley et al. (1984) expressed the notion that the firms that have a lot of tangible assets and/or heavily invest in the tangible assets tend to generate comparatively higher levels of tax credits and depreciation, and hence, as a result, have a much higher level of financial leverage. This results in a positive impact of NDTS on the rate of a firm's leverage adjustment. Also, a lot of contemporary literature studies that examine the presence of informational asymmetries of the firms reported that some firms prefer to use internal sources of financing and resources as their primary option as internal funding is the cheapest and easiest to obtain in some specific sectors (Myers, 1984). It was also implied that the firms with high profitability would prefer investments with their own retained earnings rather than using an external source of funding, hence showing the inverse relationship from the trade-off theory.

Liquidity

Liquidity is defined as the measure of whether a firm has enough liquid finances and resources to meet the obligations that the firm has over the course of the financial year. According to the literature studies and research based on the static trade-off theory model, it was reported that liquidity exhibits a quite positive interaction with the firm's leverage ratios. One of the major reasons for this association is that firms with higher levels of liquidity or liquid assets can easily meet their short term obligations due to the presence of high cash flows (Ross, 1977). As a result, firms with higher levels of liquidity ratio will prefer to have a higher proportion of ratios of debts as well. (Sharma and Handoo, 2014)

On the contrary, the literature studies that are done on the assumptions and framework associated with the pecking order theory model has reported the findings that the firm-specific determinant of liquidity has a negative interaction with the rate of target leverage adjustment. One of the major reasons for this is that firms with higher levels of liquid assets tend to use more internal sources of financing to operate their investment projects (N. Ozkan, 2011). These results are also consistent in some of the other empirical studies based on the pecking order theory (Myers, 1984; Wessels and Titman, 1988).

Short Term Debt

Kim and Pham (2006) reported in their literature research that the determinant of short-term debt is a core indicator for the measurement of the financial flexibility of the firm. Another point that was emphasized in these studies was that firms that have high levels of short term debt have the capability to change their rate of leverage adjustment more rapidly than the firms with fewer levels of short term debts (Alejandro, Aybar-Arias, José,2012). Another reason the short term debt has been given more focus is that it is very easy for a firm to pay off the obligations that are short term in nature. Other literature studies also report a positive association of short term debt with the rate of target leverage adjustment.

A lot of older literature studies did not take the influence of financial flexibility of the firms on the rate of target leverage adjustment (B. Clark, 2010). The studies that put emphasis on these core indicators reported the findings that the ratios related to the short term borrowings had exhibited a positive association with the rate of target leverage adjustment. Furthermore, the level of financial flexibility increases towards the rate of target leverage adjustment if those particular firms have lower levels of ratios of short term debt. Hence, the positive association between the rates of target leverages adjustment and the determinant of short-term debt can be

explained. These findings also correlate with the results of other existing literature as well (Aybar-Arias et al., 2012). This study also expressed the notion that firms that exhibit high levels of ratios concerning short-term debt have a slower rate of target leverage adjustment.

B. J. Clark (2011) brought forward a point in a research study that a lot of empirical studies miss or ignore the association between the financial flexibility of a firm and the adjustment speed of target capital. However, a lot of studies have found result pieces of evidence that can infer towards the result a significant interaction may be observed between the short term debts and the firm's financial decision in the research studies (Denis and McKeon, 2012; Harvey and Graham, 2001; Hodder and Singh, 2000).

The ratio between Capital Structure and the Target

Recently, a lot of literature studies are putting a lot of emphasis on the level of discrepancy that exists between the target levels that firms want to achieve for their optimal structure of capital and the actual levels of optimizations. It has been established that if there is a significant amount of distance in the planning of firms regarding the rate of target leverage adjustment, the firms will try to rapidly shift their capital structure towards the desired level (Heshmati, 2001). One of the reasons for this is that most firms consider fixed costs to be a big component in formulating the cost of adjustments for the rate of target leverage adjustment. According to this research, whenever the fixed cost becomes too high, the firm will usually try to steer away from all the policies that are related to dividends or the rate of target leverage adjustment. Most other literature research expresses the notion that there is a negative impact of distance of target leverage adjustment on the policies of capital structure formation. This becomes more apparent in cases where firms prefer to use internal sources of financing rather than settling on the debt coming from external sources. On the contrary, other literature studies also reported a positive influence of distance of rate of target leverage adjustment on the overall leverage ratios (Drobetz and Wanzenried, 2006; Elsas and Florysiak, 2011; Mukherjee and Mahakud, 2010).

Asset Maturity

In a lot of contemporary literary studies, the firm-specific determinant of asset maturity is given a lot of emphasis in the research in order to measure the firm's level of financial flexibility. Research that has been done on the adjustment speed by considering the maturities of the asset considers it as a modern core determinant for examining the rate of target leverage adjustment.

Within the contexts of financial flexibility, the concept of Asset maturity is referred to as the cash inflow levels that are generated by the operations of a firm's assets. The reason for this is

that the inflow of cash resulting from assets becomes more rapid when the duration of the maturities held by the firm is shorter. This enables the firms to pay all those obligations, which are short-term.

The literature research brought forward by Faulkender et al. (2012) expressed the notion that a significant association of maturities of assets with the rate of target leverage adjustment. The firms can easily adjust their target leverage without having to rely more on marginal costs of adjustments when they realize the maturities of cash flow. This also causes the firms to have access to large amounts of funds, and the decision-making regarding capital structure does not suffer from any sort of financial constraints.

2.5.2: Industry-specific Variables

Following are the industry-specific variables picked for this research study.

Industry Median leverage

The empirical research that actually studies finding an association between the median leverage of the entire industry with the rate of target leverage adjustment reported the findings there is a positive significance observed between the industry-specific determinant of median leverage of industry and the rate of target leverage adjustment.

The literature studies research that is done on the assumptions of the static trade-off theory reported a positive influence between the determinant of industry median leverage and the rate of target leverage (Drobetz et al., 2015). The findings of this research are contradictory to some of the research that used the Pecking order model as the framework. So, the results have always been mixed regarding this determinant, and one of the probable reasons for this could be the distinct nature of international economies.

Market concentration

Researchers have not explored the relationship between the market concentration of an economy and the leverage in detail, particularly when it comes to the emerging market and economies.

Guney et al. (2011) reported the results of this interaction on the Chinese market economy. It was reported that there is a non-linear and positive relationship between market concentration and the leverage levels of a firm. This finding was also consistent in other studies done on developing nations as well (Pandey, 2004). Both of these studies also followed the limited liability model while researching for the association. In the limited liability model, the firms that focus on maximizing equity use the levels of debt to affect the market concentration on a strategic level.

There are several empirical studies that reported consistent findings regarding this association, and they all followed the same limited liability approach.

As a result, monopolistic firms might prefer a higher level of debt as compared to other firms in the competitive markets to increase the level of quantity competition (Bolton and Scharfstein, 1990; Brander and Lewis, 2009; Maksimovic, 1988). Similarly, firms might also prefer high debt levels to mitigate the impacts of price competition (Showalter, 1995).

2.5.3: Macroeconomic variables

Following are the macroeconomic variables picked for this research study.

Market Capitalization

This macroeconomic determinant has been a topic of discussion for most contemporary studies regarding the study of target leverage adjustment. The main use of this determinant is to measure the stock's developmental levels. Previous empirical studies which examined the impact of this variable on the levels of debt of a firm reported an inverse association between the variable. According to some literature research, the findings were reported that the determinant of market capitalization shows a positive influence over the adjustment speed of a firm's leverage (de Jong et al., 2008). The results of other literature studies reported a positive influence on the ratio, but the influence was not reported to be statistically significant enough for the researchers to make any sort of conclusive inferences. The high levels of market interest volatility impede the progress of the adjustment speed of leverage, especially in the corporate sectors. On the other hand, A few research studies have reported a negative influence between the macroeconomic variable and leverage of the firm among the variables as well, but those results are also statistically insignificant

GDP Growth Rate

In recent literature and empirical studies, it was stated that the growth of GDP (Gross Domestic Product) was reported to be a core indicator for flagging important corporate information required for the needs of the firms (Cook and Tang 2010).

The studies express the notion that an increment in the total investment or growth opportunities is observed by the firms when the values of GDP (gross domestic product) increase. Furthermore, a lot of other empirical studies express the notion that the association between the gross domestic product (GDP) and the rate of target leverage adjustment is in accordance with that of interaction observed between the growth levels of the firms and the adjustment speed regarding capital structure. Literature research had also reported rate of adjustment speed is more rapid when the macroeconomic determinants, especially the GDP, showed a positive tendency (Drobetz et al., 2015; Drobetz and Wanzenried, 2006). In the same way, other literature studies have reported the finding that the high values of GDP (gross domestic product) has a significantly positive interaction with the rate of target leverage adjustment (Ahmed Sheikh and Wang, 2013; Camara, 2012; Chipeta and Mbululu, 2013; De Jonghe and Öztekin, 2015; Lemma and Negash, 2014).

COVID

The macroeconomic event of COVID-19 has caused a huge financial shock to the operating profits, the revenue of the firms and overall level of net income. Some economies are significantly affected by this variable, while some economies do not show any significant impact on the overall market. The main focus that this thesis is trying to explore is whether the COVID-19 has any significant impact on the rate of target leverage adjustment.

2.6: Hypothesis Development

H1: Growth potential has a positive impact on adjustment speed of capital structure

H2: Profitability has a positive impact on adjustment speed of capital structure

H3: Size has a positive impact on adjustment speed of capital structure

H4: Non-debt tax shield has a positive impact on adjustment speed of capital structure

H5: Liquidity has a positive impact on adjustment speed of capital structure

H6: Short term debt has a positive impact on the adjustment speed of capital structure

H7: Ratio between Capital Structure and the Target has a positive impact on adjustment speed of Capital structure

H8: Asset maturity has a negative impact on adjustment speed of capital structure

H9: Industry Median leverage has a positive impact on adjustment speed of capital structure

H10: Market concentration has a positive impact on adjustment speed of capital structure

H11: Market capitalization has a positive impact on the adjustment speed of capital structure

H12: Growth potential has a positive impact on adjustment speed of capital structure

H13: COVID has a positive impact on adjustment speed of capital structure

2.7: Conceptual Framework:

GROWTH xLEV$_{i,t-1}$

Profitability xLEV$_{i,t-1}$

SIZE xLEV$_{i,t-1}$

NDTS xLEV$_{i,t-1}$

Liquidity xLEV$_{i,t-1}$

Short term debt xLEV$_{i,t-1}$

Distance xLEV$_{i,t-1}$

Asset Maturity xLEV$_{i,t-1}$

IMLxLEV$_{i,t-1}$

Market Concentration x LEV$_t$

Market Capitalization xLEV$_{i,t-1}$

GDP Growth xLEV$_{t-1}$

COVID xLEV$_{i,t-1}$

LEV
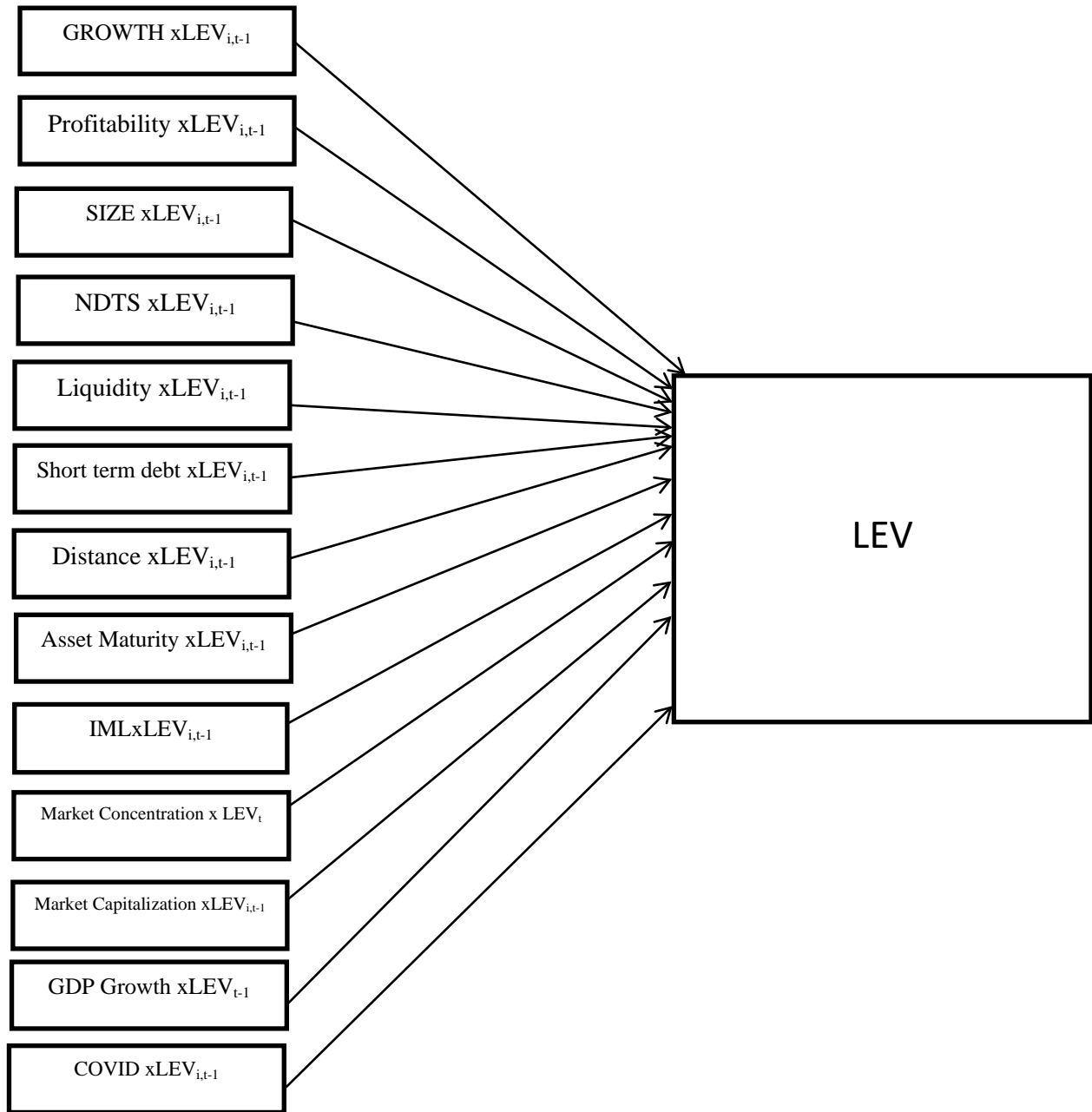
2.8: Determinant Measurements

Determinants	Abbreviation	Proxies	Empirical Evidence
Dependent variable			
Leverage	LEV	Total Debt/Total Assets	(Ahmed Sheikh & Wang, 2011; Serghiescu & Văidean, 2014)
Firm-specific Determinants			
Profitability	ROA	Net profit/Total assets	(Lemma & Negash, 2014)
Size	Size	Natural logarithm of total assets	(Banerjee & Duflo, 2000; Lööf, 2004)
Growth potential	Growth`	Market to book ratio	(Elsas & Florysiak, 2011)
The ratio between capital structure and target	DIST	Difference between estimated target leverage and observed leverage	(Drobetz & Wanzenried, 2006)
Asset Maturity	AM	average maturity values of current assets, fixed assets and inventories	(Jen and Jun 2003)
Short-term debt	STDL	Short term debt/Total debt	(H. Kim et al., 2006)
Non-debt tax shield	NDTS	Depreciation Expense/Total Assets	(Bradley et al., 1984b)
Liquidity	LIQ	Current Assets/Current Liabilities	(Abdeljawad et al., 2013)
Industry-specific Determinants			
Market concentration	HHI	Some of the squares of the market shares of firms within a given industry	(Mitani, 2014)
Industry Median Leverage	IML	Measured using DataStream data type INDUSTRY Category	(Elsas & Florysiak, 2011)
Macroeconomics Determinants			
Market capitalization	MRC	The ratio of Stock market capitalization to annual GDP value	(Fitzgerald & Ryan, 2019)
GDP Growth rate	GDPG	The annual growth rate of GDP on the basis of the nation's constant price	(Öztekin & Flannery, 2012)

Chapter 3: Data and Methodology

3.1: Research Approach and Type

This research study is quite explanatory in nature, which explains the time series data of non-financial firms in Pakistan. The approach towards this study will be quantitative in a way that we will examine the impacts of determinants in this study through the help of quantitative research methods. The primary objective of this research thesis is to investigate the interaction of various types of determinants on the rate of target leverage adjustment, especially in the times of COVID-19. Deductive research methods will be utilized to determine all the empirical results that are related to the significance of models with the help of secondary data that is available. It is a prerequisite for a clear level of understanding and knowledge about the interactions of determinants from various perspectives, especially when it is concerned with descriptive statistics.

3.2: Research Design

The research thesis will be designed to create new hypotheses that will be evaluated, analyzed and estimate the results of the research. The use of secondary data that is available regarding the relevant variables is essential for explanatory research. It helps to find the nature of different variables, which will later use in various policies related to the respective fields. The quantitative data of this research is obtained on the designed hypothesis for each model to test the impacts of the variable on one another. The study analyzes the interactions of determinants on the rate of target leverage adjustment in a detailed manner.

3.3: Panel Data Analysis

We will use GMM (generalized method of moments) for this thesis. The reason for this is that this method will facilitate us in estimating parameters that are necessary for this research study. However, this method can't be utilized in cases where instrumental variables are higher in number than the number of parameters that are being estimated. This method helps in equating the determinant data's moment conditions with considerations to the violations of assumptions that may or may not occur in the regression analysis. The generalized method of moments provides a great advantage in the research as it helps in overcoming any sort of correlation problem in the residuals

We will also use the fixed effects regression model to estimate and analyze the association between the determinants. A fixed-effects model is defined as a model in which the parameters regarding the model are non-random or fixed quantities. This mechanism of this model contradicts the mechanisms of the mixed models and random effects models where some random variables are present in the model parameters. In a fixed-effects regression model, each mean value present in a group is considered as a fixed-specific quantity. The fixed effects represent the subject-specific means, especially in the research which involves time-series panel data where longitudinal observations exist for the same determinant.

3.4: Research Population

The population of the study consists of non-financial firms that are listed in the PSX (Stock Exchange of Pakistan). The non-manufacturing firms that are chosen for this study come from a mix of different sectors.

3.5: Data Collection and Sample Size

For this study, secondary data is collected from Thomson Reuter DataStream and the annual reports that are available in the listings of the Stock Exchange of Pakistan (PSX) website. The study selects a sample of 359 firms from a mix of non-financial sectors. Quarterly data is taken for a sample period comprised of 6 years from 2016 to 2021.

3.6: Data Analyses Method

The data analysis methods that we will utilize for this study are the generalized method of moment (GMM) estimation and descriptive statistics. Earlier research literature examining the influence of rate of the target leverage adjustment prefer to use the generalized method of moments because it gives more consistent estimation than others (Baum and Zerilli, 2016; Drobetz and Wanzenried, 2006; Rangan and Flannery, 2006; Lemma and Negash, 2014; Mukherjee and Mahakud, 2010).

3.7: Research Models

The research model that this study will operate on will use the determinant leverage as a function of industry-specific, macroeconomic and firm-specific determinants within a specification that permits the determination of adjustment costs and adjustment speed (Antoniou, Guney and

Paudyal, 2008; Wanzenried and Drobetz, 2006; Flannery and Rangan, 2006; A. Ozkan, 2001). The specification for this econometric research model is given in equation (1)

$$LEV_{it} = \alpha LEV_{it-1} + \beta X_{it} + \gamma_i + \lambda_i + \mu_{it} \qquad (1)$$

Where LEV is the ratio of the leverage, α is the parameter for the adjustment, X represents the vectors regarding the explanatory variables, υ is referred to as a term of error, β is a K*1 constant vector as observed in the firm-specific events and effects that are assumed constant over a time period t, λ_i is the time-specific events and effects that are unobserved and assumed constant over individual firms i. In a research study by Antoniou et al. (2008), it was established that determination of whether a firm can adjust towards could be achieved through the corresponding target leverage adjustment (the association of this determinant is symbolically referred to as 1−α). The below one coefficient regarding the lagged leverage indicates the existence of target leverage behaviour. So it can be inferred that α is referred to as a proxy for costs of adjustment and has exhibited an indirect association with the rate of target leverage adjustment (speed of adjustment), which is denoted in the research model given by 1−α (Rangan and Flannery, 2006).

So, the econometric model for this study is stated in equation (2)

$$LEV_{it} = \beta_0 + \beta_1\ LEV_{i,t-1} + \beta_2\ ROA_{i,t} + \beta_3\ SIZE_{i,t} + \beta_4\ GROWTH_{i,t} + \beta_5\ STDL_{i,t} + \beta_6\ DIST_{\ i,t} - \beta_7\ AM_{i,t} + \beta_8\ IML_{i,t} + \beta_9\ NDTS_{i,t} + \beta_{10}\ HHI_t + \beta_{11}\ LIQ_{i,t} + \beta_{12}\ MRC_t + \beta_{13}\ GDPG_t + \beta_{14}\ COVID_{i,t} + \mu_{i,t} \qquad (2)$$

where LEV is the leverage of the firm, ROA is the profitability of the firm; SIZE is the total firm size, GROWTH is the growth potential of the firm; STDL is the short-term debt to long-term debt ratio, DIST is the ratio target capital structure and the actual value, AM is the maturity of assets, NDTS is the non-debt tax shield, IML is the industry median leverage, HHI is the market concentration, LIQ is the liquidity of the firm, MRC is the market capitalization, GDPG is the growth rate of GDP, and COVID is the dummy variable.

$$LEV_{it} = \beta_0 + \beta_1\ LEV_{i,t-1} + \beta_2\ ROA_{i,t} + \beta_3\ SIZE_{i,t} + \beta_4\ GROWTH_{i,t} + \beta_5\ STDL_{i,t} + \beta_6\ DIST_{\ i,t} - \beta_7\ AM_{i,t} + \beta_8\ IML_{i,t} + \beta_9\ NDTS_{i,t} + \beta_{10}\ HHI_t + \beta_{11}\ LIQ_{i,t} + \beta_{12}\ MRC_t + \beta_{13}\ GDPG_t + \beta_{14}\ COVID_{i,t} + \beta_{15}[interaction\ terms] + \mu_{i,t} \qquad (3)$$

The interaction terms in equation (3) terms is defined as multiplication of lagged leverage with the individual determinants to capture the effect of these independent variables on the speed of adjustment.

Chapter 4: Results and Discussions

4.1: Descriptive Statistics

Table I illustrates the descriptive statistics for all determinants.

Table I: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
LEV	7410	.341	.356	0	3.658
ROA	7410	.032	.148	-.982	3.078
Size	7410	15.659	1.85	9.915	20.678
AM	7406	.557	.235	0	1
Growth	7012	1.89	87.032	0	4645.214
STDL	6574	.66	.292	0	1
NDTS	7113	.128	.099	0	2.366
IML	7410	.294	.148	0	2.215
GDPG	7410	.035	.021	-.004	.055
LIQ	7016	1.659	11.23	0	317.27
MRC	6963	.621	1.85	0	22.88
HHI	7410	.155	.144	.044	1
Covid	7410	.232	.422	0	1

The mean leverage was value 0.341, which mean that leverage constitutes 34.1% of the capital structure of Pakistani firms. The maximum leverage level is 3.658, and the minimum value is 0.

4.2: Correlation Matrix Analysis

Table II shows the correlation matrix of all variables that are involved in this study for the quarterly period ranging from 2016 to 2021 and indicates the absence of multicollinearity among the determinants.

Table II: Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	LEV	ROA	Size	AM	Growth	STDL	NDTS	IML	GDPG	LIQ	MRC	HHI	Covid
(1) LEV	1.000												
(2) ROA	-0.426	1.000											
(3) Size	-0.096	0.226	1.000										
(4) AM	0.160	-0.274	-0.066	1.000									
(5) Growth	0.043	-0.003	-0.027	0.023	1.000								
(6) STDL	0.022	-0.062	-0.279	-0.248	0.021	1.000							
(7) NDTS	0.181	-0.063	0.006	0.186	-0.001	-0.106	1.000						
(8) IML	0.325	-0.203	-0.222	0.197	0.023	0.034	0.002	1.000					
(9) GDPG	0.024	0.006	-0.069	0.048	-0.034	0.063	0.010	0.023	1.000				
(10) LIQ	-0.403	0.293	0.021	-0.332	-0.017	-0.084	-0.137	-0.263	-0.028	1.000			
(11) MRC	-0.145	0.263	0.408	-0.063	-0.008	-0.173	0.037	-0.208	0.030	0.030	1.000		
(12) HHI	-0.131	0.141	0.095	-0.211	-0.018	-0.057	-0.025	-0.313	-0.039	0.320	0.044	1.000	
(13) Covid	-0.043	0.056	0.068	-0.049	0.025	-0.081	-0.028	-0.066	-0.695	0.056	-0.031	0.046	1.000

4.3: Regression analysis

Table III states the regression results of the Fixed-Effects Model that have been estimated to analyze the influence of determinants on the rate of target leverage adjustment .

Table III: Regression results

LEV	Coefficient	Standard Error	t-value	p-value	[95% Conf. Interval]		Sig
ROA	-.374	.096	-3.90	0	-.563	-.186	***
Size	.028	.03	0.95	.342	-.03	.087	
AM	.037	.1	0.37	.708	-.159	.234	
Growth	0	0	5.09	0	0	0	***
STDL	-.046	.03	-1.54	.124	-.105	.013	
NDTS	-.018	.155	-0.12	.907	-.322	.286	
IML	.557	.134	4.15	0	.293	.822	***
GDPG	.074	.139	0.53	.594	-.199	.347	
LIQ	-.047	.009	-5.10	0	-.066	-.029	***
MRC	-.003	.003	-1.20	.233	-.009	.002	
HHI	-.056	.107	-0.53	.597	-.266	.154	
Covid	.002	.01	0.17	.866	-.019	.022	
Constant	-.195	.442	-0.44	.659	-1.064	.675	

Mean dependent var		0.356	SD dependent var	0.273
R-squared		0.231	Number of obs	5694
F-test		857.331	Prob > F	0.000
Akaike crit. (AIC)		-11151.860	Bayesian crit. (BIC)	-11072.094

*** p<.01, ** p<.05, * p<.1

Growth

Growth has a co-efficient of 0. Its P-value is 0. This indicates that growth potential in the Pakistani economy exhibits a positive and statistically significant association with the ratios of leverage. This indicates that rapidly growing firms, especially in the economy in Pakistan, use more levels of debt and fewer levels of equity in order to finance the new projects. One of the primary reasons for this could be to grow in the non-financial firms in Pakistan, huge flow of cash are required, which firms may not be able to fulfill through internal financing sources only and must have to rely on external debt.

Profitability

ROA has a co-efficient of -0.374. Its P-value is 0.00. This indicates that that firm-specific determinant of profitability in Pakistani firms has exhibited a negative and statistically significant association with the leverage. These results are consistent with the literature research that report the findings that most firms in Pakistan use their profit for investment, and as a result, they use less amount of debt (Haron, Saniza and Ismail, 2013; Negash and Lemma, 2014). There is a high rate of financing through internal sources in firms that generate high levels of profitability. The advantages of having more levels of profitability are the easier accessibility to the external source of financing and hence have better levels of target leverage adjustment and financial flexibility.

Size

The size of the firm has a co-efficient of .028. Its P-value is 0.342. This indicates that company size in Pakistani firms does indicate a positive relationship towards leverage, but it is statistically insignificant. The positive relationship is in accordance with the trade-off theory. However, the significance could also indicate that shows that variable of size might be getting underwhelmed by values of other explanatory variables used for studying. The results that firm size is insignificant to the leverage decision indicate the earlier studies' mixed empirical results, as evident by the findings of some previous studies (Niresh and Velnampy, 2014).

NDTS

NDTS has a co-efficient of -0.018. Its P-value is 0.907. This result indicates that the non-debt tax shield shows a negative relationship with leverage, but these results are statistically insignificant. The negative results are in accordance with the traditional trade-off theory that states that firms

use debt as a tax shield. High levels of costs of depreciation tax shield lower the incentive to use debt. These results support the earliest studies in the literature that reported that NDTS had a negative and not significant influence on leverage (Chen et al., 2014).

Liquidity

Liquidity has a co-efficient of -0.047. Its P-value is 0. This indicates that liquidity does have a negative relationship towards leverage, and it is statistically significant. These highly significant results are in accordance with the prediction of the pecking order theory and similar to the results of other studies conducted in Central European countries. The result suggests that more liquid firms would reduce the level of leverage by using their own earnings and accumulated earnings.

These findings are in accordance with previous studies exhibiting a significant negative relationship between liquidity and leverage in Malaysian, British, Vietnamese and Pakistani firms (Mazur, 2007; A. Ozkan, 2001; Shahjahanpour et al., 2010; Sheikh and Wang, 2010).

Short term debt

Short term debt has a co-efficient of -0.046. Its P-value is 0.124. This indicates that the short term debts have a negative relationship towards leverage, but it is statistically insignificant. This is against the literature that had done on this variable like Kim and Pham (2006), which states that firms that have relatively high levels of short-term debts rapidly adjust their leverage faster and more easily compared to companies with low short-term liabilities. It is relatively easier to increase or pay for short-term liability long-term liability. But being insignificant results mean that these results can be quite different with different data samples.

Asset Maturity

Asset Maturity has a co-efficient of 0.037. Its P-value is reported to be 0.708. This indicates a positive yet insignificant between the maturities of assets and leverage. This literature result correlates with the existing arguments presented for the determinant that even though the interaction is reported found to be positive, the result is not statistically significant enough to explain the association of this firm-specific determinant with the rate of target leverage adjustment (Claessens and Djankov, 1999).

Industry Median Leverage

IML has a co-efficient of 0.557. Its P-value is 0. This exhibits the findings that median leverage of Pakistani industry exhibits a positive influence towards ratios of leverage, and the result is also statistically significant. The findings of these results are in conformance with the positive association results observed in other empirical studies based on the static trade-off theory studies Getzmann et al.,(2014).

Market concentration

Size has a co-efficient of -0.056. Its P-value is 0.597. The results of the finding exhibit a negative influence of the market concentration on the ratios of leverage, but insignificance was reported in the results. In this thesis, we can associate the literature of trade-off theory to industries in order to explain the negative association between market concentration and leverage. Even though the study is insignificant, the negative association is in accordance with the studies, which states that higher concentration in the market leads to lower leverage (Miao, 2005).

Market capitalization

The determinant of MRC has a co-efficient of -0.003. Its P-value is 0.233. This indicates that the determinant of market capitalization ratio exhibits a negative influence towards ratios of leverage, but the results are reported to be statistically insignificant. Even though the ratios related to the market capitalization has been reported to be an insignificant impact on the leverage of the firms in most studies, some studies have found an association of this macroeconomic variable with leverage in some economies. Overall, the results of these findings are in conformance with literature studies based on the Pecking Order Model. (Ameer et al., 2010; Schmukler and Vesperoni, 2006)

GDP Growth rate

GDP Growth Rate has a co-efficient of 0.074. Its P-value is 0.594. This indicates that the GDP growth rate has a positive relationship towards leverage, and it is statistically insignificant. The economic growth cycle also has an impact on capital structures. The findings of these results are in accordance with the studies based on the pecking order theory, which states that an increment in the economic expansion accelerates the usage of internal sources of financing in the firms, so firms tend to rely less on external debt financing. This result was found in accordance with the earlier studies that report the findings that firms with financial constraints reduce their cost of financing during times of economic upswing (Köksal and Orman 2015 ; Whited and Wu, 2006).

COVID

COVID has a co-efficient of 0.002. Its P-value is 0.342. This indicates that COVID has a positive relationship towards leverage, but it is statistically insignificant. This could indicate that COVID has a different impact on individual sectors rather than the whole economy. The exemptions that a lot of key industries got due to COVID-19 could also play a role on the low values of this result.(Asad Hashim, 2020)

4.5: Test for multicollinearity

The source of multicollinearity is a very high value of correlation and may result in biases in the results. High correlation may give rise to multicollinearity problems. It affects the analysis of

regression as an alternative to influencing the dependent and independent variables. It starts impacting each other and also does influence total results. Results have been reported in Table (IV) through VIF, and it is below 5. It indicates that multicollinearity does not exist.

Table IV: Variance inflation factor		
	VIF	1/VIF
Covid	1.967	.508
GDPG	1.956	.511
AM	1.356	.738
LIQ	1.355	.738
Size	1.346	.743
MRC	1.285	.778
ROA	1.254	.798
STDL	1.25	.8
IML	1.24	.806
HHI	1.207	.829
NDTS	1.055	.948
Growth	1.004	.996
Mean VIF	1.356	.

4.6: Test for diagnostics:

For this research thesis, The Hausman test is also performed to determine whether the fixed-effect and random effect model is applied for the research. The p-value of cross-section random is (0.0000) and indicates that the fixed effect model shall be applied.

Table V: Hausman Test			
Summary	Statistics	d.f	P-value
Cross section Chi-square	82.51	12	0.000

4.7: GMM analysis

Table (VI) reports the interaction of firm-specific determinants with the rate of target lagged leverage. Based on the partial adjustment model, the value of coefficient of adjustment speed of capital structure is obtained by identifying and estimating the regression coefficient of lagged leverage towards target leverage. Based on the results obtained in the Table VI, the Speed of Adjustment in Pakistani Non-financial firms is 16.7% per quarter (1-0.833) which indicates that the non-financial firms adjusts their rate of target leverage with the rate of 16.7 percent. The findings are lesser from the 60% SOA reported in a studies without the effects of COVID-19 (Memon, Rus, Ghazali, 2015). These findings are still higher than the 4% SOA reported in recent studies that researched under the effects of COVID-19.

	Table VI							
	GMM Analysis of Firm-specific Determinants							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	leverage	leverage	leverage	leverage	leverage	leverage	leverage	leverage
L.LEV	0.833***	0.889***	0.867***	0.977***	0.949***	0.943***	0.955***	0.950***
	(0.040)	(0.030)	(0.086)	(0.022)	(0.017)	(0.021)	(0.018)	(0.019)
ROA	-0.198***		-0.159***	-0.164***	-0.168***	-0.168***	-0.167***	-0.160***
	(0.028)		(0.027)	(0.025)	(0.029)	(0.029)	(0.028)	(0.025)
SIZE	0.005**	0.003						0.002
	(0.002)	(0.002)						(0.002)
HHI	-0.036	-0.007	0.021	0.053	0.085**	0.085**	0.154***	0.012
	(0.085)	(0.059)	(0.044)	(0.039)	(0.041)	(0.042)	(0.049)	(0.045)
Covid	-0.005	-0.005	-0.003	-0.002	-0.003	-0.003	-0.003	-0.003
	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
LIQ	-0.011	-0.010	-0.004	-0.005	0.000	0.000		-0.000
	(0.017)	(0.014)	(0.012)	(0.006)	(0.005)	(0.005)		(0.009)
IML	0.089	0.081	0.071*	0.068*	0.061*	0.063*	0.082*	0.071*
	(0.065)	(0.055)	(0.039)	(0.039)	(0.035)	(0.036)	(0.044)	(0.041)
MRC	-0.008	-0.004	0.001	0.004	0.005*	0.005*	0.006	-0.000
	(0.007)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
AM	-0.038*	-0.028*	-0.023*					-0.019*
	(0.022)	(0.016)	(0.012)					(0.010)
Growth	0.000***	0.000***	0.000***	0.000***				0.000***
	(0.000)	(0.000)	(0.000)	(0.000)				(0.000)
STDL	-0.015	-0.011	-0.008	-0.006	0.000	-0.000	-0.001	
	(0.012)	(0.009)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	
NDTS	0.289**	0.130	0.094	0.077	0.062		0.054	0.107
	(0.131)	(0.103)	(0.081)	(0.079)	(0.080)		(0.090)	(0.076)
GDPG	0.233***	0.179**	0.205***	0.198***	0.194***	0.191***	0.195***	0.204***
	(0.067)	(0.077)	(0.068)	(0.069)	(0.068)	(0.067)	(0.067)	(0.069)
DISTxLEV$_{-1}$	0.209***							
	(0.055)							
ROAxLEV$_{-1}$		-0.348***						
		(0.061)						
SIZExLEV$_{-1}$			0.005					
			(0.006)					
AMxLEV$_{-1}$				-0.055*				
				(0.031)				
GrowthxLEV$_{-1}$					0.000***			
					(0.000)			
NDTSxLEV$_{-1}$						0.036		
						(0.047)		
LIQxLEV$_{-1}$							-0.034***	
							(0.012)	
STDLxLEV$_{-1}$								-0.010
								(0.019)
Constant	-0.007	-0.003	0.013	-0.006	-0.018	-0.016	-0.030	-0.034
	(0.064)	(0.050)	(0.028)	(0.023)	(0.018)	(0.017)	(0.022)	(0.037)
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.892	0.970	0.809	0.705	0.714	0.730	0.658	0.843
Hansen	0.406	0.774	0.702	0.397	0.213	0.394	0.478	0.478
Sargan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.7.1: Impact of Growth on Capital Structure SOA

Growth has an interaction coefficient of 0.0000 with the leverage lag. Its standard error is 0.00. This indicates that growth has a statistically positive interaction influence towards the rate of target leverage adjustment. This indicates that the firms in Pakistan which exhibit rapid potential for growth utilize more levels of debt financing than the sources of equity in order to finance the new projects. One of the primary reasons for this could be to grow in the non-financial firms in Pakistan, huge flow of cash are required, which firms may not be able to fulfill through internal financing sources only and must have to rely on external debt. This confirms our earlier hypothesis about growth opportunities. So, we accept the hypothesis.

4.7.2: Impact of Profitability on Capital Structure SOA

ROA has a negative interaction coefficient of -0.349 with the leverage lag at a significant rate of 99%. This indicates that the determinant of profitability exhibits positive interaction towards the rate of target leverage adjustment and is statistically significant. The findings of these results are conformance with the empirical studies based on the Pecking Order theory that the firms that generate high levels of profitability have easier access to avail investment opportunities, and as a result, these firms prefer to use lower amounts of debt (Köksal and Orman, 2015; Serghiescu and Văidean, 2014; Serrasqueiro and Caetano, 2015; Thippayana, 2014). Hence the Hypothesis is accepted.

4.7.3: Impact of Size on Capital Structure SOA

Size has a positive interaction coefficient of 0.005 with the leverage lag. Its standard error is 0.006. This indicates that the determinant of size has a negative interaction towards the rate of capital structure adjustment, and the findings of these results are statistically insignificant. This insignificance in the results could state that the determinant of size could be getting underwhelmed by other determinants used for this study. So, the findings of these results are contradictory to the empirical studies that reported a positive interaction among the variables (Akbas and Karaduman, 2012; Devi and Devi, 2014; Doğan, 2013). But due to the insignificance of the results, we cannot make any decision regarding the interaction.

4.7.4: Impact of Non-debt Tax Shield on Capital Structure SOA

NDTS has a positive interaction coefficient of 0.036 with the leverage lag. Its standard error is 0.047. This indicates that NDTS has a negative interaction towards the adjustment rate of capital

structure but is statistically insignificant. Even though negative interaction is in conformance with the empirical studies based on the traditional trade-off theory that the firms use debt financing as a tax shield, But due to the insignificance of the results, we cannot make any decision regarding the interaction.

4.7.5: Impact of Liquidity on Capital Structure SOA

Liquidity has a negative interaction coefficient of -0.034 with the leverage lag. Its standard error is 0.012. This indicates that the determinant of liquidity has a positive interaction towards the rate of target leverage adjustment and is statistically significant. The findings of these results are in conformance with the empirical studies based on the pecking order model significant regarding the adjustment of target leverage adjustment. Furthermore, the findings of the result express the notion that firms that have more liquid assets have the option of easily shifting their rate of leverage by using their own retained earnings and internal source of financing (Nguyen et al., 2012). So, we accept the hypothesis.

4.7.6: Impact of short term debt on Capital Structure SOA

Short term debt has a negative interaction coefficient of -0.010 with the leverage lag. Its standard error is 0.0190. This indicates that the determinant of short-term debt has a positive interaction towards the adjustment speed of capital structure but is statistically insignificant. This is against the literature that had done on this variable which states that firms that have relatively high levels of short-term debts have the ability to adjust the rate of leverage adjustment in a more rapid and accessible manner as compared to the firms with low short-term debts (Kim and Pham, 2006). But being insignificant results mean that these results can be quite different with different data samples. But due to the insignificance of the results, we cannot make any decision regarding the interaction.

4.5.7: Impact of Distance on Capital Structure SOA

Distance has a positive interaction coefficient of 0.209 with the leverage lag. Its standard error is 0.055. This indicates that liquidity has a negative influence on the adjustment speed of capital structure and is statistically significant. This could indicate firms in Pakistan frequently adjust toward their rate of desired leverage if their actual debt is not far from target debt. These results goes against the reports of previous literature (Heshmati, 2001).So, we reject the hypothesis.

4.7.8: Impact of Asset Maturity on Capital Structure SOA

Asset maturity has a negative co-efficient interaction of -0.055 with the leverage lag. Its standard error is 0.031. This result indicates that the maturity of the assets in the firms of the Pakistani economy exhibits a significantly positive influence on the rate of target leverage adjustment (SOA). The findings report that if the firms have longer maturities in their assets, they will adjust their leverage rate faster than those who have shorter maturities in their assets. The findings of this result are contradictory to research studies brought forward by (Almilia, 2007) which

reported the findings that the repayment of the bondholders would be at face value of those bonds or the principal values of bonds held. So, we reject this hypothesis.

Table (VII) reports the interaction of industry-specific determinants with the rate of target lagged leverage.

Table VII			
GMM Analysis of Industry-specific Determinants			
	(1)	(2)	(3)
VARIABLES	Leverage	leverage	leverage
L.LEV	0.939***	0.899***	0.952***
	(0.018)	(0.040)	(0.026)
ROA	-0.158***	-0.157***	-0.153***
	(0.025)	(0.025)	(0.027)
SIZE	0.002	0.003*	0.003*
	(0.002)	(0.002)	(0.001)
HHI	0.006	-0.013	
	(0.045)	(0.051)	
COVID	-0.003	-0.004	-0.004
	(0.004)	(0.004)	(0.004)
LIQ	-0.003	-0.004	-0.001
	(0.010)	(0.012)	(0.012)
IML	0.068		0.061
	(0.042)		(0.044)
MRC	-0.001	-0.003	-0.002
	(0.004)	(0.004)	(0.004)
AM	-0.024**	-0.021	-0.026**
	(0.011)	(0.014)	(0.011)
Growth	0.000***	0.000***	0.000**
	(0.000)	(0.000)	(0.000)
STDL	-0.008	-0.008	-0.010
	(0.007)	(0.007)	(0.007)
NDTS	0.103	0.115	0.110
	(0.078)	(0.084)	(0.079)
GDPG	0.204***	0.188***	0.204***
	(0.069)	(0.066)	(0.068)
IMDLxLev$_{-1}$		0.110	
		(0.086)	
HHIxLev$_{-1}$			-0.114
			(0.105)
Constant	-0.019	-0.002	-0.020
	(0.042)	(0.039)	(0.043)
Observations	5,464	5,464	5,464
Number of Company ID	309	309	309
AR(1)	0.000	0.000	0.000
AR(2)	0.906	0.818	0.844
Hansen	0.639	0.913	0.152
Sargan	0.000	0.000	0.000
Number of Instruments	233	233	233

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.7.9: Impact of Industry Median Leverage on Capital Structure SOA

IML has a positive interaction coefficient of 0.110 with the leverage lag. Its standard error is 0.086. This indicates that the determinant of industry median leverage has a negative interaction towards the rate of target leverage adjustment, but the results are also reported to be statistically insignificant. These findings are contradictory with previous studies based on the trade-off theory framework that reported a positive interaction between the rate of target leverage adjustment and industry median leverage (Getzmann et al., 2014). But due to the insignificance of the results, we cannot make any decision regarding the interaction.

4.7.10: Impact of Market Concentration on Capital Structure SOA

Market Concentration has a negative interaction coefficient of -0.1141 with the leverage lag. Its standard is 0.105. This indicates that the determinant of market concentration exhibits positive interaction towards the rate of target leverage adjustment, but the results are also reported to be statistically insignificant. This insignificance can be associated with the previous studies, which found a positive association between the macroeconomic variables and the rate of adjustment (MacKay and Phillips, 2005). But due to the insignificance of the results, we cannot make any decision regarding the interaction.

Table (VIII) reports the interaction of macroeconomic determinants with the rate of target leverage adjustments.

Table VIII				
GMM Analysis of Macroeconomic Determinants				
	(1)	(2)	(3)	(4)
VARIABLES	Leverage	Leverage	leverage	leverage
L.LEV	0.939***	0.939***	0.926***	0.942***
	(0.018)	(0.018)	(0.020)	(0.018)
ROA	-0.158***	-0.158***	-0.158***	-0.158***
	(0.025)	(0.024)	(0.024)	(0.025)
SIZE	0.002	0.003	0.002	0.002
	(0.002)	(0.002)	(0.001)	(0.002)
HHI	0.006	-0.021	-0.009	0.005
	(0.045)	(0.064)	(0.045)	(0.044)
Covid	-0.003	-0.004	-0.007*	
	(0.004)	(0.004)	(0.004)	
LIQ	-0.003	-0.001	-0.002	-0.003
	(0.010)	(0.010)	(0.010)	(0.010)
IML	0.068	0.060	0.056	0.066*
	(0.042)	(0.045)	(0.042)	(0.040)
MRC	-0.001		-0.001	-0.001
	(0.004)		(0.004)	(0.004)
AM	-0.024**	-0.024**	-0.022**	-0.023**
	(0.011)	(0.012)	(0.011)	(0.011)
Growth	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
STDL	-0.008	-0.008	-0.007	-0.007
	(0.007)	(0.007)	(0.007)	(0.006)
NDTS	0.103	0.115	0.096	0.100
	(0.078)	(0.080)	(0.077)	(0.079)
GDPG	0.204***	0.204***		0.207***
	(0.069)	(0.069)		(0.045)
MCGRxLev$_{-1}$		-0.014		
		(0.021)		
GDPGxLev$_{-1}$			0.398**	
			(0.201)	
CovidxLev$_{-1}$				-0.008
				(0.006)
Constant	-0.019	-0.030	-0.005	-0.019
	(0.042)	(0.045)	(0.041)	(0.042)
Observations	5,464	5,464	5,464	5,464
Number of CompanyID	309	309	309	309
AR(1)	0.000	0.000	0.000	0.000
AR(2)	0.906	0.949	0.918	0.689
Hansen	0.639	0.441	0.660	0.0966
Sargen	0.000	0.000	0.000	0.000
Number of Instruments	233	233	233	233

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.7.11: Impact of GDP Growth Rate on Capital Structure SOA

GDP Growth rate has a positive interaction coefficient of 0.398 with the leverage lag. Its standard error value is 0.201. This indicates that the determinant of GDP Growth rate has a negative interaction towards the rate of target leverage adjustment, and the findings of this result are reported to be statistically significant. The findings of this result are contradictory to the previous empirical studies that reported a positive interaction with the rate of target leverage adjustment (Chipeta and Mbululu, 2013; de Haas and Peeters, 2006; Korajczyk and Levy, 2003). So, we reject this hypothesis.

4.7.12: Impact of Market Capitalization on Capital Structure SOA

Market Capitalization has a negative interaction coefficient of -0.014 with the leverage lag. Its standard error value is 0.021. This indicates that Market Capitalization has a positive influence on the adjustment speed of capital structure, but it is statistically insignificant. Even though the market capitalization ratio has reported an insignificant interaction with the leverage of the firms in most studies, some studies have found an association of this macroeconomic variable with leverage in some economies. Overall, the non-financial firms' financing behaviour favours the Pecking Order Theory. The findings of these results are in accordance with the empirical studies that report a positive interaction among the variables (Ameer et al., 2010; Schmukler and Vesperoni, 2006). But due to the insignificance of the results, we cannot make any decision regarding the interaction.

4.7.13: Impact of COVID on Capital Structure SOA

Market Concentration has a negative interaction coefficient of -0.008 with the leverage lag. Its standard error value is 0.006. This indicates that COVID has a positive influence on the adjustment speed of capital structure, but it is statistically insignificant. This indicates that the effect of COVID on the individual sectors is not translating well to the overall effect on the Pakistani economy, But due to the insignificance of the results, we cannot make any decision regarding the interaction.

Chapter 5 – Recommendations and Conclusions

5.1: Conclusion

This research explores the determinants that affect the speed of adjustment of capital structure for non-financial firms in Pakistan during the COVID-19 Pandemic. These firms are listed in the PSX (Pakistan Stock Exchange). This thesis contributes towards the literature for dynamism in the rate of target leverage adjustment of Pakistani firms by examining the estimations of target capital structure and all the possible determining and explanatory factors that can be involved in affecting the adjustment speed. Using a sample data of 359 non-financial that are listed firms of Pakistani firms and analyzing the association by using GMM as the preferred means of estimation, the thesis confirms the existence of dynamic capital structure in Pakistani firms. The adjustment speed towards the target leverage shift in Pakistan ranges somewhere around 16.7% per quarter in the period of COVID-19. The estimated speed of adjustment was found to be comparable with both the developing and developed nations. In some developing nations, the adjustment speed was found to be comparable with the findings provided by studies done in some other developing countries like Thailand, India, Malaysia, and some countries in Africa. On the contrary, the speed of adjustment of Pakistani firms was much more rapid than some of the findings in developed nations such as America and the United Kingdom.

The findings of the results regarding the capital structure SOA testing are in conformance with the dynamic trade-off theory that expresses the notion that the determinants that can influence leverage speed of firms' adjustment can involve the costs of adjustments and financial flexibility of the firms. The most common determinants have exhibited a significant association with the rate of target leverage adjustment in the firms. From the firm-specific variables, the determinants of profitability, growth, asset maturities and liquidity showed significant influences towards the adjustment speed of capital structure. Distance between capital structure and the target, an indicator of financial flexibility, significantly influences capital structure SOA. GDP growth is one of the macroeconomic factors that could have had a significant influence on capital structure SOA.

5.2: Limitations

The effects of COVID-19 itself is a big limitation, as it is creating obstacles in examining the adjustment speed of the capital structure of Pakistani firms in a normal setting. So maybe after the pandemic of COVID-19, we will be able to get more accurate estimations of the actual adjustment speed of firms in normal settings.

5.3: Recommendation

Recommendations can be made for both the managers and investors and the managers in Pakistan regarding the results of this study

The management of the firms in the Pakistani economy should consider increasing the investment levels to maintain levels of liquid assets, growth and levels of profitability of their firms. In addition to this, the management of the firms should pay considerable attention to the growth rates of Gross domestic product because this macroeconomic determinant could significantly help facilitate the adjustment rate of target leverage adjustment.

The investors in the Pakistan Stock Exchange should consider investing in firms with the characteristics that were found to be quite significant in this research study. If the firms focus on the significant determinants, there is a high possibility of achieving an optimum capital structure.

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