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The Effect of Firm Financial Situation and Industry Characteristics on Capital Structure Adjustment: Evidence from a Distressed Market

Prof. Mahdi Moradi[1], Mr. Hossein Tarighi[2*], Ms. ElaheFarmanbar-Fdafan[3]

Department of Accounting, Faculty of Economics and Administrative sciences, Ferdowsi University of Mashhad (FUM).Iran
Department of Accounting, Master of Science in Accounting, Attar Institute of Higher Education
Department of Accounting, Master of Science in Accounting, Islamic Azad University, Mashhad Branch

***Corresponding Author:** Mr. Hossein Tarighi, Department of Accounting, Master of Science in Accounting. Attar Institute of Higher Education. Email: hossein.tarighi@outlook.com*

ABSTRACT

The aim of the study is to investigate the relationship between the corporate financial situation and industry characteristics with capital structure adjustment in an inflationary market called Iran. The study population consists of 1150 observations and 115 firms listed on the Tehran Stock Exchange (TSE) during a decade between 2009 and 2018.The statistical model used in our study is a multivariate regression model; further, the statistical technique used to test the hypotheses is panel data. Consistent with the Market positioning theory, the results indicate that since Iranian companies have many financial problems because of severe economic sanctions, they do not care about the type of financing, that is, whether it is debt or equity. According to the conditions of the financial markets, they only choose that kind of financing that is most valuable to their firms. Furthermore, in line with the Pecking Order theory, Iranian firms have no optimal debt ratio. Hence, the observed debt ratio of each company reflects its total needs for external financing. This article is one of the most comprehensive studiesin Iran that simultaneously surveys the impacts of firm financial situation and industry characteristics on capital structure adjustment. What really will fascinate other scholars about our paper is the time period of the study because there were unprecedented sanctions against Iran market and many manufacturing industries were in financial strain. Without hesitation, the paper makes aware financial analysts of this fact that the market conditions of each country make it possible for companies to choose the type of financing.

Keywords: *Firm financial position, Industry characteristics, Capital structure adjustment, Market Positioning theory, and Pecking Order theory.*

INTRODUCTION

Corporate financing is one of the most challenging issues in the capital markets. Capital structure is considered as the most important parameter affecting the value of companies and their orientation towards capital markets. Given the sources of financing, companies have different returns and risks in the area of capital markets. Therefore, capital structure decisions will have an important role in the credibility of the firms against investment institutions; however, the importance of companies in terms of the breadth of operation, profitability, growth facilities, size and type of activity determines their diversified financial needs. In the meantime, debt resources, while increasing fixed costs, will increase leverage and thus systematic risk. In addition, paying attention to the cost of different financing methods will create perfect opportunities for profitability; by contrast, ignoring it triggers off the financial crisis. Therefore, managers' financial thinking will register the companies' main position in the financial markets and help the capital markets' creditors to evaluate them perfectly.

After the Investment theory of Modigliani and Miller in 1958 that was considered as a cornerstone of capital structure theories, some theories have been developed to prove the importance of corporate capital structure, focusing on capital market incompatibilities and shortcomings. In the interim, the Trade-off theory as one of the prominent views of capital structure focuses on two types of

incompatibility, one of which is the tax benefits and the other the costs of the financial crisis and bankruptcy. According to this theory, the target debt ratio is determined by the balance between benefits and costs of debt financing. The dynamic trade-off theory, which has been studied extensively in the past decade, suggests that adjustment costs may prevent companies from continuing to move toward their target leverage. Consequently, companies may only adjust their leverage when the benefits of adjustment outweigh its costs. In recent years, a large number of studies have attempted to test the validity of the trade-off theory by examining how fast firms move toward their goal lever. For example, Ozkan (2001), as well as Flannery & Rangan (2006), found that British and American companies had moved towards their target capital structure at high speed. An important limitation of these studies is that they implicitly assume that the mechanisms of adjustment of corporate capital structure are symmetrical so that companies move at a similar rate toward the same debt ratios. In fact, they have not taken into account the fact that companies may face different adjustment costs due to their specific characteristics and therefore choose different paths for their target capital structure. The most important point about Tehran Stock Exchange (TSE) is that since Iran country has been struggling with severe economic sanctions, the vast majority of Iranian firms in different industries have many financial problems (Salehi et al, 2019). In an awful economic situation, the question arises whether the firm financial position and industry characteristics have a significant influence on capital structure adjustment or not. Finding the answer to this question is the turning point of this paper and can broaden researchers' knowledge horizon in terms of theoretical and practical.

THEORETICAL FOUNDATIONS AND DEVELOPMENT OF RESEARCH HYPOTHESES

The purpose of capital structure is to determine the composition of each company's financial resources in order to maximize the wealth of its shareholders, since the cost of capital of a company is considered a function of its capital structure, the selection of the desired capital structure reduces the cost of capital and increases its market value. In financial matters, decisions related to debt and equity are called Capital Structure Decisions. Moreover, all activities affecting the current capital structure of firms are called capital structure adjustment activities (Ross et al., 2002). The most important early theories of capital structure that had deficiencies in their assumptions consist of Net Income Approach, Net Operating Income Approach, Traditional Approach, and Modigliani and Miller Theory. All these theories assume that there is no income tax; the companies only use two sources of debt financing and ordinary shares, and debt costs are lower than equity costs.

Static trade-off theory suggests that companies optimize their debt levels so that the tax benefits of additional borrowing can be offset by rising bankruptcy costs. On the one hand, since interest payments reduce taxes, more debt financing increases the tax advantage. On the other hand, an increase in the amount of debt increases the likelihood of default and thus the expected cost of bankruptcy. Here, companies determine the optimal amount of their financial leverage by weighing the costs and benefits of each additional dollar of debt. Debt benefits include tax savings on interest and a reduction in the agency problem of free cash flow. Debt costs include the potential costs of bankruptcy and a conflict of interest between shareholders and creditors. At optimal leverage, the benefits of the last dollar of debt are precisely aligned with its costs (Fama and French, 2005).In fact, according to this theory, the optimal debt ratio of a company is determined by the balance between tax savings and various costs of bankruptcy(Myers, 1984).In fact, this theory does not consider the role of the Capital Structure Adjustment Costs, whereas Myers (1984) argues that adjustment costs exist, and they cause the capital structure adjustment towards the optimal level is slowly formed. In static trade-off theory, the debt ratio is adjusted momentarily, meaning that the transaction costs are zero or the managers' indifference to the transaction costs. However, in the Pecking Order Model, the order of financing is precisely determined by the issuance costs. Therefore, it can be said that the dynamic trade-off model is a combination of the key constituents of the two static trade-off and pecking order theories. This theory assumes that firms adjust their capital structure to obtain the optimal financial leverage ratio. However, such adjustments will be made gradually, due to market deficiencies, such as transaction costs (McMillan & Camara, 2012). Actually, given the existence of adjustment costs, the theory holds that corporate capital

structure does not necessarily correspond to the target leverage ratios (Dudley, 2008). These adjustment costs prevent companies from constantly adjusting to the target capital structure. For this reason, companies may only adjust their debt ratio when the benefits of adjustment exceed the costs of adjustment (Dudley, 2008; Faulkender et al., 2012). The theory of dynamic trade-off theory also states that companies may have a target domain, rather than having a unique target financial leverage, within which it is possible to change the financial leverage (Dang et al., 2012). For instance, as the company's profitability increases, the debts are paid off, and when the debt ratio reaches its lowest defined level, the company begins to redeem its shares to adjust the ratio. As the corporate lose raise, debt levels go up, and when it hit its peak, the company issues stocks to adjust the debt ratio and to reach the specified level over time.

The Pecking Order Theory was proposed for the first time in the capital market by Donaldson (2000), and subsequently, Myers (1984) developed this theory by emphasizing the importance of information asymmetry in the capital structure. It is generally assumed that there are three sources of financing for a company: Accumulated Earnings, Debt, and Equity. Although stocks are subject to serious adverse selection problems and debt only has minor adverse selection problems, accumulated profits do not face adverse selection problems. From the perspective of an external investor, stocks are much riskier than debt. Therefore, an investor demands a higher return on equity. Investors also believe that accumulated profits are a more favorable source of finance than debt, and debt is also more desirable than equities. Under normal circumstances, companies do not use equity financing (Frank & Guyal, 2003). Myers (1984) argues that when a firm prefers internal financing to external financing, and also when debt financing is better than equity issuance, the firm's capital structure is shaped by a pecking order model. In general, the pecking order theory is based on information asymmetry between management and external investors. Also, in the real world, the behavior of the pecking order theory can be explained by the existence of transaction costs. Transaction costs incurred at the time of external financing, or debt and equity issuance, leading management to firstly use cheaper internal resources (Rasiah & Kim, 2011). Contrary to the theory of trade-off, there is no pre-defined optimal debt ratio in the pecking order theory. Another of the most important differences between the two theories of Pecking Order and Trade-off is their different interpretation of the relationship between variables of profitability, size, and firm growth with debt ratios (capital structure).While trade-off theory posits a positive relationship between profitability and size of the company with a debt ratio and a negative linkage between corporate growth and debt ratio, pecking order theory considers the opposite of trade-off theory. These factors have made these two theories as competing theories in the structure of capital (Rasiah & Kim, 2011).

None of the theories stated has paid much attention to the status of the company in the capital market and the impact of the company stock value on the strategies of the company capital structure. However, recent studies have shown that the positioning of stock and bond issuance plays an important role in corporate financial policy. Graham &Harvey's (2001) study of 392 financial managers showed that there is no reliable evidence of theories of the pecking order and static trade-off, while the financial managers under investigation claimed to actively employ market positioning techniques in their decisions. There are generally two approaches to market positioning theory. In the first approach, investors and managers are assumed to be rational. In this approach, companies issue stocks after the release of positive information, which reduces the information asymmetry between management and shareholders. In fact, the decline in information asymmetry coincides with the rise in stock prices, and companies are trying to seize this opportunity. In the latter approach, managers believe that investors have a non-rational behavior. In this approach, the securities market arbitrage opportunity is assumed to be incomplete, and managers with rational behavior will identify these wrong pricing and make their decisions accordingly (Baker & Wurgler, 2013).According to the Market Positioning Theory, companies don't mainly care about the type of financing. Depending on the conditions of the financial markets, they choose the mode of financing that is most valuable to the company (Drobetz et al, 2013). The findings of Jenter (2005) and Jenter et al. (2011) confirm the managers' efforts for financing's activities in line with market positioning theory. Baker & Wurgler (2002)

also argue that market positioning is the main driver of capital structure changes.

The theories already mentioned in the previous sections suggest that the structure of corporate target capital may vary according to the characteristics of the company. Although much of the capital structure research has examined the explanatory power of macroeconomic or corporate variables that determine target leverage, there have not been many studies on the potential factors affecting capital structure adjustment (Dang et al, 2012).It is necessary to briefly review some of the corporate variables like leverage, profitability, growth opportunities, tangibility, and firm size that may potentially influence capital structure adjustment. One of the factors affecting the capital structure of companies is their financial leverage. According to Cook and Tang (2010) and Smith et al. (2015), since some firms have leverage targets based on book values whereas some others have leverage goals with market values, the best measure of debt is using simultaneously book and market values. Trade-off theory also indicates that creditors can more confidently lend to companies with more fixed assets; furthermore, the greater the tangible assets of a company, the less information asymmetry between management and its investors, and such companies are more likely to issue stocks (Smith et al, 2015). According to the static trade-off theory, firms with higher growth opportunities borrow less than low-growth companies because growth opportunities as an intangible asset cannot be used as collateral (Chen, 2004). In contrast, the pecking order theory assumes companies with high growth opportunities can use more debt. Debt has costs that can lead to the bankruptcy of undervalued companies, and on the other, companies with higher growth opportunities increase information asymmetry related to the quality of investment projects and allow more debt to be used. Therefore, this theory predicts a positive relationship between growth opportunities and the debt-to-book ratio. The major advantage of using debt is tax abatement so that the debt interest has tax exemption. In addition to the interest tax shield, there are other interest-free items such as depreciation and tax credit that can reduce tax payments. Many scholars have shown that there is a negative relationship between the level of non-debt tax savings and the debt ratio (Fama & French, 2002; Voutsinas & Werner, 2011). Companies that employ high debt to invest heavily in tangible assets are subject to higher depreciation and tax credit. Hence, there may be a positive relationship between non-debt tax shield and debt ratio (Harris & Raviv, 1991).

Profitable companies are likely to have high accumulated profits available so that they may not be subject to severe financing constraints and be able to issue securities at the lowest cost.In fact, high-profit companies are likely to benefit from financial flexibility and leverage adjustment. Low-profit companies also tend to have limited internal funds and face financial constraints, which avoids rapid leverage adjustment. Of course, since a high leverage can lead to large financial crisis costs, low-profit companies must have a strong incentive to return quickly to the target lever, which implies a negative impact of profitability on adjustment rates (Dang et al, 2012). In the static trade-off model, the relationship between profitability and debt ratio is explained by bankruptcy costs. Simply put, decreasing the profitability of a company increases the expected costs of bankruptcy, and increasing bankruptcy costs make companies with less profitability tend to be less leveraged (Fama & French, 2002). In fact, profitable companies have lower bankruptcy costs and higher tax shield income (Drobetz et al, 2013). In contrast, the pecking order theory assumes that higher profitability implies lower levels of financial leverage, meaning that internal funds are preferred over debt financing (Drobetz et al, 2013).

Regarding the size of a company, it can be distressed that larger companies in the market are generally reputable and have better access to capital markets. The cost of financing for large corporations is negligible, indicating a higher adjustment rate (Drobetz & Wanzenried, 2006). Larger companies also have the least cash flow fluctuations, financial crisis costs, and debt obligations. Therefore, they have less incentive to adjust the capital structure, which points to a slower rate of adjustment (Flannery & Rangan, 2006). From the theoretical point of view, the relationship between company size and financial leverage is not clear. According to the static trade-off theory, larger companies have greater borrowing capacity and can earn more profits. Larger companies are usually more diversified and therefore have more stable cash flows, which reduces the risk of their bankruptcy. They also have greater bargaining power when using debt and can reduce the transaction costs

associated with issuing long-term debt. However, according to the pecking order theory, firm size can be considered as an indicator of information asymmetry between the firm and capital market (Drobetz et al, 2013). The information asymmetry between internal investors and the capital market is less for large companies because they are more capable of issuing securities such as stocks (Chen, 2004).

The Relation between Capital Structure Adjustment with Deficit & Surplus Financing

Seeing any sign of financial imbalance has important implications for the pace of corporate capital structure adjustment (Dang et al, 2012). More precisely, when companies have financial deficits, they are under greater pressure to offset that deficit through debt or stock issuance. However, such external financing activities may provide opportunities for these companies to choose the most appropriate combination of debt and equity. On the other hand, when companies have excess cash flow, they are under relatively less pressure to deal with this imbalance. Byoun (2008) indicated that most adjustments happen when companies have above-target (below-target) debt with a financial excess (deficit). Dang et al. (2012) showed firms having big financing imbalance, huge investment or low profits instability adjust faster than those with the reverse features; in addition, companies not only modify at diverse rates but also seem to adjust toward dissimilar leverage objectives. John et al. (2012) carried out a research entitled "Heterogeneous Speeds of Adjustment in Target Capital Structure" and found that firms with higher non-debt tax shields and cash holdings adjust quicker to their target capital structure, whereas those with higher profitability, information intensity, industry leverage, financial restrictions, and market timing adjust slower to their goal capital structure. Faulkender et al. (2012) also examined the impact of cash flows in leverage adjustments. They arrived at the conclusion that the characteristics of a company's cash flow not only affect the target capital structure, but it also influences the rate of adjustment toward the target. They also found that market conditions and indicators of financing constraints affect the pace of capital structure adjustment. In another interesting study, Smith et al. (2015) found evidence that New Zealand companies with higher surplus financing and leverage would have larger target debt ratios. The firms with larger surplus financing may reduce their debt as a way to maintain financial flexibility, such as avoiding the costs of issuing shares.

According to the research literature and current features of the Iranian market, the first hypothesis of this research is assumed as follows.

H1: Financial deficit & surplus affect capital structure adjustment.

The Relation between Capital Structure Adjustment and Industry Concentration

From Byoun (2008) point of view, companies usually have less market power in less concentrated industries and thus find themselves at a disadvantage when they are far from their desired level. Therefore, these companies have a greater incentive to adjust the leverage ratios that they consider desirable. On the other hand, firms in highly concentrated industries usually have more market power and thus feel less pressure to adjust rapidly to target ratios. Smith et al. (2015) defined industry characteristics in terms of three variables of industry concentration, industry dynamism, and opportunities for sustainable industry growth. They found evidence that New Zealand firms in highly concentrated industries, whose debt is above the target, are more likely to downgrade their target leverage. Moreover, less dynamic companies, with higher debt than expected, are also likely to reduce their debt ratios in the capital structure. Before doing the research of Smith et al. (2015) in New Zealand, Kayo & Kimura (2011) had come the conclusion that specific industry characteristics such as industry concentration can affect the firm leverage. Taking together, it is expected that the second hypothesis of our study is as follows.

H2: The amount of industry concentration affects capital structure adjustment

The Relation between Capital Structure Adjustment and the Ability of the Industry Environment to Generate Sustainable Growth

Sustainable growth environments are areas of growth and stability that allow companies to generate additional resources to protect against relative scarcity (Dess& Beard, 1984).In debt surplus companies, leverage reduction can easily be used as a way to maintain debt capacity to meet future financial needs and avoid the cost of issuing equity(Byoun, 2008). Similarly, companies in industries with

sustainable growth that have more resources and higher target debt can also easily use their leverage. These companies also have more ability to maintain income as a way to rapidly reduce their debt ratios. On the other hand, firms in low-growth industries having fewer resources and incentives to maintain debt capacity have the opportunity to raise their debt by adjusting it to the target debt ratio. Clearly, there is an incentive to make extensive adjustments to companies whose debt is well above and below target. For example, low-sustained growth companies with fewer resources are using new stocks to fund additional debt and reduce their debt ratio, while high-sustained companies with more resources use the mechanisms like stock repurchases to increase their debt ratios. Smith et al. (2015) realized that New Zealand firms in highly concentrated industries with high sustained growth that their debts are higher than expected tended to adjust their target leverage towards down. From the research background, it can be inferred that the extent of the ability of the industry environment to generate sustainable growth has an impact on adjusting the capital structure.

H3: The ability of the industry environment to generate sustainable growth affects capital structure adjustment.

The Relation between Capital Structure Adjustment and Industry Dynamism

Companies in more dynamic industries are more willing to take risks in business. Therefore, companies in highly dynamic industries with high target debt are more motivated to adjust their leverage ratio (Kayo & Kimura, 2011). This incentive is less for firms operating in highly dynamic industries with sub-target debt, or low-dynamic industries with sub-target debt and debt higher than the target. Using a database from 90 Swiss firms from 1991 to 2001, Drobetz & Wanzenried (2006) in a study entitled "What determines the speed of adjustment to the target capital structure?" examined the effect of corporate characteristics and macroeconomic variables on the rate of adjustment of capital structure. They found that higher-growth firms and firms that deviate significantly from the optimal capital structure were more likely to adjust. The results also showed that there was a positive relationship between good economic conditions and adjustment speed. Cook & Tang (2010) conducted research entitled "Macroeconomic conditions and capital structure adjustment speed" over the period 1977-2006. In this study, four variables were used to measure economic conditions, namely, the difference in yield on 20-year government bonds and 3-month Treasury Documents, The Differences between AAA vs. BAA Corporate Bond Yields, the growth rate of Gross Domestic Product (GDP), and Market dividend yield. The results show that companies in a good economic situation move faster towards the target financial leverage than the bad ones. McMillan & Camara (2012) also proved that domestic companies have a faster adjustment rate than multinationals in America. Based on the combined data of companies in 37 different countries over the period 1991-1996, Öztekin and Flannery (2012) concluded that legal and financial constraints were significantly correlated with firm adjustment rates. Their results suggest that better business environments reduce transaction costs associated with adjusting the corporate capital structure, and firms move more rapidly toward the target capital structure. Therefore, if we take a look at the literature of research in the past, it can be readily acknowledged that the extent of industry dynamics influences the adjustment of capital structure.

H4: Industry dynamism affects capital structure adjustment.

Research Methodology

This study can be considered as applied research, for our findings will be employed in the decision-making process. The statistical model used in this paper is a multivariateregression; the time range of the study is between 2009 and 2018 as long as a decade. The total data needed in this article is collected directly from the financial statements on the Tehran Stock Exchange (TSE) website. After collecting the required data from reliable and available resources, the data has been analyzed by the E views software.

Population & Statistical Sample

The study population contains all companies listed on the Tehran Stock Exchange during the period 2009 to 2018. In order to better evaluate data, all companies must have the following characteristics:

- The type of business activity is productive and thus investment companies, leasing, credit, and financial institutions and banks

are not included in the sample due to their different natures.

- The financial periods of companies should be finished at the end of the solar year in order to enhance the comparability and homogeneity of companies in terms of the time period.
- According to the research time period (2009-2018), the company is listed on the Tehran Stock Exchange before the year 2009 and its name is not removed from the listed companies by the end of 2018.
- During the research period, companies had not changed their financial year.
- Financial statement information and explanatory notes should be available between 2009 and 2018.

By applying the above conditions, 115 companies have been selected from 2009 to 2018. In addition, firms in different industries are categorized in Table 2.

Table2. *Breakdown of different industries in terms of the industry group*

Industry classification	Industry name	Number of firms	Percentage
Group 1	Ceramic Tile	17	14%
	Cement, lime, plaster		
	Extraction of other mines		
Group 2	Basic metals	19	16%
	Manufacture of metal products		
	Extraction of metal ores		
Group 3	Equipment and machinery	15	
	Electric apparatus		
	Manufacturing of mass media		13%
	Computer and its related activities		
	Publishing		
	Wood Industries		
	Textiles		
Group 4	Automotive and parts manufacturing	15	13%
Group 5	Oil products	12	11%
	Rubber & Plastic		
	Other Nonmetallic Mineral Products		
Group 6	Food & Beverage	11	10%
Group 7	Pharmaceutical products	13	11%
Group 8	Chemical products	14	12%
Total	***20***	***115***	***100%***

Research Model

The Test of the First Research Hypothesis

Financing deficits and surpluses seem to affect adjustment speed. Using the achievements unparalleled of researchers such as Byoun (2008), and Smith et al. (2015), it is argued that when a company has been faced with a deficit or surplus may adjust to a goal debt ratio at a moderately low cost. In this study, the main purpose of the first hypotheses is to investigate the association between fraction and surplus financing and the adjustment speed of capital structure in the Iran context. Actually in this paper, we use level variables rather than dummy variables to deficit and surplus financing. Taking into account the level variables, this model can provide information on how to adjust and the effect of a company's deficit and surplus on debt adjustment. So our model is as follows:

$$\Delta DR_{it} = \propto_0 + \propto_1 Sur_{it} + \propto_2 Def_{it} + (\propto_3 Sur_{it} + \propto_4 Def_{it}) TDE_{it} D_{it}^{above} + (\propto_5 Sur_{it} + \propto_6 Def_{it}) TDE_{it} D_{it}^{below} + u_{i,t}$$

In where, ΔDR_{it} is the change in the debt ratio from year t-1 to year t0. A financial deficit (Def_{it}) is defined as a positive value using the following formula:

$$Def_{it} = Div_{it} + I_{it} - OCF_{it}$$

Where Div_{it} is the dividend payments of firm i at time t, I_{it} is the net investment of firm i at time t and OCF_{it} are operating cash flows after interest and taxes for firm i at time t. A financial deficit must be covered by either debt or equity. For financing deficits and surpluses, Sur_{it} is recognized as Def_{it} divided by book value of

assets, when Def_{it} is less than 0, and 0 otherwise; and deficit is defined as Def_{it} divided by book value of assets, when Def_{it} is larger than 0 and 0 otherwise. By including level variables, the model can provide evidence about how a firm's deficit or surplus influences both the direction and the extent of debt adjustments (Smith et al, 2015).

$TDE_{it} = |DR^*_{it} - DR_{it-1}|$ Show a portion of the debt ratio's deviation from the target debt ratio. According to Byoun (2008), and Smith et al. (2015), objective debt ratio DR^*_{it} is estimated to be fitted value from the cross-sectional regression specified by the subsequent equation:

$$DR_{it} = \beta X_{it-1}$$

In the above equation, DR_{it} equals to real debt ratio, X_{it-1} is made up of a variety of factors that can potentially affect the target debt ratio. In this regards, Leverage, Growth Opportunities, Size, Tangibility, and Industry classification are determinants of capital structure (Smith et al, 2015). It should be suggested that Leverage is calculated by dividing the debt by the book value of the asset. Growth opportunities come from the percentage change in the book value of assets over a year, and the size of a company is measured by the natural logarithm of the total assets of the company; Profitability is calculated by dividing operating profit by total assets of the first period. Tangibility is obtained by dividing fixed assets into total assets. Eventually, all industries in the Tehran Stock Exchange are divided into 8 industry classification.

D_{it}^{above} is a dummy variable whose value is 1 if the actual lever is more than the target, otherwise it will be zero, while D_{it}^{below} is a dummy variable that if the real lever is less than the target value is 1 and otherwise zero. Finally, the α1 (α2) constants measure the adjustment size for firms with Surplus (Deficit) financing regardless of existing debt levels.

The Test of the Second Research Hypothesis

Following Smith et al. (2015) in New Zealand, in the next hypothesis, we are going to know if industry concentration has a significant impact on the capital structure adjustments among firms listed on TSE.

$$\begin{aligned}\Delta DR_{it} = {} & \beta_0 + \beta_1 High - Con_{it} + \beta_2 Low - Con_{it} + (\beta_3 High - Con_{it} \\ & + \beta_4 Low - Con_{it}) TDE_{it} D_{it}^{above} + (\beta_5 High - Con_{it} \\ & + \beta_6 Low - Con_{it}) TDE_{it} D_{it}^{below} + u_{i,t}\end{aligned}$$

The Herfindal index is used to measure the industry concentration, which is obtained through the stock market price of industry. The high value of this indicator indicates that the focus in the industry is relatively high. This index is defined as follows:

$$Herfindal = \sum_{i=1}^{1} S_{ij}^2$$

S_{ij} is the stock market price of the company i is in industry j. Accordingly, the index value is calculated annually for each industry. These values were averaged over two 5-year periods to reduce the error over the study period. Then, using the values obtained, the industries are ranked upwards. Industries with a high rating of more than 50% over a particular financial year and over a five-year period have a high concentration.

The Test of the Third Research Hypothesis

firms in environments with high growth and strength can produce excess resources once they have financial problems (Dess and Beard,1984). Smith et al. (2015) argue that the ability of the industry environment to create sustainable growth has an impact on adjusting capital structure. In an economic environment with dynamic industries, it is expected that not only above-target debt firms can decline their leverage but below-target debt firms also are able to move towards their target capital structure (Smith et al, 2015). Thus, the third research model aims to investigate if industry munificence affect capital structure adjustments.

$$\begin{aligned}\Delta DR_{it} = {} & \gamma_0 + \gamma_1 High - Mun_{it} + \gamma_2 Low - Mun_{it} + (\gamma_3 High - Mun_{it} \\ & + \gamma_4 Low - Mun_{it}) TDE_{it} D_{it}^{above} + (\gamma_5 High - Mun_{it} \\ & + \gamma_6 Low - Mun_{it}) TDE_{it} D_{it}^{below} + u_{i,t}\end{aligned}$$

$High - Mun_{it}$ Demonstrates the ability of the industry environment to generate sustainable growth, whereas $Low - Mun_{it}$ indicates the low capacity of the industry environment. According Smith et al. (2015), industry munificence measure is defined using regressing time against

an industry's sales over the previous 5 years and dividing the regression slope coefficient by the mean value of sales over the same 5-year period.

The Test of the Forth Research Hypothesis

Experience has shown that more commercial risk has occurred in industries that have been more dynamic (Kayo & Kimura, 2011).In highly dynamic industries, Smith et al. (2015) argue that only firms with above-target debt will have a strong motivation for reducing debt or raising equity. Therefore, the last equation of this research seeks to examine the impact of industry dynamism on the speed of adjustments.

$$\Delta DR_{it} = \delta_0 + \delta_1 High - Dyn_{it} + \delta_2 Low - Dyn_{it} + (\delta_3 High - Dyn_{it} + \delta_4 Low - Dyn_{it}) TDE_{it} D_{it}^{above} + (\delta_5 High - Dyn_{it} + \delta_6 Low - Dyn_{it}) TDE_{it} D_{it}^{below} + u_{i,t}$$

Similar to Smith et al. (2015), in this paper, the standard error of the munificence regression slope coefficient divided by the mean value of the industry's sales over the prior 5 years is defined as industry dynamism. In the above equation, $High - Dyn_{it}$ and $(Low - Dyn_{it})$ describe the industry vitality when an industry is ranked in the upper (lower) 50% of industries in a particular year based on the 5-year average values of dynamism, and 0 otherwise.

Integrated Equation of the Research

In the last phase of research, all four previous equations are integrated to evaluate the impact of the company's financial situation and industry characteristics on the speed of capital structure adjustment.

$$\Delta \mathrm{DR}_{it} = \theta_0$$

RESULTS

Descriptive Statistics

For accurate analysis and understanding of the statistical population, descriptive statistics of the variables are presented in Table 3. This table contains information on mean, median, minimum and maximum and standard deviation.

Table3. *Descriptive statistics*

Variable	Mean	Median	S. Deviation	Maximum	Minimum
DR	0.667	0.658	0.244	3.760	0.089
ΔDR	235.5	32.073	1148.8	18307.5	-3994.4
Sur	0.064	0.032	0.083	0.726	0
Def	0.036	0.000	0.081	0.693	0
High-Con	785627.8	426706.4	1623820.5	11392476.4	0
Low-con	78207.2	0.000	109411.9	375699.9	0
High-Mun	2.144	1.894	1.789	9.076	0
Low-Mun	-0.071	0.000	0.269	0.000	-1.090
Growth Op	17.799	13.663	24.913	252.203	-49.039
Tang	0.251	0.216	0.178	0.889	0.003
Size	13.327	13.144	1.402	18.455	9.797
Lev	0.667	0.658	0.244	3.760	0.089
Sale	2034.9	419.048	7835.3	107420.9	0

Based on the results of the descriptive statistics, it can be interpreted that, on average, almost Iranian companies are above their debt targets, for the economic conditions of Iran market due to the economic sanctions are heavy weak and the companies because of the numerous financial problems have to borrow more than their intended purpose. The leverage variable

also shows that nearly two-thirds of Iranian corporate capital structure is made up of debt. Approximately a quarter of corporate capital structure is made up of fixed assets because firms with more fixed assets can borrow better from creditors. In addition, it is seen in this economic environment that growth opportunities for each company are small and close to 18%.

F-limer (Chow) Test

In the initial step of econometrics, the F-Limer test is used to identify if the model should be fitted to the common effect model (Pooled) or fixed-effects model. In F-limer test, failing to reject the null hypothesis means that all individual effects are statistically equal, and instead of all of them, one width of shared origin can be used. In this case, the model should be estimated using the common effects model. By contrast, rejecting the H0 in this test indicates that individual effects are significantly different from each other, in which case fixed effects pattern is preferred over common effects pattern.

Table4. *F-limer Test*

H0	F-statistic	P-value	Result
OLS method is appropriate	**7.2519**	**<0.0001**	**H0 is rejected**

According to the results of the above table, it can be seen that the fixed effects model is more appropriate than the OLS model.

Hausman Test

In the second step, the Hausman test is used to determine whether there is a significant correlation between individual effects and model error. Failing to reject the null hypothesis in this test means that individual effect values are randomly generated and the model must be estimated using a random effects model, whereas H0 rejection indicates that the model is consistent with the fixed effects model.

Table5. *Hausman Test*

H0	Chi-Sq. Statistic	P-value	Result
random effects method is appropriate	14.958	0.31	H0 is accepted

Based on the results of the test, it can be stated that the random effects panel is more suitable than the fixed effects panel.

Dickey–Fuller Test

Another point is that the underlying principles of using panel methods are the lack of serial autocorrelation and being stationary of the dependent variable in the model. If the model has serial autocorrelation or if the dependent variable is not stationary, then the panel method cannot be used and the GPLM method should be used. Firstly, Dickey–Fuller test used in this study to evaluate being stationary of the dependent variable (ΔDR).

Table6. *Dickey–Fuller test*

H0	Chi-Sq. Statistic	P-value	Result
Dependent variable is not stationary	-7.762	<0.001	H0 is rejected

Since the amount of P-value for this test is less than 5%, H0 is failed and we can conclude that our dependent variable (ΔDR) is stationary.

Breusch-Godfrey Test

In the next step, after the confirmation of being stationary of the dependent variable, the Breusch-Godfrey test should be used to detect serial autocorrelation**.**

Table7. *Breusch-Godfrey test*

H0	Chi-Sq. Statistic	P-value	Result
There is no serial autocorrelation	284.82	<0.001	H0 is rejected

Since H0 in the test of Breusch-Godfrey is failed, it can be noted that there is serial autocorrelation; as a result, the Generalized Partial Linear Model (GPLM) should be used to fit the research model.

The Results of the Research Model

The results of our research model in Table 8 are as follows.

Table8. *The results of the research*

Variable	Coefficient	S. Deviation	T-statistic	P-value
θ_0	483871.3	164.7643	2.937	<0001***
θ_1	−882367.1	447.5701	−1.971	0.04867*
θ_2	365979.8	425.638	0.86	0.38988
θ_7	338	2.317	0.146	0.88459
θ_8	4919.9	33.538	0.147	0.88337
θ_{13}	−4397.3	21.846	−0.201	0.84047
θ_{14}	−22392.6	145.3226	−0.154	0.87754
θ_{19}	−41243.6	26.8982	−1.533	0.12523
θ_8	3204201.4	9232.6619	0.347	0.72855
θ_5	1197951.9	3527.3779	0.34	0.73415
θ_6	4427259.2	7703.2908	0.575	0.56548
θ_4	3585408.8	4932.9026	0.727	0.46733
θ_{11}	−4367.8	66.1	−0.066	0.94732
θ_9	−33588.3	21.5735	−1.557	0.11949
θ_{12}	48647.3	1069.8782	0.045	0.96373
θ_9	−73400.2	367.8021	−0.2	0.84182
θ_{17}	−258246.1	733.4043	−0.352	0.72475
θ_{15}	−11904	151.3568	−0.079	0.93731
θ_{18}	−4486469.7	3442.3461	−1.303	0.19247
θ_{16}	470496.8	1141.7233	0.412	0.68027
θ_{23}	123376.5	290.7914	0.424	0.67136
θ_{21}	41849.9	115.5703	0.362	0.71727

The results of the general research model show that since the coefficient of the financial surplus's variable (θ_1) is □ □ □ □ □ □ □ □ and its P-value is less than 5 percent, it can be said that financing surplus variable and the change in debt ratio are inversely correlated. On the other hand, there is no significant linkage between financing deficit (θ_2) and the change in debt ratio. In other words, Iranian firms with financial surplus have more motivations for reducing their debt ratio. Next, if we look at the other variables in the research, we simply find that the P-value of $\theta_3$to θ_{23} are all larger than 0.05; therefore, with 95% confidence, none of the hypotheses in this study are meaningful. In general, it can be argued that the managers of Iranian companies pay no attention to the excess and deficit financing of their companies and do not attempt to reach the target debt. Iranian companies have also experienced many ups and downs over the recent years, and sometimes they have restructured their capital structure without regard to company conditions.

CONCLUSION

The underlying premise of the debate among capital structure theories is the question of whether firms constantly adjust their capital structure to achieve a target debt ratio. Researchers are examining influential variables by doing different researches, and some of the variables, which may seem to be influential, are not effective in some countries in practice such as Iran. Given that target capital structure helps financial managers to increase company value by reducing capital costs and creating favorable attitude among investors, the results of this study show that managers in most of the Iranian companies regardless of their target capital structure make no effort to reach their target debt. Financial managers should focus more on examining the structure of the firm's target capital, given the role of adjustment costs and firm characteristics. Company characteristics can influence its adjustment to the target capital structure, thereby helping managers, financial analysts, banks and financial institutions and other users (especially creditors and share holders) to more accurately analyze the corporate capital structure and management performance. In countries where companies use the Trade-off theory, they set a ratio for their target debt and then adjust the direction the company moves. This ratio is determined by establishing a balance between the benefits of tax shield and the costs of bankruptcy. But unfortunately, most Iranian companies do not pay attention to choosing different ways of adjusting capital structure with respect to tax

shield. In addition, although companies have long-term goal leverage, they do not immediately leverage their current leverage level, but only adjust to their leverage in some periods (Riccetti et al, 2013).

Accordingly, the behavior of companies in Iran is very similar to the theory of market positioning. Baker & Wurgler (2002) indicated that firms position their stocks according to the financial market conditions. Companies generally don't care about the type of financing, which means debt or equity financing do not matter for them. Rather, depending on the conditions of the financial markets, they choose the mode of financing that is most valuable to the company (Drobetz et al, 2013). What is worth mentioning is that since Iran market has been faced with severe fluctuations due to economic sanctions during the recent years (Salehi et al, 2019),companies, depending on market conditions, try to choose the kind of financing that can add value to the company. Further, it should be suggested that if the market conditions of both sources of financing (debt and equity) are not appropriate they will delay this issue, but if the market conditions are appropriate they will do so even if they do not need the funds (Frank & Guyal, 2009). As a result, there is no optimal capital structure in the market positioning theory. There are generally two approaches to market positioning theory, both of which lead to the same results. In the first approach, investors and managers are assumed to be rational and logical. In this approach, companies issue stocks after the release of positive information, which reduces the information asymmetry between management and shareholders. In fact, the decline in information asymmetry coincides with the rise in stock prices, and companies are trying to seize this opportunity. In the second approach of this theory, managers believe that investors behave irrationally. In fact, due to the irrational behavior of investors, there are areas where the company's stock is not properly priced (Luigi & Sorin, 2009). This approach assumes that the securities market's arbitrage is incomplete and that rational managers will identify this wrong pricing and makes their decisions accordingly (Baker & Wegler, 2013). This approach assumes that the theory of market positioning is also a subset of the behavioral finance literature, assuming that such pricing is incorrect and that companies are able to identify this pricing even better than markets. This theory does not explain why such incorrect pricing should exist or why companies should behave better than financial markets in recognizing such incorrect pricing. In short, our findings are consistent with the studies of Jenter (2005), and Jenter et al. (2011) that confirm the managers' efforts for financing's activities in line with market positioning theory.

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