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Investigating the Relationship between Firms' Financial Constraints and Cost Stickiness

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Abstract

Objectives: This study aims to rigorously investigate the relationship between financial constraints faced by companies and the phenomenon of cost stickiness. Understanding this relationship is crucial for effective financial management and strategic decision-making.

Design/methodology/approach: To achieve the research objectives, a comprehensive dataset comprising 132 firms listed on the Tehran Stock Exchange was meticulously selected using a systematic exclusion model. The analysis spans an 8-year period from 2015 to 2022. A linear multivariate regression model was employed to robustly test the research hypotheses.

Findings: The empirical results reveal a direct and statistically significant relationship between financial constraints and cost stickiness. This finding indicates that companies experiencing financial limitations tend to exhibit greater cost stickiness, which can adversely affect their operational efficiency.

Innovation: This research contributes valuable insights by demonstrating that effective management of financial crises can significantly mitigate cost stickiness. By highlighting this relationship, the study underscores the importance of proactive financial strategies in enhancing corporate resilience and performance.

Keywords: Financial Constraint, Cost stickiness, Tehran Stock Exchange.

1. Introduction

Cost stickiness occurs when the percentage of cost increase with an increase in the volume of activity is greater than the percentage of cost reduction from decreasing the same volume of activity. This type of spending behavior has been labeled as "sticky costs" by Anderson et al. (2003). Unlike small changes in activity, large changes in activity force managers to adjust the cost structure, altering the firm's products, which ultimately leads to a change in the total cost line. Additionally, managers are more likely to adjust costs when activities increase rather than when they decrease (Balakrishnan et al., 2004). Costs can be classified and described in various ways for different purposes (Namazi et al., 2012). The nature of operations in for-profit units can also impact this classification and description. While manufacturing companies and trading services may face similar costs, the classification and description of these costs may differ between the two types of companies (Nikkar and Heydarinejad, 2015).

Various factors can contribute to cost stickiness or exacerbate it. In today's global economic system, financial constraints are a significant issue for all companies. Financial constraints are not synonymous with economic pressure or the risk of bankruptcy, although they are closely related. When companies become more sensitive to cash flow constraints between domestic and foreign financial costs, their ability to finance is limited. The measurement of profit and its impact play a crucial role in corporate governance, with financial statement users placing great importance on it (Nosrat and Badavar Nahandi, 2018). Financial constraints refer to restrictions preventing financing for all desired investments. The inability to secure funds for an investment may be due to poor credit conditions, an inability to borrow, an inability to issue new shares, or the presence of non-liquid assets. However, financial constraints are not synonymous with financial pressure, and the level of financial constraints varies based on regulatory and governance mechanisms. Internal control can effectively mitigate management self-interest, reduce underlying conflicts, improve operational efficiency, and reduce information asymmetry (Cheng et al., 2014).

The main focus of this study is to explore the impact of financial constraints on a firm's cost stickiness. Cost management is a fundamental aspect of daily firm management and resource planning to maximize profits by effectively managing costs. When managers aim to maximize profits through cost management, there is often an asymmetric relationship between changes in business volume and cost changes, known as cost stickiness (Anderson, 2003). This phenomenon occurs when activity levels increase, leading to increased costs, but when activity levels decrease, costs do not decrease proportionally, resulting in cost stickiness. Financial constraints can exacerbate this issue due to a lack of financial resources to cover costs, creating a challenging situation for companies. Given the uncertain findings regarding the effects of financial constraints on cost stickiness and the gaps in research in this area, as well as the role of financial constraints in managerial decision-making and funding of costs in companies, it is crucial to address this issue.

The structure of the research involves expanding on theoretical foundations, hypotheses, and empirical bases, followed by defining the methodology and research variables, and finally presenting the research findings and conclusions.

Theoretical, empirical, and research hypothesis

Cost stickiness is a characteristic of cost behavior that demonstrates how costs increase more when activity levels increase than they decrease when activity levels decrease (Namazi et al., 2012). Cost management is a crucial aspect of daily business operations, impacting resource planning and profit maximization. The concept of cost stickiness, as discussed by Anderson (2003), highlights an asymmetric relationship between changes in business volume and costs. This phenomenon occurs when costs increase with activity

levels but do not decrease proportionately when activity levels decrease, leading to cost stickiness.

Factors influencing asymmetric changes in firm costs have been explored by Anderson et al. (2003) in the context of resource adjustment by managers to cope with varying business volumes. The stickiness of costs can result from improper resource management, leading to financial constraints (Bradbury & Scott, 2018). While cost adjustment helps understand cost stickiness, companies still need adequate financial support to manage costs effectively.

Financial constraints play a critical role in cost stickiness, affecting a firm's ability to adjust costs and improve performance through cost control (Chen & Ma, 2021). Companies facing financial constraints prioritize cash flow in investment decisions, highlighting the importance of access to capital. Addressing financial constraints is essential for effective cost management and business performance improvement.

In today's global economic landscape, financial constraints pose a significant challenge for companies, impacting their ability to finance desirable investments. Financial constraints should not be confused with economic pressure or bankruptcy risk, although they are interconnected. Companies with severe financial constraints emphasize cash flow in decision-making and face limitations in financing due to internal and external fund allocation costs.

In conclusion, cost stickiness is a critical issue for companies as it can disrupt business operations and hinder goal achievement. Financial constraints can influence the stickiness of costs, underscoring the importance of addressing these constraints to effectively manage costs and enhance business performance.

Research hypothesis

There is a significant relationship between financial constraints and corporate cost stickiness.

Chen and Ma (2021), in a study titled "Financial Constraint, Internal Control, and Cost Stickiness," suggest that managers believe conserving resources is more effective than rebuilding them afterwards. However, financial constraints have introduced uncertainty into resource decisions made by managers. The study analyzed data from manufacturing companies in China from 2009 to 2017, revealing that financial constraints significantly impact companies' cost stickiness. Furthermore, the study found that a low quality of internal control can worsen the relationship between financial constraints and cost stickiness.

Li and Lu (2021), in a study titled "Product Market Competition and Cost Stickiness: Evidence from China," propose that in emerging markets, product market competitiveness reduces costs. The impact of product market competition on cost stickiness is not significantly weakened for companies with a differentiation strategy, but it is significantly weakened for companies with public property rights. Additionally, the financial strength and competitive position of the industry undermine the effect of product market competitiveness on cost stickiness.

Habib and Costa (2021), in their research on the relationship between debt maturity structure and cost stickiness, found that factors such as free cash flows, revenue management incentives, and executive compensation structure affect cost stickiness. Debt limits cost stickiness due to the short maturity of resources. Lee et al. (2020) stated in a study titled "Risk Management and Cost Asymmetry" that cost stickiness increases with managers' risk-taking behavior. They also found a positive but weak relationship between risk and cost stickiness for companies with higher management levels. The study highlighted the moderating effect of managerial preferences in NGOs, less competitive industries, and areas with lower marketing degrees.

Ghanbari and Sawkash Salmasi (2021), in a study on "The Impact of Economic Crisis and Economic Growth on Cost Stickiness," noted that during economic booms, cost stickiness increases, while economic recessions have a negative effect on cost stickiness. Severe economic sanctions negatively

impact cost stickiness, with a significant difference in stickiness observed only in operating costs during normal versus severe sanctions. Farnoudi and Ghajar Beigi (2021), in a study on "The Effect of Financial Distress and Financial Constraint on Commercial Credit of Companies," found that financial constraint positively affects accounts receivable but did not show strong evidence of an impact on accounts payable. The study emphasized the role of financial distress and financial constraint in companies' financing and trade policies.

Fattahi et al. (2020), in a study on "Cost Stickiness and Credit Risk of Banks," concluded that there is a positive and significant relationship between cost stickiness and banks' credit risk. Enayatpour Sheyadeh et al. (2020), in a study on "The Effect of Ownership Concentration on the Relationship between Cost Stickiness and Investment in Fixed Assets in the Tehran Stock Exchange," found a significant inverse relationship between cost stickiness and fixed asset investment, as well as a positive and significant effect of ownership concentration on this relationship. Vaghfi et al. (2019), in a study on "Stickiness Behavior of Costs in Tehran Stock Exchange Firms," observed that the increase in all three levels of cost for the same increase in activity level is greater than the reduction in these costs for the same decrease in activity level, indicating sticky cost behavior in the companies surveyed. Additionally, the study found an increase in total operating costs.

Pourshiade et al. (2019) conducted a study titled "The Effect of Ownership Concentration on the Relationship between Cost Stickiness and Corporate Risk of Firms Listed on the Tehran Stock Exchange," which found that cost stickiness significantly increases a firm's level of risk. Additionally, they discovered that ownership concentration, a key component of corporate governance, has a negative and significant impact on the relationship between cost stickiness and corporate risk.

In another study, Hajiha et al. (2019) explored "The Impact of Managers' Short-Term Attitude on Cost Stickiness of Firms Listed on the Tehran Stock Exchange." They emphasized the importance of understanding cost behavior in accounting and finance, highlighting how cost stickiness reflects managers' motivations in cost control. Their research revealed that managers' short-term attitude is negatively and significantly related to cost stickiness.

Namazi and Fathali (2018) investigated "The Effect of Intellectual Capital and Free Cash Flow on Cost Stickiness of Firms Listed on the Tehran Stock Exchange." Their findings indicated a significant inverse relationship between free cash flow and sales, administrative, and public costs. They also noted that both free cash flow and intellectual capital influence the stickiness of these costs, further supporting an anti-sticky relationship.

In a study by Etemadi and Ahmadi (2015), it was concluded that political relations with the government can alleviate financial constraints for companies. Companies with ongoing political connections tend to overcome financial obstacles more easily.

Hajiha and Mohammad Hossein Nezhad (2015) analyzed factors contributing to internal control weaknesses within firms. Their study, which included 97 companies listed on the Tehran Stock Exchange, examined the impact of eight explanatory variables on internal control weaknesses. The results of the regression analysis revealed a positive and significant relationship between the logarithm of stock price, inventory-to-total asset ratio, and losses with internal control weaknesses. Other variables such as exchange rate, income growth, market value per book value, Altman index, and total debt to assets ratio showed no significant relationship with internal control weaknesses.

Research Methodology

Due to the basic theoretical foundations related to the variables under study, the present research is classified as applied research in terms of its purpose and method of execution. This classification is due to the lack of manipulation of independent variables to observe their impact on dependent variables, as well as the descriptive-causal nature of the study, which aims to

investigate variables in their natural state without interference.

Historical and post-event data were collected using library and archival methods to test the research hypotheses. The statistical population of the study consists of all firms listed on the Tehran Stock Exchange, excluding companies with financial periods ending other than in March, those that changed their financial period during the research period, companies with insufficient information for comparability, and investment companies, banks, and insurance companies. To ensure data homogeneity, 132 companies were selected through a systematic screening process, and their data were collected for an 8-year period from 2015 to 2022, similar to previous studies.

Regression analysis was conducted using Eviews12 software, along with robust standard error tools and appropriate statistical tests to evaluate the final hypotheses.

Regression model:

$CS_{i,t} = + \beta \beta 0_1 KZ_{i,t} + \beta 2 LEV_{i,t} + \beta 3 SIZE_{i,t} + \beta_4 ROA_{i,t} + \beta 5 MTB_{i,t} + \varepsilon_{i,t}$

Operational Definitions of Research Variables

Independent research variable: Financial constraint (KZ)

Firms face financial constraints when there is a disparity between internal and external expenditures of allocated funds. According to this definition, all companies can be considered limited in financial terms, but the levels of financial constraint vary. Less limited financial entities are those with higher liquidity assets and high net assets. In this research, financial constraint is a binary variable (0 and 1) used to measure the financial constraint of the Kaplan and Zeinglas index. This index has been adapted for the Iranian environment by Raee and Hesarzadeh (2009) and is calculated using the following equation. The KZ score is then ranked from smallest to largest, divided into five parts, and companies in quintiles four and five are identified as having financial constraints.

KZ = 17.33 – 37.486 * (Cashholding/ Total Assets) – 15.21 * (DIY/ Total Assets) + 3.39 * LEV – 1.402 * (M/B)

Cashholding: Net cash flow of the firm divided by the firm's total assets
Total Assets of the Firm
D IY: Corporate Dividend Ratio to Assets
LEV: Total corporate liabilities divided by total assets
M/B: Ratio of market value of equity to book value (Nosrat and Badavar nahandi, 2018).

The dependent variable of research: Cost adhesion (CS)

Cost stickiness was first proposed by Anderson et al. (2003). Cost stickiness is a type of cost behavior that shows how costs change in response to changes in income over a period of time. Anderson et al. utilized a regression model in their study, as described by Kordestani (2020). Rimmer (2018) and Hamburg (2018) also used a similar model to measure cost stickiness. The remaining part of the model indicates the degree of stickiness of the costs.

$$log\left(\frac{\text{SGAt}}{\text{SGAt}-1}\right) = \beta_0 + \beta_1\, log\left(\frac{\text{Salest}}{\text{salest}-1}\right) + \beta_2\, Dt * log\left(\frac{\text{Salest}}{\text{salest}-1}\right) + e$$

In the above relationship:
SGA: Sales, administrative, and general expenses for the current year (operating cost).
SGAt-1: Sales, administrative, and general expenses in the previous year.
Sales: Total sales revenue for the year.
$Sales_{t-1}$: Total sales revenue in the previous year.
D: The model is a fictitious variable that has two values (0 and 1). This variable is assigned the number (1) if the current year's sales revenues have decreased compared to the previous year (i.e., periods of decline

in sales) and the number (0). The remainder of the model is used as cost adhesion (Fattahi, Kordestani, and Rastgooian, 2020).

Control variables of research

ROA (Return on Corporate Assets): To calculate this variable, the net dividend before interest and taxes on total assets are used.

SIZE (firm size): To calculate this variable، the natural logarithm of the sum of assets is used.

LEV (Corporate Leverage): To calculate this variable, the sum of the total liabilities divided by the total sum of assets is used.

MTB (Growth Opportunity): To calculate this variable, the division of the market value of the capital by the book value of capital is used at the end of the fiscal year.

Research Findings

Descriptive statistics of research variables

Table 1 displays the descriptive statistics of the research variables. The primary central indicator is the average, which signifies the equilibrium point and center of gravity of the distribution and serves as a good indicator of the centrality of the data. For instance, the average value for the leverage variable is 0.56, indicating that the majority of the data is centered around this point. This suggests that, on average, companies have 50% of their assets accounted for as liabilities. Generally, dispersion parameters are used as criteria for determining the amount of dispersion from one another or their dispersion rate relative to the average. One of the most crucial parameters of dispersion is the standard deviation. The value of this parameter for growth opportunity (market value to book equity) is 3.18 bps, while for the adhesion variable cost it is 10%, signifying that these two variables have the highest and lowest standard deviations, respectively. Thus, the market value of the companies in the sample displays a higher dispersion compared to other information regarding their book value. The lowest and highest values in each variable vary. For example, the largest amount of leverage is 1.04 bps.

As can be seen in Table 2, the total year total of the companies surveyed is 1056 cases, of which 423 cases (40.06% of the year-companies) were limited financially, and 633 cases (59.94%) of the year-companies had no financial constraints.

According to the results obtained in Table 3, it is observed that the significance level of variables in the stability test is less than 5% and indicates the stability of the variables.

According to the results obtained in Table 4, it is observed that the significance level of the test for the research model is higher than 5% and the application of the common effects model (integrative) is preferable to the fixed effects model, so in this situation it is not necessary to present the Hausman test (Banimahd et al., 2016).

The results in Table 5 show that the significance level of the test in the research model is less than 5%, indicating the presence of variance inconsistency in the disruptive sentences. This issue is resolved by implementing the GLS command in the final estimation of the models. Additionally, the significance level of the serial autocorrelation test in the research model is more than 5%, suggesting the absence of serial autocorrelation in the models.

Table 1: Descriptive statistics of quantitative variables

Variable	Mean	Min	Max	S. dev.
CS	0.0005	0.45	-0.30	0.10
LEV	0.56	1.04	0.10	0.20
MB	4.12	10.87	-0.55	3.18
ROA	0.13	0.45	-0.053	0.13
SIZE	14.60	18.68	11.64	1.47

Table 2: Variable Frequency Distribution of Financial Constraints

Variable	Value	Frequency	Percent Frequency
Kz	1	423	40.06
Kz	0	633	59.94
Total	-	1056	100

Table 3: Stability Test Quantitative Variables

Variable	Test Statistics	Sig	Results
CS	-16.8583	0.0000	Stationary
LEV	-82.3447	0.0000	Stationary
MB	-10.3771	0.0000	Stationary
ROA	-31.4487	0.0000	Stationary
SIZE	-19.4103	0.0000	Stationary

Table 4: F-Limmer Test

Test Model	Test Statistics	Sig
F Leamer	1.43	0.19

Table 5: Variance Heterogeneity Test Results

Test Model	Test Statistics	Sig
White	12.40	0.0000
Breusch-Godfrey	0.40	0.20

Table 6: Hypothesis of a Hypothesis

$CS_{i,t} = + \beta \beta 0_1 KZ_{i,t} + \beta 2 LEV_{i,t} + \beta 3\ SIZE_{i,t} + \beta 4\ ROA_{i,t} + \beta 5\ MTB_{i,t} + \varepsilon_{i,t}$					
Dependent Variable: Cost stickiness					
Variables	**Coefficients**	**Std**	**Statistic t**	**Sig**	**VIF**
Kz	0.048	0.023	2.09	0.036	1.11
LEV	0.069	0.011	5.93	0.0000	1.14
SIZE	0.012	0.003	3.83	0.0007	1.07
ROA	-0.94	0.049	-19.12	0.0000	1.41
MB	0.069	0.083	0.84	0.40	1.38
C	0.48	0.050	9.68	0.0000	-
Coef	0.33				
Watson Durbin	1.98				
F	42.48				
Sig	0.0000				

The results from Table 6 indicate that the financial constraint variable, with a positive coefficient of 0.048 and a significance level below 5% (0.036), has a direct and significant relationship with the firm's value. Since the hypothesis test's condition for confirmation is below 5%, the first hypothesis of the research is accepted with a 5% error level. Control variables, except for the opportunity to grow the firm, have a significant relationship with the dependent variable of the research at a significance level below 5%. The coefficient of determination is 33%, suggesting that the independent and control variables in the model

explain 33% of the dependent variables. Watson's camera value is 1.98, indicating no correlation between the disruptive sentences of the autocorrelation model. Test statistics for the research model, with a significance level below 5%, show a good fit. Additionally, the collinearity statistics (VIF) are below 5 and around 1, suggesting no strong correlation between the research variables.

Research Results

The main purpose of this study is to investigate the role of internal controls on the relationship between financial constraints of companies and cost stickiness. Cost stickiness is a characteristic of cost behavior that shows the rate of increase in costs when the activity level increases is greater than the rate of cost reduction when the activity level decreases.

Statistical discussions reveal that the financial constraint variable, with a significance level below 5%, has a direct and significant relationship with the stickiness of a firm's cost. Financial constraint refers to hindrances in financing all desirable investments. Cost management is a crucial aspect of daily firm operations.

While cost adjustment helps in understanding cost stickiness, companies still require sufficient financial support to offset costs. Supply Costs Financing, which leads to financing constraints for companies, suggests that financing constraints affect cost stickiness through cost adjustment.

The results of the first hypothesis of the research indicate a direct relationship between financial constraints and cost stickiness. When companies face financing constraints, they encounter problems in compensating for costs. Despite financial constraints, the firm's investments decrease, leading to higher cost levels and increased stickiness. As financial constraints increase, the level of stickiness also rises.These findings align with the research conducted by Chen and Ma (2021). In addition, Beigi Vaghfi, et al. (2019) have found that financial constraints have a significant impact on payments, cost compensation, and the financial performance of a firm is linked to cost adhesion. The results of the first hypothesis suggest that companies that plan ahead and utilize financial experts are able to adjust their spending levels during different periods in line with inflation and market fluctuations, thus avoiding cost stickiness during sales downturns. The research indicates that it is crucial for firm managers to maintain adequate resources to navigate financial crises and constraints, ensuring that financing costs do not escalate. Investors and shareholders in the capital market are advised to carefully analyze financial statements and corporate information to make informed decisions about future investments and identify companies facing crises. Future research should explore the influence of corporate credit ratings on cost stickiness during financial hardships.

References

Anderson, M., Banker, R., & Janakiraman, S. (2003). Are selling, general, and administrative costs “sticky”? Journal of Accounting Research, 41(1), 47–63. https://doi.org/10.1111/1475-679X.00095.

Balakrishnan, R., Petersen, M. J., & Soderstrom, N. S. (2004). Does capacity utilization affect the “stickiness” of cost? Journal of Accounting, Auditing and Finance, 19(3), 283–299.

Bradbury, M., & Scott, T. (2018). Do managers forecast asymmetric cost behavior? Australian Journal of Management, 43(4), 538–554. https://doi.org/10.1177/0312896218773136

Chen, Y., & Ma, Y. (2021). Financing constraints, cost stickiness, and internal control quality. Journal of Economics and Management, 22(5), 1231–1251. https://doi.org/10.3846/jbem.2021.14878

Cheng, S., Jiang, W., & Zeng, Y. (2016). Does access to capital affect cost stickiness? Evidence from China. Asia-Pacific Journal of Accounting & Economics*, 25(1–2), 177–198.

Cheng, Q., Goh, B., & Kim, J. (2014). Internal control and operational efficiency. Contemporary Accounting Research*, 35(2), 1102–1139. https://doi.org/10.1111/1911-3846.12409

Dehdarnasab, P., Hamzelou, H., & Rahmani, M. (2015). Investigating the resort of earnings management in financially restricted companies and financial firms in listed companies in Tehran Stock Exchange. International Conference on Modern Research in Management, Economics and Accounting, 2, 1–16.

Enayatpour Sheyadeh, E., Derakhshan, J., & Forghani, A. (2020). The effect of ownership concentration on the relationship between cost adhesion and investment in fixed assets in Tehran Stock Exchange. Research in Accounting and Economic Sciences, 4(1), 49–60.

Esmaeilzadeh, A., & Mehrnoosh, A. (2014). The relationship between cost adhesion with earnings quality and prediction error. Experimental Financial Accounting and Audit Research, 6(21), 37–61.

Farnoudi, I., & Ghajarbeigi, M. (2021). The effect of financial distress and financial constraints on the commercial credit of Tehran Stock Exchange companies. New Research Approaches in Management and Accounting, 9, 111–129.

Fattahi, Y., Kordestani, G., & Rastgouian, H. (2020). Stickiness of costs and credit risk of banks. Journal of Islamic Economics and Banking, 31, 115–99.

Ghanbari, A., & Arekash Salmasi (2021). The impact of financial crises and economic growth on cost adhesion. Accounting and Management Outlook, 4(45), 1–17.

Habib, A., & Costa, M.D.(2021). Debt maturity structure and cost stickiness. Journal of Corporate Accounting & Finance. https://doi.org/10.1002/jcaf22479

Hajiha, Z., Ghaderi, K., & Ghaderi, S.(2019). The effect of short-term managers' attitude on the cost stickiness of firms listed on the Tehran Stock Exchange. Asset Management and Financing, Fall(26), 27–44.

Li, J., & Luo, Z.(2021). Product market competition and cost stickiness: Evidence from China. Managerial and Decision Economics, 3(4), 305–360.

Namazi, M., Ghaffari, M.J., & Fereidouni,M.M.(2012). Fundamental analysis of sticky behavior of costs on the scope of changes in Tehran Stock Exchange. Accounting Advances, 4(2), 151–177.

Namazi,M.; Fathali,A.(2019). The effect of intellectual capital and free cash flow on stickiness of costs in Tehran Stock Exchange companies. Experimental Research of Accounting, Winter(30), 223–250.

Nikkar,J.; Heidarinejad,G.(2015). Costs asymmetry-cost adhesion: Evidence, causes and impacts. Accounting Accountability Community Interests, (18), 69–92.

Nosrat,G.; Badavar Nahandi,Y.(2018). The relationship between corporate governance and firm growth with emphasis on the role of financial constraints. Journal of Development Management and Transformation, 33(25-35).

Vaghfi,S.H.; Parandin,K.; Khajehzadeh,S.(2019). Study of cost stickiness behavior in Tehran Stock Exchange companies. Accounting Accountability Community Interests, Winter(35), 135–155.

Li,Z.; Ying,Q.; Chen,Y.; Zhang,X.(2020). Managerial risk appetite and asymmetry cost behavior: evidence from China. First published: September 11,60(5). https://doi.org/10.1111/acfi12692