

An Empirical Study of Cost Stickiness and Enterprise Value of Listed Manufacturing Companies

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Abstract: The study under review is the A-share manufacturing class of all public corporations in China, and the main Study time period is from 2016 to 2020. It Probes into the relevance between cost stickiness and firm value, and analyzes the moderating role of financial flexibility between them. The next results are got: for manufacturing enterprise, cost stickiness will be helpful to the promotion of enterprise value; At the same time, financial flexibility reserve will be good for the promotion of cost stickiness on corporate value.

1. Introduction

Accordance with the former theory, the correlation between company costs and corporate sales revenue is linear. In 1997, Noreen et al.^[1] first questioned the traditional cost theory and proposed that the traditional cost theory was inconsistent with reality. ABJ.^[2] found that when the business scope of an enterprise reduces, the cost decreases less than the cost increases when the operation scope increases, and named this appearance as "cost stickiness". Calleja et al.^[3] and Yusheng Kong^[4] also proved the existence of cost stickiness successively. For manufacturing firm, how to improve corporate value for long-term development is a problem that must be considered. Manufacturing enterprises often need a lot of production resources input. The investment of production resources enables enterprises to have better development. Meanwhile, these resources are also one of the costs of enterprises, which will affect the value of firm. Therefore, how to better manage costs plays an important role for enterprises. This can help enterprises improve business value and management level. This research try to study the correlation infer cost stickiness and firm value. This essay inspects the regulating effect of financial flexibility on the relevance between firm value and cost stickiness too, and puts forward a new perspective for improving financial flexibility and enterprise value.

2. Theoretical Analysis and Research Hypothesis

2.1. Cost Stickiness and Firm Value

On account of the incomplete contract doctrine, a firm with a long-term contract does not want to abandon the existing contract at will when its business volume decreases. If you give up, you may lose the benefits agreed with the supplier before, and the constant change will lead to the increase of transaction costs, which is not conducive to for ages development of the enterprise. In addition, when the market condition improves, in order to restore the previous scale of production, manufacturing enterprises need to purchase more materials and recruit more personnel. Over the long haul, the current cost reduction means that enterprises need to bear a lot of adjustment costs, and enterprises should maintain the existing ability to solve sudden changes in the market environment. High cost stickiness is beneficial to the development of enterprises.

Therefore, the above questions, this paper makes a research hypothesis:

H1: The connection between cost stickiness and firm value is optimistically correlated.

2.2. Cost Stickiness, Financial flexibility And Firm Value

Firms which can maintain appropriate financial flexibility can actively respond to changes in the environment, reduce risks, and enable managers to choose the best measures for enterprises in the face of market emergencies. Enterprises with high financial flexibility have more sufficient funds. With no financial constraints, executives are emboldened to serve their companies and accomplish their goals. In the face of business volume adjustment, they will make the best response measures in time to prevent value decline.

Therefore, in view of the above, this research hypothesis is made:

H2: Financial flexibility has a positive regulating influence on the relationship between firm value and cost stickiness.

3. Research Design

3.1. Sample Selection and Data Source

The study samples in this paper are all A-share manufacturing public firms from 2016 to 2020. The original data are mainly obtained from WIND database and Guotai 'an database, and the data are filtered as follows: (1) Remove *ST and ST companies that do not have reference and research value; (2) Remove companies with missing data; (3) Refer to WEISS model, data that change in opposite directions of revenue and cost are removed. Winsorize all continuous variables with 1% quantile to get 11356 valid samples.

3.2. Variable Definition

Dependent variable: This paper define TOBIN Q as explained variable.

Explanatory variables: This paper refers to Weiss^[5]'s method for calculating cost stickiness level, which is as follows:

$$\text{Sticky} = \log \left(\Delta \frac{\text{cost}}{\Delta \text{sale}} \right)_{i,m1} - \log \left(\Delta \frac{\text{cost}}{\Delta \text{sale}} \right)_{i,m2}$$

$$m1, m2 \in [t, t - 3]$$

$$\Delta \text{cost}_{i,t} = \text{cost}_{i,t} - \text{cost}_{i,t-1}$$

$$\Delta \text{sale}_{i,t} = \text{sale}_{i,t} - \text{sale}_{i,t-1}$$

In this model, *i* refers to the sample company. *m1* refers to the quarter in which company *i* experienced a decrease in operating income near the end of the year, and *m2* refers to the quarter in which Company *i* experienced an increase in operating income near the end of the year.

Table 1 Definition and description of variables

Variable type	Variable name	Variable symbol	Description of a variable
Explained variable	Enterprise value	TOBIN Q	Market value/replacement cost of assets.
The explanatory variable	Cost sticky	STICKY	According to WEISS model, and the absolute value is taken.
Regulating variable	Financial flexibility	FF	The sum of debt flexibility and cash flexibility.
Control variable	Enterprise scale	SIZE	The logarithm of the total assets of the enterprise.
	Capital structure	LEV	Total liabilities/total assets.
	Cash flow from operating activities	CS	Net cash flow from operating activities divided by total assets.
	Growth ability	GROTH	Revenue growth divided by total revenue for the previous year.

Moderating variable: Financial flexibility be represented to the cash flexibility plus debt flexibility. Cash flexibility is the enterprise's cash ratio subtract the industry average cash ratio, and

the value of debt flexibility is the maximum between 0 and the difference between the industry average debt ratio and the enterprise debt ratio.

The specific variable definitions in this paper are shown in Table 1.

3.3. Model Construction

In order to study how firm value is affected by cost stickiness, the time-individual dual fixed effect model is used to construct the following model 1:

$$\text{TOBIN } Q_{i,t} = \alpha + \beta_0 \text{ Sticky}_{i,t} + \sum \text{Control}_{i,t} + \sum \text{Year} + \Sigma \text{ stock} + \varepsilon_{i,t} \quad (1)$$

In order to verify the regulatory effects of financial flexibility, this paper added the interaction terms of cost stickiness and financial flexibility to model 1, and established model 2:

$$\text{TOBIN } Q_{i,t} = \alpha + \beta_0 \text{ STICKY}_{i,t} + \beta_1 \text{ STICKY}_{i,t} \times \text{FF}_{i,t} + \beta_2 \text{FF}_{i,t} + \sum \text{Control}_{i,t} + \sum \text{Year} + \Sigma \text{ stock} + \varepsilon_{i,t} \quad (2)$$

4. Empirical Analysis

4.1. Descriptive Statistical Analysis

Through data processing, the total number of remaining data samples is 11356. The descriptive statistics of the main variables in the model can be seen in the tabulation 2. The maximum and minimum values of companies (TOBIN Q) are 8.357 and 0.764 respectively, which indicates that there are differences in the operation and value of different listed enterprises. Relevant data on cost stickiness, reflecting A-share listed companies in our country's stickiness of cost is different. The standard deviation of financial flexibility (FF) is 0.184, which reflects that the financial flexibility reserve of A-share listed companies is relatively different.

Table 2 Descriptive statistics

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Sample size	Mean	Standard deviation	Minimum	Maximum
STICKY	11,356	0.647	0.833	0	4.211
TOBIN Q	11,356	2.137	1.327	0.764	8.357
FF	11,356	0.0722	0.184	-0.196	0.727
SIZE	11,356	22.18	1.167	20.11	25.71
LEV	11,356	0.398	0.189	0.0630	0.890
CS	11,356	0.0545	0.0643	-0.123	0.241
GROTH	11,356	0.165	0.392	-0.489	2.501
Number of Stock	2376	2376	2376	2376	2376

4.2. Correlation Analysis

Table 3 Correlation analysis result

	TOBIN Q	STICKY	FF	SIZE	LEV	CS	GROTH
TOBIN Q	1						
STICKY	0.066***	1					
FF	0.188***	0.001	1				
SIZE	-0.351***	-0.063***	-0.281***	1			
LEV	-0.263***	-0.036***	-0.619***	0.499***	1		
CS	0.115***	0.002	0.189***	0.055***	-0.177***	1	
GROTH	0.0100	-0.086***	-0.049***	0.067***	0.037***	0.00300	1

This article conducted Pearson correlation research on variables in the model, and the consequences are shown in Table 3. The correlation coefficient between corporate value (TOBIN Q) and cost stickiness is 0.066, and the relationship between the two is positively correlated, reflecting that cost stickiness has a positively Promoting effect on corporate value, and H1 is verified. The

correlation coefficients between financial flexibility and corporate value are 0.188, indicating that good financial reserve will improve corporate value.

4.3. Regression Result Analysis

Model 1 in Table 4 shows the regression result of enterprise cost stickiness on enterprise value (TOBIN Q). The regression result of the main effect. The result shows that the regression coefficient of cost stickiness and enterprise value (TOBIN Q) is 0.045 which is positive correlation at 1% level and supports hypothesis H1. Model 2 shows the interaction term between financial flexibility maintaining and cost stickiness and the coefficient of enterprise value is 0.126 which is obviously positive at the level of 1%, indicating that good financial flexibility significantly enhances the positive correlation of the main effect, and verifies H2.

Table 4 Results of regression analysis

VARIABLES	(1)	(2)
	TOBIN Q	TOBIN Q
STICKY	0.045*** (4.02)	0.037*** (3.11)
FF		0.189* (1.84)
STICKY&FF		0.126** (2.13)
SIZE	-0.433*** (-13.16)	-0.438*** (-13.29)
LEV	-0.101 (-0.89)	0.079 (0.62)
CS	1.060*** (5.84)	1.025*** (5.63)
GROTH	0.021 (0.87)	0.022 (0.92)
CONSTANT	12.469*** (17.57)	12.484*** (17.58)
OBSERVATION	11,356	11,356
NUMBER OF STOCK	2,376	2,376
R-SQUARED	0.270	0.271
STOCK FE	YES	YES
YEAR FE	YES	YES

5. Conclusion

Constructing two models based on panel data, and reach the ensuing findings: Enterprise cost stickiness promotes enterprise value. Better financial flexibility maintaining will enhance the promotion effect. In the light of foregoing empirical conclusions, this paper suggests that administrator should keep a watchful eye on cost control, and when making relevant decisions, enterprises should take A comprehensive consideration to expand the certain impact of cost stickiness on corporate value as much as possible.

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