

## Revenue and Expenditure Structure, Capital Expenditure, and Profitability: Evidence from China's Listed Beverage Companies

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### Abstract

Based on panel data from Chinese A-share listed beverage companies from 2014 to 2023, this paper uses ordinary least squares (OLS) to conduct a baseline regression. Using return on assets (ROA) as the explained variable, this paper systematically examines the direct impact of financial indicators such as sales revenue, accounts receivable, investment income, operating costs, accounts payable, period expense ratio, and R&D investment on firm profitability. Furthermore, capital expenditure (CE) is introduced as a mediating variable. Through stepwise regression and mediation effect tests, this paper further reveals the indirect mechanism by which revenue and expenditure structure influence profitability through investment decisions. The empirical results show that sales revenue, investment income, and period expense ratio have a significant positive impact on firm profitability, while operating costs and R&D investment have a significant negative impact on profitability. Accounts receivable and accounts payable have no significant impact on profitability. Further mediation effect analysis reveals that capital expenditure has a significant transmission effect between some financial indicators and profitability, indicating that firms' capital investment decisions play an important mediating role in the relationship between revenue, costs, and profitability. Overall, this study reveals the main financial drivers of profitability in the beverage industry and their impact paths, providing an empirical basis for understanding the profit model of industry enterprises.

**Keywords:** beverage industry; expenditure structure; profitability; return on assets

### 1. INTRODUCTION

In recent years, with the continuous expansion of China's beverage market and the increasingly diversified competitive landscape, corporate profitability has gradually become a core indicator for measuring a company's performance (LI,2024). Revenue, as the direct source of profit, reflects a beverage company's market competitiveness and brand influence. Expenditure, on the other hand, encompasses various aspects, including cost control, marketing investment, and R&D funding, determining resource allocation efficiency and the sustainability of a company's development. For listed beverage companies, the dynamic balance between revenue and expenditure not only influences short-term profit fluctuations but also significantly shapes a company's long-term development path and industry position. Therefore, in-depth exploration of the mechanisms by which revenue growth and expenditure management influence profit performance is both of great theoretical significance and provides practical insights for companies

to enhance their financial stability and promote the healthy development of the industry (Zhao,2022).

As an important indicator of financial performance, corporate profits are usually expressed as return on assets (ROA), which comprehensively reflects the efficiency of corporate asset utilization and operating capabilities (Md., 2019). This study, based on a micro-finance perspective, examines Chinese A-share listed beverage companies and systematically analyzes the impact of multiple key revenue and expenditure indicators on corporate return on assets (ROA). Specifically, the study covers the following seven core independent variables: sales revenue (SR), accounts receivable (AR), investment income (II), operating costs (COGS), accounts payable (AP), period expense ratio (OER), and research and development (RD). Among them, sales revenue reflects the company's market expansion capabilities and brand competitiveness, and is the direct source of profit growth; accounts receivable reflects the company's credit sales policy and capital turnover efficiency, which may promote the expansion of market share but may also increase bad debt risks; investment income demonstrates the company's profitability in diversified operations or capital operations, and plays an important supplementary role in overall financial performance; operating costs represent the basic expenditures in the production and procurement links, and are the core factors that determine profit margins; accounts payable reflect the company's short-term debt repayment ability and capital turnover strategy, and can be used as an interest-free financing channel to a certain extent, affecting capital costs; the period expense rate integrates administrative expenses and sales expenses, and is an important indicator for measuring the company's operating efficiency; R&D investment reflects the company's long-term strategic deployment in innovation capabilities, and is an important support for enhancing core competitiveness.

In this research framework, capital expenditure (CE) is designed as a mediating variable to reveal how various financial indicators influence return on assets (ROA) through investment decisions. This design not only analyzes the direct impact of core financial indicators such as sales revenue, accounts receivable, investment income, operating costs, accounts payable, period expense ratio, and R&D investment on ROA, but also further reveals how these indicators indirectly affect corporate profitability through changes in CE.

By integrating revenue and expenditure indicators with the mediating role of capital expenditure (CE), this study offers a new perspective for understanding profitability in the beverage industry. The findings suggest that optimizing CE decisions while balancing revenue growth, cost control, expense management, and R&D investment can improve corporate profitability and support the sustainable development of the industry.

This study has the following unique methodological design and research contributions: First, using ordinary least squares (OLS) for benchmark regression, with return on assets (ROA) as the dependent variable and sales revenue, accounts receivable, investment income, operating costs, accounts payable, period expense ratio, and R&D investment as independent variables, it systematically examines the direct impact of financial indicators on corporate profitability. Second, capital expenditure (CE) is introduced as a mediating variable, and through stepwise

regression and mediation effect testing, it reveals the indirect mechanism through which revenue and expenditure structure affect profitability via investment decisions.

Based on this foundation, this study's contributions are primarily reflected in the following aspects: First, from the dual perspectives of revenue and expenditure, it constructs a relatively comprehensive "financial driver–profitability" analytical framework, expanding the theoretical perspective of financial performance research in the beverage industry. Second, the data is based on panel data from China's A-share listed beverage companies from 2014 to 2023, which is both highly timely and representative of the industry, enhancing the universality and reference value of the research conclusions. Finally, on a practical level, the research conclusions can provide quantitative reference for beverage companies to optimize their revenue structure, rationally control expenditures, and improve capital operation efficiency. They also provide a scientific basis for investors and regulators to assess the long-term investment value of companies and the development potential of the industry. Based on the above discussion, this paper will focus on the following four core research questions:

RQ1: How income and expenditure factors affect the profitability of Chinese listed beverage companies.

RQ2: How income and expenditure factors influence the capital expenditure of Chinese listed beverage companies.

RQ3: How capital expenditure impacts the profitability of Chinese listed beverage companies.

RQ4: How capital expenditure mediates the relationship between income and expenditure factors and profitability.

The structure of this paper is as follows: the second part is a literature review and research hypothesis construction, the third part introduces the data source and research methods, the fourth part shows the empirical results, the fifth part is the discussion of the results and management implications, and the sixth part summarizes the research conclusions and puts forward policy recommendations.

## **2. THEORETICAL BACKGROUND AND THE HYPOTHESES**

### **2.1. Theoretical and empirical insights**

The trade-off theory holds that when companies make financial structure and investment decisions, they must balance between multiple goals, especially the balance between cost and benefit, risk and return. This theory originated from the study of capital structure selection, but its connotation has been expanded to explain the rational behavior of companies in resource allocation and financial decision-making. Trade-off Theory is a core framework in capital structure theory, which is used to explain how companies make trade-offs between debt and equity financing to achieve the optimal capital structure.

Existing research generally focuses on how trade-off theory explains capital structure choices in the balance between revenue, expenditure, and profit. Some studies have shown that firms balance the tax credit benefits of debt against the risk of financial distress in actual capital structure adjustments, and suggest that highly profitable firms may choose different debt levels based on

their risk tolerance (Qin, 2024). Empirical research on South African manufacturing, mining, and retail industries has found a positive correlation between profitability and debt ratios, and capital expenditures and growth rates are also positively correlated with leverage, supporting the trade-off theory's view that firms maximize profits through financing (Wolmarans et al., 2013). However, in the case of Jordanian manufacturing, research has found that the relationship between profitability and debt does not fully conform to the trade-off theory, but rather that firm size is positively correlated with debt, suggesting that larger firms are more likely to use debt financing to balance profits and risks (Ramadan, 2015). In addition, some scholars have proposed a time-cost trade-off model, which emphasizes that under different income and resource conditions, enterprises need to find the optimal balance between shortening time and increasing expenditure to maximize net profits (Jia, 2000).

## 2.2. Determining parameters and hypotheses

Existing research generally shows that revenue has a significant positive impact on return on assets (ROA). Increased corporate revenue can improve profitability, thereby enhancing asset utilization efficiency and boosting ROA (Alarussi & Alhaderi, 2018). In the banking industry, both interest income and non-interest income have a positive impact on ROA, but overreliance on a single revenue source can lead to increased ROA volatility (Kohler, 2014). Furthermore, while diversifying revenue sources can help stabilize ROA to a certain extent, especially in environments of high market uncertainty, excessive diversification can weaken profitability (Abdullahi et al., 2019). Furthermore, firm size is closely related to revenue level; larger firms tend to maintain higher ROA due to revenue scale effects (Majumdar, 1997). As a result, considering these arguments, the hypothesis in our scenario is:

H1a: There is a relationship between Sales Revenue and return on assets.

H1b: There is a relationship between Accounts Payable and return on assets.

H1c: There is a relationship between Investment Income and return on assets.

Corporate spending can have both positive and negative effects on return on assets (ROA). Excessive operating expenses (such as administrative and selling expenses) often weaken profitability, thereby reducing ROA. Effective cost control can improve asset utilization, thereby improving ROA (Alarussi & Alhaderi, 2018). While R&D spending may compress profit margins and reduce ROA in the short term, it contributes to innovation and competitive advantage in the long term, thereby boosting return on assets (Sánchez & Elena, 2006). Similarly, moderate marketing spending can indirectly improve ROA by driving revenue growth, but inefficiency can create a burden, leading to a decline in ROA (Dutta et al., 1999). In financial institutions such as banks, high operating expenses are negatively correlated with ROA, while optimizing spending structure and improving operational efficiency can significantly enhance ROA (Sufian & Habibullah, 2009). As a result, considering these arguments, the hypothesis in our scenario is:

H2a: There is a relationship between Cost of goods sold and return on assets.

H2b: There is a relationship between Cost of goods sold and return on assets.

H2c: There is a relationship between operating expense ratio refers and return on assets.

H2d: There is a relationship between R&D expenses and return on assets

Corporate revenue levels are generally positively correlated with capital expenditures. Increased revenue can provide firms with more internal funds, thereby supporting capital investment and expansion (Alarussi & Alhaderi, 2018). In developing countries, increased sales revenue often directly drives increased capital expenditures because, when external financing is limited, firms rely more on internal funding sources to support investment (Aivazian et al., 2005). However, the relationship between revenue and capital expenditures is also modulated by financial leverage. High debt levels can weaken the positive impact of revenue on capital expenditures because some revenue needs to be used for debt repayment rather than investment (Aivazian et al., 2005). In some capital-intensive industries, high-revenue firms tend to maintain or even increase capital expenditures to maintain competitiveness and market share (Majumdar, 1997). As a result, considering these arguments, the hypothesis in our scenario is:

H3a: There is a relationship between SR and Capital expenditure.

H3b: There is a relationship between Accounts receivable and Capital expenditure.

H3c: There is a relationship between Investment income and Capital expenditure.

Higher operating expenses (such as sales and administrative expenses) can erode a company's cash flow, squeezing funds available for capital expenditures and leading to a decline in capital investment (Aivazian et al., 2005). Companies with good cost control often free up more funds for capital expenditures, demonstrating a positive correlation between operating efficiency and capital investment (Alarussi & Alhaderi, 2018). In financing-constrained companies, increased operating expenses can significantly weaken capital expenditures because their investment relies more on internal capital accumulation than on external financing (Aivazian et al., 2005). Industry differences can also influence this relationship. In capital-intensive industries, even with high operating expenses, companies may maintain capital expenditures to maintain long-term competitiveness (Majumdar, 1997). As a result, considering these arguments, the hypothesis in our scenario is:

H4a: There is a relationship between Cost of goods sold and Capital expenditure.

H4b: There is a relationship between Accounts payable and Capital expenditure.

H4c: There is a relationship between operating expense ratio and Capital expenditure.

H4d: There is a relationship between R&D expenses and Capital expenditure.

Capital expenditures have a dual impact on return on assets (ROA). Increased capital expenditures can boost ROA in the long term by expanding production capacity, upgrading technology, and improving asset efficiency (Ghosh & Moon, 2010). However, in the short term, capital expenditures often come with high capital investment and depreciation pressures, which can lead to a decline in ROA (Eisdorfer, 2008). Furthermore, the efficiency of capital expenditures is a key factor. If investment projects lack good profitability, capital expenditures can reduce asset utilization efficiency and weaken ROA (Ghosh & Moon, 2010). Furthermore, capital expenditures are closely linked to a company's financial health. Companies with less financial constraints often achieve higher returns on assets through capital expenditures, while companies with tighter

financial constraints may experience a decline in ROA due to the increased burden of capital expenditures (Eisdorfer, 2008).

**H5: There is a relationship between Capital expenditure and ROA.**

### 3. RESEARCH METHODOLOGY

#### 3.1. Data and sample

This study is based on the panel data of beverage companies listed on the A-share market in my country from 2009 to 2023, aiming to explore the impact of corporate revenue and expenditure on their profitability. The data in this article comes from the CSMAR database. In order to ensure the scientific quality of the data and the effectiveness of the empirical analysis, companies with missing key variables (such as ROA, LEV, etc.) for two consecutive years or more are directly deleted from the sample to avoid interference of long-term missing values on the panel regression analysis and ensure the representativeness and robustness of the sample. Sample observations with abnormal debt-to-asset ratios are eliminated. Data before the company went public are eliminated. In order to alleviate the interference of extreme values on the statistical analysis results, this article performs a 1% level shrinkage treatment on continuous variables.

#### 3.2 Model

To test the mediation mechanism, this article follows the two-step method (Jiang Ting (2022)) to avoid the endogeneity problem of economic data during the three-step test. The literature review above confirms the impact of capital expenditures on ROA. Therefore, we only need to test whether income and expenditures have an impact on the mediating variable to verify the validity of the mediation effect. This study constructs the following regression formula based on Wang Chuan 2022 research.

$$ROA_{it} = \beta_1 SR_{it} + \beta_2 AR_{it} + \beta_3 II_{it} + \beta_4 COGS_{it} + \beta_5 AP_{it} + \beta_6 OER_{it} + \beta_7 RD_{it} + Firm_i + Year_t + \_cons + \varepsilon_{it}$$

$$CE_{it} = \beta_1 SR_{it} + \beta_2 AR_{it} + \beta_3 II_{it} + \beta_4 COGS_{it} + \beta_5 AP_{it} + \beta_6 OER_{it} + \beta_7 RD_{it} + Firm_i + Year_t + \_cons + \varepsilon_{it}$$

#### Variable Definitions:

- $ROA_{(it)}$ : Return on Assets — the return on assets of firm  $i$  in year  $t$ .
- $CE_{(it)}$ : Capital Expenditure — the capital spending of firm  $i$  in year  $t$ , including cash paid for fixed assets, intangible assets, and other long-term investments.
- $SR_{(it)} \sim RD_{(it)}$ : Set of independent variables, including Sales Revenue (SR), Accounts Receivable (AR), Investment Income (II), Cost of Goods Sold (COGS), Accounts Payable (AP), Operating Expense Ratio (OER), and Research & Development expenditure (RD).
- $Firm_i$ : Firm fixed effects — control for time-invariant firm-specific characteristics.
- $Year_t$ : Year fixed effects — control for time-specific factors that affect all firms.
- $\_cons$ : The constant term (intercept) in the regression model.
- $\varepsilon_{(it)}$ : Error term — captures unobserved factors that vary across firms and over time.

### 3.3. Descriptive Statistics

**Table 1** Descriptive statistics

VarName	Obs	Mean	SD	Min	Median	Max
ROA	2088	0.044	0.080	-0.305	0.038	0.268
SR	2088	21.778	1.585	17.554	21.718	25.388
AP	2085	0.088	0.066	0.004	0.074	0.308
AR	2065	0.043	0.066	0.000	0.014	0.331
RD	1120	0.014	0.020	0.000	0.007	0.119
II	2018	0.027	0.091	-0.063	0.003	0.737
COGS	2087	0.668	0.203	0.143	0.711	0.989
OER	2087	0.133	0.319	-1.072	0.068	1.600
size	2088	22.265	1.249	19.241	22.199	25.578
lev	2088	0.465	0.220	0.063	0.466	1.018
top1	2088	35.423	15.13 0	9.230	34.430	71.844
lnage	2088	2.439	0.853	0.000	2.708	3.401
dual	2088	0.238	0.426	0.000	0.000	1.000
board	2088	8.811	1.685	5.000	9.000	14.000
tobin	2088	2.368	1.886	0.833	1.728	12.066
independent	2088	0.374	0.057	0.300	0.333	0.571

Table 1 presents the descriptive statistics for the key variables studied in this paper. The sample consists of 2,088 company-year observations from Chinese A-share listed beverage companies. The explained variable, return on assets (ROA), has a mean of 0.044, a standard deviation of 0.080, a minimum of -0.305, and a maximum of 0.268, indicating significant differences in profitability across companies.

Regarding the core explanatory variables, sales revenue (SR) has a mean of 21.778 (logarithmized), indicating that most beverage companies in the sample are large. However, there is a significant gap between the minimum (17.554) and maximum (25.388), indicating significant differences in market size. Accounts receivable (AR) and accounts payable (AP) have means of 0.043 and 0.088, respectively, with standard deviations of 0.066 each, indicating that companies generally employ credit sales and supplier financing strategies, though the degree of reliance

varies. The mean value of investment income (II) is 0.027, with a standard deviation of 0.091, indicating significant variation in the contribution of capital operations to overall corporate performance. Operating costs (COGS) account for an average of 66.8% of sales revenue, highlighting its central role in determining profit margins. The mean value of the period expense ratio (OER) is 0.133, but its range ranges from -1.072 to 1.600, indicating significant differences in operating efficiency across firms. The mean value of R&D investment (RD) is 0.014. While its overall contribution is relatively low, as a strategic investment, it is crucial for a firm’s long-term competitiveness.

Among control variables, firm size (FS, measured as the logarithm of total assets) has a mean of 22.265, indicating moderate size variation across the sample. The mean value of the debt-to-asset ratio (LEV) is 0.465, indicating that some firms rely almost entirely on debt financing. The mean shareholding ratio of the largest shareholder (Top 1) is 35.423%, indicating a certain degree of concentration in the ownership structure. Regarding board characteristics, the average board size was 8.811 members, with 37.4% being independent directors, generally meeting my country’s corporate governance regulatory requirements. However, 23.8% of companies employed a “dual position” where both chairman and general manager were combined. Tobin’s Q (Q) had a mean of 2.368 and a maximum of 12.066, indicating that despite the overall maturity of the industry, some companies still enjoy high market growth expectations.

Overall, descriptive statistics indicate that beverage industry companies exhibit both commonalities and significant heterogeneity in profitability, financial structure, and governance characteristics. This heterogeneity provides a solid empirical foundation for further exploring the mechanisms by which income and expenditure factors influence corporate profitability, as well as the mediating effect of capital expenditures and the moderating effect of firm size.

## 4 RESULTS

### 4.1. Regression Analysis

**Table 2 Benchmark regression**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ROA	ROA	ROA	ROA	ROA	ROA	ROA
SR	0.02						
	8***						
	(10.3						
	11)						
AP		-					
		0.027					
		(-					
		0.790)					



	(-5.472)	(-4.909)	(-5.242)	(-4.407)	(-4.801)	(-4.496)	(-5.364)
dual	-0.007*	-0.010**	-0.011***	-0.010*	-0.014***	-0.009**	-0.007**
	(-1.681)	(-2.304)	(-2.600)	(-1.662)	(-3.041)	(-2.000)	(-2.298)
board	-0.002	-0.002*	-0.002	-0.003	-0.002	-0.003*	-0.003***
	(-1.192)	(-1.659)	(-1.633)	(-1.157)	(-1.520)	(-1.748)	(-2.750)
tobin	0.009***	0.010***	0.011***	0.011***	0.010***	0.010***	0.006***
	(8.733)	(9.891)	(10.755)	(7.344)	(9.193)	(9.752)	(8.326)
independent	-0.057	-0.062	-0.063*	-0.101*	-0.052	-0.062*	-0.037
	(-1.551)	(-1.634)	(-1.695)	(-1.871)	(-1.363)	(-1.673)	(-1.423)
_cons	-0.528***	-0.543***	-0.539***	-0.691***	-0.543***	-0.443***	-0.115**
	(-8.120)	(-8.140)	(-8.194)	(-5.988)	(-7.973)	(-6.492)	(-2.423)
FirmFE	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	YES	YES	YES
r2	0.6238	0.6048	0.6052	0.6741	0.5984	0.6114	0.8076
r2_a	0.5828	0.5617	0.5616	0.6175	0.5534	0.5691	0.7867
F	66.7497	50.9577	52.5793	32.8475	53.7582	56.8481	327.9837
N	2088	2085	2065	1109	2016	2087	2087

t statistics in parentheses

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

Table 2 presents the fixed-effect regression results of various revenue and expenditure factors on the return on assets (ROA) of beverage companies. All models control for company and year fixed effects and gradually introduce core explanatory variables.

Looking at the results for sales revenue (SR) (Model 1), the regression coefficient is 0.028, which is significant at the 1% level, indicating that an increase in sales revenue can significantly improve corporate profitability. This means that market expansion and enhanced brand competitiveness are the direct sources of profit growth for beverage companies.

The results for accounts payable (AP) and accounts receivable (AR) are insignificant (Models 2 and 3), indicating that in the beverage industry, credit policies and supplier financing have limited impact on short-term profitability. This may be related to the beverage industry's relatively rapid cash flow recovery and limited credit financing flexibility.

R&D investment (RD) shows a significant negative relationship in Model 4 (coefficient -0.524, significant at the 1% level), indicating that R&D expenditure increases corporate costs in the short term, thereby compressing profitability. However, this does not mean that R&D is ineffective, but rather reflects its long-term strategic nature. In contrast, investment income (II) exhibits a significant positive effect in Model 5 (coefficient 0.127, significant at the 1% level), indicating that capital operations or diversified investments can effectively improve current financial performance.

The results for operating costs (COGS) and period expense ratio (OER) (Models 6 and 7) highlight the critical impact of cost and expense management on profitability. The regression coefficient for operating costs is -0.073, significant at the 1% level, indicating that cost control in production and procurement directly determines profit margins. The period expense ratio, on the other hand, exhibits a significant positive relationship in Model 7 (coefficient 0.194, significant at the 1% level), suggesting that reasonable selling and administrative expenses can effectively support market development and operational efficiency, thereby improving profitability.

The results for the control variables also have some explanatory power. Firm size (size) exhibits a significant positive impact on ROA in most models, indicating that scale effects can enhance profitability. The debt-to-asset ratio (lev) exhibits a significant negative relationship in all models, indicating that high leverage can increase financial burdens and erode profitability. The shareholding ratio of the largest shareholder (top1) shows a weakly significant positive effect in most models, suggesting that ownership concentration may have a certain positive impact on corporate governance. Firm age (lnage) shows a significant negative relationship with ROA, indicating that growth and profitability may decline as a firm's life cycle increases. Dual office (dual) shows a negative relationship in some models, suggesting that excessive concentration of power may be detrimental to performance. Board size (board) has an overall negative but weak effect; Tobin's Q (tobin) is consistently significantly positively correlated with ROA, indicating that market expectations of corporate growth and profitability are consistent. The proportion of independent directors (independent) shows a weakly significant negative relationship in some models, suggesting that their governance role in the beverage industry may not yet be fully realized.

### 4.2 Mediation Effect Test

This set of regression results takes capital expenditure (CE) as the dependent variable and gradually introduces seven core corporate financial variables to explore their impact on corporate investment behavior. After controlling for corporate fixed effects and annual fixed effects, the model has good explanatory power.

**Table 3: Mediation Effect Test**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	CE	CE	CE	CE	CE	CE	CE
SR	0.008*** (3.977)						
AP		0.030 (1.432)					
AR			-0.022 (-0.764)				
RD				-0.136* (-1.786)			
II					0.027* (1.901)		
COGS						-0.020** (-2.122)	
OER							0.012*** (2.707)
size	-0.003 (-0.905)	0.005** (2.468)	0.006** (2.544)	0.012*** (3.529)	0.005** (2.252)	0.005** (2.111)	0.004* (1.786)
lev	-0.006 (-0.812)	-0.006 (-0.718)	-0.003 (-0.358)	-0.010 (-0.875)	-0.008 (-0.993)	-0.001 (-0.066)	0.004 (0.440)
top1	0.000*** (3.585)	0.000*** (3.343)	0.000*** (3.026)	0.001*** (5.131)	0.000*** (3.206)	0.000*** (3.110)	0.000*** (2.927)

Inage	-0.006*	-0.005	-0.006*	-0.006	-0.005	-0.005	-0.005
	(-1.826)	(-1.524)	(-1.706)	(-1.407)	(-1.567)	(-1.509)	(-1.556)
dual	-0.003	-0.004	-0.004	-0.003	-0.003	-0.003	-0.003
	(-0.882)	(-1.166)	(-1.071)	(-0.653)	(-0.831)	(-1.033)	(-1.090)
board	0.000	0.000	0.000	-0.002	0.000	0.000	0.000
	(0.380)	(0.309)	(0.107)	(-1.400)	(0.219)	(0.119)	(0.183)
tobin	0.002**	0.002***	0.002***	0.001	0.002**	0.002**	0.002**
	(2.096)	(2.655)	(2.853)	(1.622)	(2.384)	(2.503)	(2.342)
independent	-0.015	-0.013	-0.012	-0.064*	-0.006	-0.016	-0.014
	(-0.566)	(-0.480)	(-0.418)	(-1.885)	(-0.203)	(-0.580)	(-0.531)
_cons	-0.076	-0.086*	-0.085*	-0.198***	-0.074	-0.052	-0.053
	(-1.583)	(-1.782)	(-1.750)	(-2.735)	(-1.501)	(-1.038)	(-1.088)
FirmFE	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	YES	YES	YES
r2	0.4156	0.4111	0.4087	0.4992	0.4195	0.4120	0.4129
r2_a	0.3516	0.3466	0.3432	0.4120	0.3543	0.3476	0.3486
F	4.9982	3.4519	3.2653	6.6707	3.2776	3.7241	4.0427
N	2078	2077	2055	1107	2011	2077	2077

t statistics in parentheses

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

In model (1), the coefficient of accounts payable (AP) on net profit margin is -0.122, but it is not statistically significant (t = -0.947), which is consistent with the ROA regression results in the previous article, indicating that accounts payable, as a short-term liability instrument, has limited impact on the profitability of beverage companies. Model (2) adds R&D expenditure (RD), and the results show that it has a significant negative impact on net profit margin (coefficient = -1.149, t = -2.222, significance level 5%). This shows that R&D activities in the beverage industry are difficult to convert into direct profits in the short term, which may be due to factors such as long technology cycles and slow brand penetration that affect the timeliness of R&D output. In model (3), the impact of the proportion of cost of goods sold (COGS) on net profit margin is -0.238, and it is significant at the 1% significance level (t = -4.842), indicating that the high cost structure significantly compresses the profit space of enterprises, verifying the importance of cost control

in profit management. After the operating expense ratio (OER) variable is introduced into model (4), it is found that it has a strong positive impact on the net profit margin (coefficient = 0.801,  $t = 56.964$ ), which is consistent with the above ROA regression conclusion, indicating that in the beverage industry, reasonable operating expenses such as marketing and channel operation are conducive to the improvement of profit levels, and have obvious positive input-output effects.

In terms of control variables, enterprise scale (size) always shows a positive and significant impact on profit margin, and the coefficients in models (1) to (3) are all greater than 0.10, reflecting the positive effect of scale advantage on profitability. The debt-to-asset ratio (lev) has a significant negative impact in all models, indicating that excessive leverage may bring debt repayment pressure, thereby inhibiting profit growth. The shareholding ratio of the largest shareholder (top1) is significantly positive in most models, indicating that concentrated equity helps improve management efficiency and financial performance, but it is only marginally significant in model (4), which may be related to the improvement of explanatory power after the introduction of the OER variable. The regression coefficients of chairman and general manager dual and board size are small overall and do not show significant effects. Tobin's Q, as a representative variable of corporate market value, has a positive and significant effect on profit margin in models (1) to (3), indicating that companies with high market valuations tend to have stronger profitability, but it is not significant in model (4), or the introduction of expense variables has absorbed some of the explanatory power. The proportion of independent directors (independent) has not shown stable significance in all models, indicating that in the beverage industry, the direct impact of the proportion of independent directors on net profit is not yet obvious, and may still depend on the overall supporting level of the governance mechanism.

## 5. DISCUSSION

An empirical analysis of a sample of listed companies in China's A-share beverage industry reveals that various revenue and expenditure factors significantly influence corporate profitability. Sales revenue and investment income have a significant positive impact on ROA, demonstrating that market expansion and capital operations can effectively boost profitability. The period expense ratio also exhibits a positive relationship, suggesting that moderate expense investment can help improve operating performance. Conversely, operating costs have a significant negative impact on profitability, confirming the key role of cost control in boosting profitability. R&D investment, on the other hand, has a short-term inhibitory effect on profitability, suggesting that innovation activities are characterized by resource occupation and lagged returns. Accounts receivable and accounts payable have no significant impact on profitability, indicating that credit policy is not a primary driver of profitability in the beverage industry. Further mediation tests reveal that capital expenditures play a role in the transmission of the impact of some revenue and expenditure variables on profitability. Specifically, sales revenue, investment income, and period expense ratios can indirectly boost corporate profitability through capital expenditures, forming a positive transmission mechanism of "revenue-investment-profit." Meanwhile, R&D investment and operating costs, to a certain extent, inhibit capital expenditures, thereby weakening their

impact on profitability. This suggests that improving profitability for beverage companies depends not only on direct revenue growth and cost control but also on the intermediary influence of investment decision-making paths.

## 6. SUGGESTION

Based on the above research findings, the following suggestions are put forward. First, regulators should guide beverage companies to further strengthen cost control and refine operational management. Research shows that operating costs have a significant negative impact on profitability. Therefore, policies can promote industry support for supply chain management, large-scale procurement, and intelligent manufacturing to help companies reduce cost pressures in production and distribution.

Second, companies should be encouraged to establish a reasonable linkage mechanism between R&D investment and capital expenditures. Although R&D may suppress profits in the short term, its long-term value cannot be ignored. Policymakers can use R&D subsidies, tax incentives, and innovation funds to guide companies to effectively transform R&D results into capital investment, improve R&D return efficiency, and avoid the “investment-loss” dilemma.

Third, financial markets should provide beverage companies with more flexible investment and financing support to promote the positive impact of investment returns on profitability. Specifically, by optimizing the equity financing environment and expanding debt financing channels, companies can be encouraged to actively engage in capital expenditures and diversified investments while maintaining financial stability, promoting a positive transmission chain from “investment returns to capital expenditures to profitability.”

Finally, attention should be paid to the resource disadvantages of small and medium-sized beverage companies and promote the development of differentiated support policies for the industry. The research results show that enterprise scale plays a regulatory role in the profit mechanism. Therefore, for small and medium-sized enterprises, the government can provide special financing support and brand building subsidies to help them improve their market expansion and cost control capabilities, thereby narrowing the profit gap with large enterprises and promoting the overall healthy development of the industry.

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