

## The Impact of Asset-Based Indicators on Operating Income: An Empirical Study for the China Communication Listed Companies

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### Abstract

*This essay takes 19 listed communication companies as the research sample, trying to explore the correlation coefficient and correlation between the assets financial indicators, intangible assets and operating income. Through regression analysis, the author finds that the total asset turnover ratio and total assets net profit are positively correlated with revenue. Furthermore, the effect is significant. Compared with the 19 listed companies' financial statements of 2015 and 2016, the total assets of 17 companies have increased significantly, but the total assets net profit and total asset turnover ratio of 16 companies have significantly decreased. Therefore, the hypothesis is that companies make use of earnings management through overstated assets, but the overstated assets cannot generate real revenue, and lead to the companies' total assets turnover ratio declined.*

**Key words :** *Listed communication companies, Assets financial indicators, Revenue, Empirical analysis, Earnings Management*

### I. Introduction:

The operating income of an enterprise is the financial data closely watched by the shareholders and stakeholders of the company. It is also the main operating result of the enterprise and an important guarantee for the profit of the enterprise.

According to the definition of assets in the "Accounting Standards for Business Enterprises - Basic Principles", assets refer to the resources formed by the past transactions or events of the company and owned or controlled by the company and are expected to bring economic benefits to the company. Therefore, the author assumes that there is a correlation between assets and total operating income or profits. The purpose of this dissertation is to study the correlation between asset-related financial indicators and operating income through the related asset indicators in the company's financial statements, and to determine the level of earnings management of sample firms based on the internal logic of financial indicators.

This paper selects 19 Chinese listed companies classified by the China Securities Regulatory Commission as the communications and related equipment industry. In order to exclude the impact of different asset sizes on the research, the total assets of the 19 sample companies selected range from RMB 3 billion to RMB 7 billion. Between the RMB exchanges (40 companies are in line with the classification of the CSRC's communications and related equipment industries, 26 are between 3 billion and 7 billion, and 19 are randomly sampled). Because this paper also tried to study the impact of intangible assets on operating income, the listed companies in the communications and related equipment industries with higher levels of intangible assets were selected as samples.

All the data in the paper is used data. The data comes from the company's annual reports for 2016 and 2016.

### II. Research ideas and methods:

Through the selected financial data of the 19 listed companies in the communications industry in 2016, we can find out which asset-based financial indicators are related to operating income. It is assumed that companies can manage surpluses through inflated assets, and total assets increase, but inflated. Assets cannot generate operating income, resulting in a decrease in total asset turnover. Comparing the changes in

the total and average values of the total assets of 19 companies in 2015 and 2016, and the changes in the average value of the total assets turnover rate, we can judge whether the company has performed earnings management through inflated assets.

III. Correlation and Regression Analysis of Relevant Indicators, Intangible Assets and Operating Income: Firstly, a correlation analysis was carried out on the four asset indicators (intangible assets, total asset turnover, total asset net profit, total asset growth rate) and intangible assets and total operating income (see Table 1). There are two significant coefficients that can be found from the table. One is the total asset turnover rate and total operating income, with a significant coefficient of 0.973; the other is total asset growth rate and total operating income, with a significant coefficient of 0.504. No significant correlation was found between the ratio of intangible assets and the financial indicators of assets and total operating revenue. It is generally believed that the total asset turnover rate reflects the operational capacity of the company. The higher the general total asset turnover rate, the stronger the company's asset utilization efficiency and sales ability. The growth rate of total assets reflects the growth capacity of enterprises. It is generally believed that the higher the growth rate of total assets, the faster the expansion of asset management scales in a certain period of time. Further, the total asset turnover rate and the total asset growth rate are selected as independent variables, and the operating income is used as the dependent variable for linear regression.

Table 1 Correlation coefficient between asset class financial indicators and operating income and intangible assets in 2016  
Correlation matrix

	2016 Intangible Assets Share	2016 Total Asset Turnover	2016 Total Assets Net Profit Margin	2016 Total Asset Growth Rate	2016 Total Operating Income	2016 Intangible Assets
2016 share of intangible assets	1.000	-.449	-.056	.255	-.422	.973
2016 total asset turnover	-.449	1.000	.331	-.234	.928	-.432
2016 total net profit margin	-.056	.331	1.000	.291	.504	-.006
2016 total asset growth rate	.255	-.234	.291	1.000	-.158	.294
2016 total operating income	-.422	.928	.504	-.158	1.000	-.368
2016 intangible assets	.973	-.432	-.006	.294	-.368	1.000

Table 3 Factor contribution rate of asset class financial indicators in 2016  
Summary of the illustrated variance

element	Starting feature value			Retrieving square sum and loading			Cyclic square sum loading		
	total	Variant %	accumulation%	total	Variant %	accumulation%	total	Variant %	accumulation%
1	2.280	45.601	45.601	2.280	45.601	45.601	2.244	44.874	44.874
2	1.417	28.335	73.936	1.417	28.335	73.936	1.453	29.062	73.936
3	.841	16.824	90.760						
4	.413	8.267	99.027						
5	.049	.973	100.000						

Table 3 shows the results of the factor contribution rate. Among them, only the eigenvalues of the first two factors are greater than 1, and the sum of their eigenvalues accounts for 73.936, so the first two factors can be extracted as the main factor.

Table 4 2016 rotated factor loading for financial indicators of assets

Rotating element matrix

	element	
	1	2
2016 the proportion of intangible assets	.180	-.629
2016 total asset turnover	.906	-.315
2016 Total Asset Net Profit Rate	.680	.574
2016 total asset growth rate	-.048	.782
2016 total operating revenue	.962	-.132

Table 4 shows the rotated factor loading values. The first factor has the strongest correlation with the total asset turnover rate. Therefore, the total asset turnover rate is used as the explanation for the first factor. The second factor is most relevant to the total asset net profit rate, so the total asset net profit rate will be as a representative of the second factor.

Table 5 Test Statistics of Asset-Based Financial Indicators Evaluation Model in 2016  
Model summary

model	R	R squared	Adjusted R-squared	Standard skewness error	Durbin-Watson
1	.930 <sup>a</sup>	.865	.848	66841.85205500881	2.182

Table 5 shows the test statistics of the evaluation model. The adjusted R-squared of this regression model is 0.865, indicating that the regression fit is very high, and Durbin-Watson is 2.182, indicating that there is no autocorrelation of the model residuals. This regression model is very good.

Table 6 Analysis of variance of financial indicators for assets in 2016

Variance analysis

model	sum of square	df	Mean square	F	Significant
1 regression	456323995346.965	2	228161997673.483	51.068	.000 <sup>b</sup>
residual	71485330978.299	16	4467833186.144		
total	527809326325.264	18			

Table 6 shows the results of the analysis of variance. In the analysis of variance, the F value is 51.068, and the Sig is 0.000, which is less than the significance level of 0.05. Therefore, it can be judged that the average financial turnover of the total assets and the total net profit rate are the average business of the listed companies in the telecommunications and related equipment industries. The ability to explain income is very significant.

Table 7 Regression coefficient

model	Non-standardized coefficient		Standardization coefficient	T	Significant
	B	Standard error	Beta		
1 (constant)	10418.655	28861.080		.361	.723
2016 total asset turnover	422873.967	40506.200	.855	10.440	.000
2016 Total Asset Net Profit Rate	.253	.093	.221	2.704	.016

From the coefficient table, the coefficients of the total asset turnover rate and the total asset net profit rate in the linear regression model are 422873.967 and 0.253, respectively, indicating that the increase in total asset turnover rate will drive the operating income of listed companies in the communications and related equipment industry to nearly 422,874 times. Increasing, the increase in the net profit margin of total assets can drive the increase of the operating income of the sample enterprises by 0.253 times, which shows and confirms the fact that the operating income of the communications company is highly correlated with its total asset turnover rate and total net profit margin. The total asset turnover rate and total asset net profit rate of the communications industry determine the income level of such enterprises. In addition, the T values of the total asset turnover rate and total asset growth rate in the linear regression model are 10.440 and 2.704, respectively, and the corresponding probability values are 0.000 and 0.016, respectively, indicating total asset turnover and total net assets. The positive correlation coefficient between the rate and the operating income is very significant ( $0.05 > 0.000$  and  $0.05 > 0.016$ ), which is not completely consistent with the results of the above analysis of variance, indicating that the operating income of the listed companies in the communications industry is affected by the total asset turnover. And the significant impact of total net profit margin.

Table 7 shows that Sig = 0.000, indicating that the regression coefficient is significant.

Comparing the total assets and total asset turnover rate of 19 selected sample companies in 2015 and 2016, the total assets in 2016 increased significantly and the average value increased by 16.4%, and the average value also increased by 16.4%. The average asset turnover rate fell by 34.05%, the total operating income

increased by 15.4%, and the average value increased by 15.4%. In line with the previous assumptions, there are reasons to suspect that 19 listed companies have inflated their assets, because the total assets, whether they are the sum or the average, increase significantly, at 16.4%, but the inflated assets cannot create operating income, so the total assets in 2016 The average turnover rate has decreased by 34.05%.

#### **IV. Conclusion:**

This paper firstly conducts an empirical analysis of the four asset class indicators and intangible assets and operating income of 19 listed companies in the communication category. Through correlation analysis and factor analysis, it finds the total asset turnover rate and total net profit margin and total net profit margin in 2016. There is a clear positive correlation with operating income. Under the same conditions, the total asset turnover rate and the total asset net profit rate will increase by 1 unit, and the operating income will increase by 422,874 times and 0.253 times, of which the value of 422,874 actually reflects the average level of total assets of 19 listed companies in the communication industry.

Secondly, suppose that enterprises can manage earnings through inflated assets, but the inflated assets cannot generate operating income, so the asset turnover rate will drop significantly. By comparing the financial data of the total assets and total asset turnover of 19 communication-listed companies in 2015 and 2016, it was found that the assumptions were met, and there was reason to suspect that the company had managed earnings through the inflated assets.

#### **Conflict of interests**

The author has not declared any conflict of interests.

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