

# Research on Earnings Management Behavior Identification and Motivation of Goodwill Impairment—Taking Century Huatong as an Example

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**Abstract:** The formation of huge goodwill provides a good "cover" for enterprise management to carry out earnings management. Listed companies can create a huge amount of goodwill with the help of high premium mergers and acquisitions, and in order to achieve the goal of positive earnings management, they may intentionally choose to delay the provision of goodwill impairment. On the other hand, goodwill impairment may also become a means for management to carry out negative earnings management, especially in the case of poor short-term business performance and decline in performance, but the overall sustainable profitability has not been changed. Therefore, it is necessary to adopt appropriate methods and models to determine whether an enterprise has earnings management behavior under different circumstances<sup>[1]</sup>. Based on this, through the in-depth analysis of the relevant financial data of Century Huatong Company, the accrual profit separation method is used to identify the degree of earnings management, and the obvious earnings management motivation is revealed in the formation of goodwill and the timing of goodwill accrual. At the same time, it is found that the provision of goodwill impairment is also affected by earnings management motivation. These earnings management behaviors may cover up the real business situation of the enterprise, which has an adverse impact on investors who do not know the inside information<sup>[2]</sup>.

**Keywords:** Earnings management, goodwill impairment, Century Huatong

## 1. Introduction

In recent years, the manipulation of accounting earnings by listed companies in China has occurred frequently, and earnings management is also a hot topic discussed by scholars at home and abroad. Due to the lack of quantification standards of relevant provisions on goodwill impairment and earnings management in accounting standards, the management authorities have greater autonomy in the selection of accounting policies and actual operation, and enterprises can realize the choice of maximizing their own interests<sup>[3]</sup>. Earnings management may be based on real transactions and business activities, and managers adjust or control accounting income information according to accounting standards to maximize their own interests. For example, by adjusting the proportion of accounts receivable bad debt provisions, the accumulated depreciation amount of fixed assets, etc. Although the current accounting data is changed, based on the basic accounting assumption that the enterprise will continue to operate, there is no difference for the entire existence of the company. In addition, management may change the earnings situation through business manipulation of real transactions, changing the timing, nature, and structure of real business activities. Management carries out earnings management by changing real transactions, which may no longer be the optimal choice for the enterprise and will bring corresponding costs. In short, the real earnings management activities deviate from the normal business activities of enterprises, which may mislead some stakeholders to misunderstand the figures in financial reports. Therefore, how to judge the degree of earnings management of listed companies, identify their earnings management motives, and find out the countermeasures and suggestions to effectively control the rational use of earnings management from the source are urgent problems to be solved. Therefore, in-depth research on earnings management is very important.

## 2. Case overview

### 2.1. Case Company profile

Zhejiang Century Huatong Co., Ltd. was founded in 2005 and successfully listed in Shenzhen Stock Exchange in 2011. With years of continuous development and growth, it has become the leading game industry in China. With the introduction of the policy of vigorously developing the cultural industry, the integration of digitalization and intelligence has been further deepened, and the game industry has ushered in the "dividend" of development. From 2016 to 2020, the average annual operating income of the game industry has reached 200 billion yuan. At present, China's game industry has a large number of online users, and the economic benefits brought by the game industry have become an important source of profit for China's Internet industry. However, the rapid development of the Internet, as a high-return industry rookie, the game industry has to keep pace with The Times, a number of game leaders have adopted a diversified business strategy, a large number of mergers and acquisitions of enterprises, the current century Huatong through the merger of its game companies have Shengyue Network, Day You, seven cool, Dot Interactive and so on. In addition, the automotive plastic products of Century Huatong also have a good reputation. Century Huatong proposed that it will continue to explore in the game sector in the future, complete the transformation and upgrading of the whole industry chain of the game, and establish a green, harmonious and shared game ecosystem.

### 2.2. Merger and acquisition and the process of goodwill generation

In recent years, in the context of the slowing down of the development of the game industry, in order to promote the standardized development of the game industry and prevent minors from becoming addicted to games, the government has formulated relevant restrictive policies on minors entering the game industry. These series of regulatory policies have had a great impact on the profitability of the entire game industry. In this context, since 2014, Century Huatong has gradually acquired a number of game companies, including Shanghai Tianyou, Seven Cool Network, Diandian Interactive, Shengyue Network, and so on, becoming a huge goodwill body of more than 10 billion yuan. It can be seen from Table 1 that great changes have taken place in the scale and main business of Century Huatong through continuous absorption and merger, from the initial auto parts to game development and related services. The specific acquisition time and amount of goodwill increase are shown in Table 1.

Table 1: Time of merger and acquisition and added value of goodwill of Century Huatong.

Acquisition completion time	Acquired party	Share	Increase in goodwill (10000 yuan)
2014	Tianyou Network	100%	75904.75
2014	Qiku Network	100%	74434.09
2015	Xiamen Fun Tour	100%	29255.4
2017	Context interaction	51%	13733.89
2018	Diandian Beijing	100%	391.78
2018	Diandian Cayman	60%	519250.81
2019	Shengqu Game	100%	711849.19

## 3. Case study

### 3.1. Earnings management behavior identification and analysis

There are many ways for enterprises to achieve earnings management, which can be judged and measured by specific accruals method, accrual profit separation method and earnings distribution method. Specific accruals method is for a specific industry or project to carry out in-depth research, suitable for the industry with large maneuverability. Therefore, this method is not adopted in this paper. However, the earnings distribution method needs a large amount of sample data from the overall perspective of the industry, which is suitable for the study of the overall overview of the industry, but not suitable for the analysis of the earnings management degree of a single enterprise. The accrual separation method mainly divides the total profit of an enterprise into non-manipulative accruals (NDA) and manipulative accruals (DA) through a selected regression model, and finally obtains the manipulative accruals by calculating the results of the total accruals and non-manipulative accruals, which is used to measure the degree of earnings management of the enterprise.

3.1.1. Model selection

At present, the main models that use accrual profit separation method to measure the degree of earnings management of enterprises include Jones model, Modified Jones model and Healy model, among which Modified Jones model is an extension and improvement on the basis of Jones model. The Modified Jones model is the most stable model in terms of its variable setting, model setting and ability to separate controllable accruals. Therefore, the Modified Jones model is adopted in this paper to analyze the degree of earnings management of the goodwill impairment case of Century Huatong Merger and acquisition. The calculation formula of this model is as follows, and the definition of variables is shown in Table 2.

$$TA_{i,t} = NI_{i,t} - CFO_{i,t} \tag{1}$$

$$\frac{TA_{i,t}}{A_{i,t-1}} = b_1 \frac{1}{A_{i,t-1}} + b_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} + b_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \epsilon_{i,t} \tag{2}$$

$$NDA_{i,t} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} \tag{3}$$

$$DA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - NDA_{i,t} \tag{4}$$

Table 2: Variable names and definitions.

Variable Name	Variable Definition
i	Sample company, namely Century Huatong
t	Select Year
$NI_{i,t}$	Net profit of sample company in period t
$CFO_{i,t}$	Net cash flow generated from operating activities of the sample company in period t
$\Delta REV_{i,t}$	The increase in operating revenue of the sample company in the T period
$\Delta REC_{i,t}$	The increase in accounts receivable of the sample company in period t
$PPE_{i,t}$	Fixed assets of the sample company in period t
$\epsilon_{i,t}$	Residual of the selected model
$A_{i,t-1}$	Total assets at the end of the year for the t-1 period of the sample company
$NDA_{i,t}$	Non manipulative accrued profit for period t after standardization treatment
$DA_{i,t}$	Manipulative accruals

3.1.2. Calculation procedure

First of all, it is necessary to subtract the net profit of the company in period t from the net flow generated by the company's business activities in period t according to formula (1) to obtain the value of the total accrual profit. Secondly, formula (2) is used to calculate the estimated coefficients of parameters b1, b2 and b3, and then the obtained coefficient values are put into formula (3) to calculate the non-manipulative accrual profit of the company in the current year. In this formula, in order to eliminate the economic consequences caused by the difference in company size, the residual error of the model is expressed with  $\epsilon$ , and the processing formula is standardized. Finally, according to formula (4), the total accrued profit obtained is subtracted from the value of non-manipulative accrual NDA to obtain the value of manipulative accrual DA. The DA value is usually used to judge and identify the degree of earnings management. Table 3-5 shows the calculation results obtained by stata16 in the above process.

Table 3: Accrued profit of Century Huatong  $TA_i$ , calculated results.

Company i	Year t	Net profit $NI_{i,t}$ (Yuan)	Net cash flow from operating activities $CFO_{i,t}$ (Yuan)	Total accrued profit $TA_{i,t}$ (Yuan)
Century Huatong	2022	-7,084,229,150	1,490,840,726	-8,575,069,876
Century Huatong	2021	2,534,245,064	890,440,514	1,643,804,550
Century Huatong	2020	2,972,631,994	3,173,650,846	-201,018,852
Century Huatong	2019	2,735,489,496	2,178,304,329	557,185,167
Century Huatong	2018	961,559,617	930,049,465	31,510,151
Century Huatong	2017	784,657,966	198,883,096	585,774,869
Century Huatong	2016	507,204,971	713,769,227	-206,564,255
Century Huatong	2015	410,154,220	476,859,520	-66,705,300
Century Huatong	2014	211,121,843	245,450,357	-34,328,514

Table 4: Calculation results of non-manipulative accrual profit of Century Huatong  $NDA_{i,t}$ .

Company i	Year t	Increase in operating revenue $\Delta REV_{i,t}$	Increase in accounts receivable $\Delta REC_{i,t}$	Fixed assets at the end of the year $PPE_{i,t}$	Total assets at the end of the previous year $A_{i,t-1}$	Non manipulative accruals $NDA_{i,t}$
Century Huatong	2022	-2,453,880,672	-698,406,888	1,245,205,803	40,642,561,548	0.0011236
Century Huatong	2021	-1,053,958,314	-482,825,922	1,477,727,923	42,746,834,578	0.0027379
Century Huatong	2020	293,249,399	149,766,364	1,216,857,360	32,359,117,092	0.0037665
Century Huatong	2019	6,565,718,539	2,196,824,121	1,227,822,189	16,746,036,368	0.0178262
Century Huatong	2018	4,633,175,442	422,996,897	1,152,647,192	6,413,770,003	0.0443985
Century Huatong	2017	34,919,213	182,716,566	1,182,708,039	5,503,922,349	0.0193541
Century Huatong	2016	430,074,989	-19,380,875	1,090,569,353	5,070,809,923	0.0241709
Century Huatong	2015	1,313,597,380	167,640,393	1,027,872,495	4,198,877,742	0.0346611
Century Huatong	2014	484,798,877	132,926,514	967,935,984	2,070,523,251	0.0515951

Table 5: Calculation results of Century Huatong's manipulative accruals  $DA_{i,t}$ .

Company i	Year t	Total accrued profit $TA_{i,t}$	Non manipulative accruals $NDA_{i,t}$	Manipulative accruals $DA_{i,t}$
Century Huatong	2022	-8,575,069,876	0.0011236	-0.2121111
Century Huatong	2021	1,643,804,550	0.0027379	0.0357166
Century Huatong	2020	-201,018,852	0.0037665	-0.0099786
Century Huatong	2019	557,185,167	0.0178262	0.0154464
Century Huatong	2018	31,510,151	0.0443985	-0.0394856
Century Huatong	2017	585,774,869	0.0193541	0.0870745
Century Huatong	2016	-206,564,255	0.0241709	-0.0649069
Century Huatong	2015	-66,705,300	0.0346611	-0.0505475
Century Huatong	2014	-34,328,514	0.0515951	-0.0681747

3.1.3. Result analysis

In order to make a detailed analysis of the operational accruals of Century Huatong Company more intuitively, the non-operational accruals NDA and manipulative accruals DA data of Century Huatong Company from 2014 to 2022 are compared in the above table, and the following line figure 1 is drawn, as well as the absolute change line figure 2 of the manipulative accruals DA.

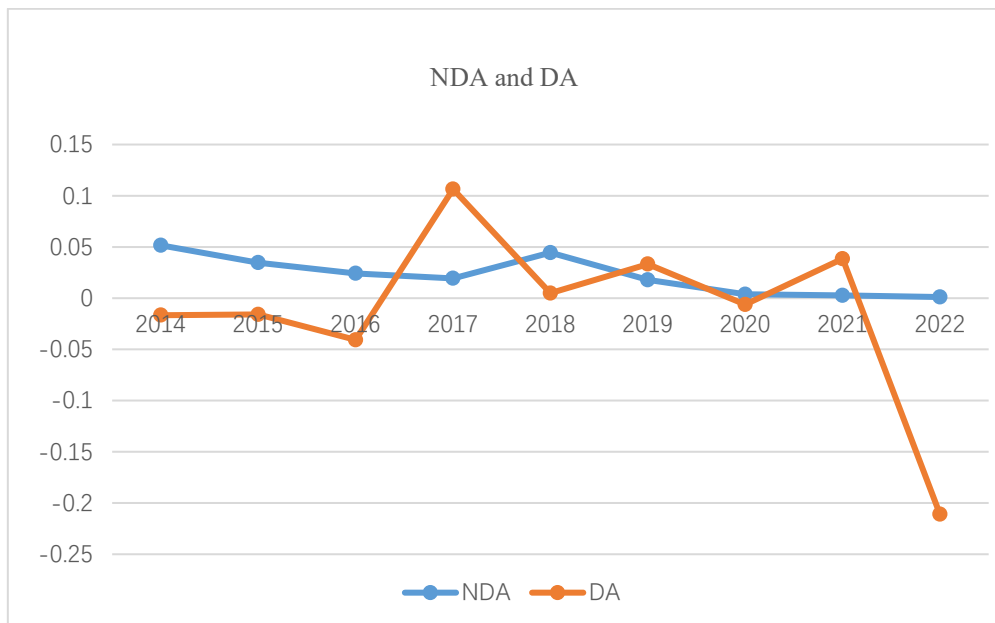


Figure 1: Change chart of non-manipulative accruals and manipulative accruals of Century Huatong.

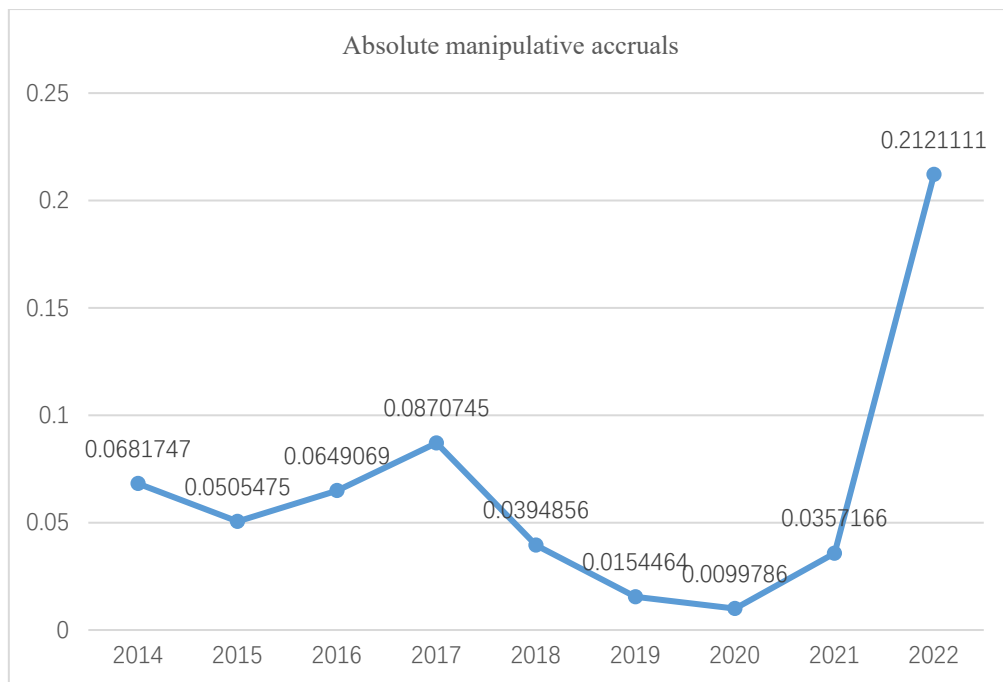


Figure 2: Absolute change chart of controllable accruals of Century Huatong.

According to the results in Figure 1-2, the NDA value of non-manipulative accruals of Century Huatong shows a steady trend with little fluctuation, while the value of manipulative accruals DA changes significantly, which can be mainly divided into two stages: The first stage, the value of manipulative accruals DA increased significantly from 2015 to 2017, reaching the maximum value of 0.087 in 2017; The increase from 0.05 in 2015 to 0.087 in 2017 indicates that Century Huatong may implement earnings management before impairment to make the current profit rise rapidly and implement positive earnings management. In the second stage, the absolute value of the discretionary accruals DA continued to decline after 2018 and fell significantly. In 2022, the decline was larger, from 0.035 to -0.212, which was also the highest absolute value of the discretionary accruals since the listing. It shows that Century Huatong adjusted the profit in the period of impairment, and there is obvious reverse earnings management motivation.

From the overall change trend of the accrued profit of Century Huatong controllable, it can be seen that Century Huatong controllable. The value of accrued profit DA is basically consistent with the time point at which the increase in the amount of M&A goodwill in 2015 delayed the provision of goodwill and the impairment of goodwill in 2022 occurred. Century Huatong's acquisition of various game companies in 2015 formed a huge goodwill, and by 2022, Century Huatong's performance was thunderous, with a net profit loss of up to 7 billion yuan, which became the first loss of the company since its listing. If the amount of goodwill impairment calculated in 2022 is not included in the profit calculation, it will have a greater impact on the net profit of the year. Although the net profit is also negative, the amount of loss is still within a reasonable range, and the amount of goodwill impairment has a greater impact on the surplus of the year. It can be seen that the earnings management behavior and motivation of Century Huatong in the process of merger and acquisition and the process of deducting goodwill impairment are relatively obvious. Therefore, it is very likely that the goodwill impairment of Century Huatong is provided for the motivation of earnings management.

### 3.2. Century Huatong earnings management motivation analysis

#### 3.2.1. Deferred impairment of goodwill under the betting agreement

In order to form a certain scale effect and strengthen synergies, Century Huatong acquired Shengyue Network in 2018, and it can be known from the transaction plan announced by Century Huatong that the company valuation of Shengyue Network is as high as 31 billion yuan, and cash and equity are used to pay. At the same time, in the betting agreement signed, the performance commitment compensation clause is agreed. In this merger and acquisition, the agreed compensation period is 2018, 2019, 2020, a total of three years, and its performance commitments are 2135.75 million yuan, 2494.35 million yuan and 2967.89 million yuan, as shown in Table 6 below. If the performance commitment is not fulfilled in

a certain year during the performance period, that is, the performance commitment is lower than the agreed performance, and the performance pledge party shall perform compensation business to Century Huatong. The completion of M&A performance commitments is as follows: Although the completion rate is relatively high, careful observation shows that the completion performance is almost all "stepping on the line" over the performance commitments and just in line with the agreed performance commitments. After the end of the performance commitment period, the operating income of Century Huatong in 2021 and 2022 declined rapidly, respectively, to -1.053 billion yuan and -24... 5.3 billion yuan. The change in operating income from positive to negative indicates that there may be moisture in the previous performance completion. There are traces of impairment in the M&A asset group, but in order to fulfill performance commitments, it chooses to delay the recognition of goodwill impairment and carries out positive earnings management.

Table 6: Fulfillment of Shengyue network performance commitments.

Year	Committed net profit (10000 yuan)	Realized net profit (10000 yuan)	Completion rate
2020	296,789	298,577	100.21%
2019	249,435	250,186	100.30%
2018	213,575	214,017	100.60%

### 3.2.2. Write off "huge results" to pave the way for next year's profits

Century Huatong had not provided for the impairment of goodwill accumulated from multiple mergers and acquisitions before 2022, but it suddenly provided for a large amount of goodwill impairment in the fourth quarter of 2022. The rationality of choosing to provide for a large amount of goodwill impairment at this point in time is doubtful, and there may be over-recognition of the loss of the year. The Shenzhen Stock Exchange also issued a letter of inquiry on this issue, asking Century Huatong to explain the rationality of this issue, as well as the reasons for the decline in net profit for two consecutive years, whether there is the use of the current market environment to make large impairment provisions for performance "big bath" behavior. Century Huatong replied that the goodwill impairment and long-term equity investment impairment initiated at the end of 2022 are prudent and reasonable, in line with the provisions of the Accounting Standards for Enterprises, and there is no use of large impairment provisions for performance "bath" behavior, saying that the pace of game development and issuance has slowed down due to the impact of the epidemic and the release schedule. And carried out some personnel optimization. Through comparison, it was found that Century Huatong's 2022 annual report showed that its operating income and net profit were significantly reduced, including a net profit loss of up to 7 billion, which became the first loss of the company since its listing.

According to the Century Huatong 2022 annual report, it can be found that the real cause of the rapid decline in the company's performance may not be affected by the overall environment of the development of the entire game industry, and large asset impairment is the main reason. As shown in Table 7, the huge goodwill formed by constant mergers and acquisitions from 2014 to 2022, before which Century Huatong had never made a provision for goodwill impairment for the game business asset group. Therefore, the large amount of goodwill impairment disclosed in 2022 is quite sudden. The company did not choose to reserve for goodwill impairment when the net profit declined in 2021, but in the case of the profit in the first three quarters of 2022, a large amount of goodwill impairment provision was made in the fourth quarter, and the goodwill impairment loss of 5.428 billion yuan all came from the game business asset group. The company made a one-time provision for asset impairment of 6.523 billion yuan, of which goodwill impairment accounted for 5.428 billion yuan, resulting in a full-year loss of 7.092 billion yuan as shown in Table 7 below. The one-time provision of high goodwill impairment may pave the way for higher profits in the coming year, ease the performance pressure in the coming year, and carry out reverse earnings management.

Table 7: Provision for asset impairment in 2022.

Provision for asset impairment in 2022	Impairment category	Amount (100 million yuan)	Proportion (%)
	Impairment amount of goodwill	54.28	0.832
Impairment of long-term equity investments	7.1	0.109	
Impairment of long-term deferred expenses	2.04	0.031	
Impairment of fixed assets	1.43	0.022	
Impairment of intangible assets	0.15	0.002	
Impairment of contract assets	0.11	0.002	
Impairment of other assets	0.09	0.001	

#### 4. Conclusion and enlightenment

Under the background of the rising tide of mergers and acquisitions in the capital market, the phenomenon of huge goodwill generated by high premium acquisitions is followed by a large number of write-offs. It can be seen that the root cause of goodwill cancellation lies in the existence of goodwill. In addition, the timing of the generation of goodwill and its recognition may hide motivations related to earnings management, which can be measured by applying appropriate methods and models to measure the extent of earnings management in a firm. The causality analysis shows that the impairment of acquired goodwill is affected by the earnings management motive, which confuses the real business situation of the enterprise and damages the interests of uninformed investors. Then, for the company level, the implementation of earnings management is only a "delay measure", which may bring more serious impact. Therefore, in the process of merger and acquisition, the target company must be carefully valued and prudently acquired, so as to reduce the risk of goodwill impairment caused by excessive premium and enrich the content of the acquisition agreement. In the formulation and supervision of accounting standards, it is very important to optimize accounting standards and introduce specific and unified standards to curb earnings management behavior of enterprises, such as standardizing the goodwill impairment process. At the same time, through clear punitive regulatory laws and regulations to strengthen supervision, combined with accounting standards, to minimize the impact of goodwill impairment on earnings management. For investors, a comprehensive awareness of investment risk is essential to maximize their own interests.

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