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Can analysts see through goodwill bubbles? The impact of goodwill on analysts' forecasts

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ABSTRACT

In recent years, the amount of goodwill has been increased dramatically and become one of the difficult problems in academic and accounting practice. This paper focuses on the impact of goodwill on analysts' forecasts. It is found that goodwill can increase the optimism and decrease the accuracy of analysts' forecasts because of its low quality. Goodwill recognised initially in bull market or from the M&A without founder-chairman or founder-CEO contains more bubbles and tends to be lower quality. The more the bubbles, the larger the optimism or the errors of analysts' forecasts. In order to exclude the alternative explanations, we also, respectively, take cross-sectional tests to control the number of analysts, the number of star analysts, and whether there is M&A in year t , and then further examine the dynamic changes between goodwill and analysts' forecasts.

KEYWORDS

Goodwill; goodwill bubble; analysts' forecast; bull and bear market; founder-management

1. Introduction

In a business combination under non-common control, the difference between the combination cost and the share of fair value of identifiable net assets of acquiree shall be recognised as goodwill. If performance of acquiree cannot meet expectations after combination, the goodwill may be impaired to reflect its true value. Recently, with the pressure of economic transformation and the upgrading of industrial structure, growth of enterprises based on internal accumulation has encountered bottlenecks and more and more enterprises tend to adopt the strategy of external expansion through merges and acquisitions (M&As). Chinese government has issued some policies which encourage M&As. With the roaring of M&As, the goodwill has increased dramatically. The total amount of net goodwill of A-share listed companies increased from RMB 37.6 billion in 2007 to RMB 1454.6 billion in 2018.

Goodwill is a valuable asset that can bring excessive profits to company in the future (Du et al., 2011; Ge, 1996) and reflects company's comprehensive strength. But there is no denying that some overpriced M&As have created goodwill bubbles and failed to meet the profits as expected in M&As. If an acquirer overestimates synergistic effect from integrating resources of acquirer and acquiree, thus paid a higher price for acquiree,

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there will be goodwill bubbles (Chen et al., 2018; Guo & Huang, 2020). Goodwill bubble is also defined as excess goodwill in some studies (Wei & Zhu, 2019). In this paper, we do not distinguish between goodwill bubbles, excess goodwill and quality of goodwill and treat them as the same.

The goodwill bubbles may inflate financial statements, send a false signal to the capital market and push up the stock price (Chen et al., 2018; Du et al., 2011). From 2014 to 2018, there were 109 cases punished by the China Securities Regulatory Commission (CSRC) along with the Shanghai Stock Exchange or the Shenzhen Stock Exchange due to problems in recognition of goodwill or goodwill impairment. The most common problem in these cases is overestimation of goodwill.¹ Goodwill bubbles have attracted extensive attention of investors, regulators and accounting standards setting organisations. The International Accounting Standards Board (IASB) launched the Goodwill and Impairment Project in 2015 which lasted for five years. The Discussion Paper was reported until March 2020. The Discussion Paper of IASB acknowledged that investors have not got enough information of goodwill and the consequences of M&A. In 2018, the CSRC issued the *Notice No.8 on Accounting Regulatory Risk – Goodwill Impairment* to regulate the disclosure of goodwill.

With the booming growth of goodwill and accumulation of goodwill bubbles, the information of goodwill may have a negative impact on decision-making of market participants. As the information media between companies and investors, analysts play an important role in the information transmission and have a significant impact on investors' decisions (Wang et al., 2021). Effective analysts' forecasts can provide market participants with information which is value-relevant. Goodwill is important information that analysts may use to make forecasts (Ayres et al., 2019; Chen et al., 2015). Better understanding on goodwill and accordingly issuing more accurate forecasts can increase market efficiency and alleviate the information asymmetry between investors and companies. But if analysts make optimistic forecasts based on overvalued goodwill, it will mislead investors to overestimate the value of the company and reduce the market efficiency. However, the current studies on the economic consequences of goodwill mainly focus on the impact of goodwill on the behaviour of investors or auditors and few investigate the impact of goodwill on analysts' forecasts. Chen et al. (2015) and Qu et al. (2016) are most relevant to this topic. Both of them study the impact of goodwill impairment (rather than goodwill) on analysts' forecasts.

Different from these two papers, this study focuses on the impact of goodwill rather than the impact of goodwill impairment. Although goodwill and goodwill impairment are related, there are critical differences between them and the mechanisms by which they influence on information users are also completely different. First, goodwill loads and conveys different information from goodwill impairment. Goodwill is an asset and its theoretical value should equal to the discounted value of future cash flows that it can bring to the company in a long period. That is, goodwill should reflect company's future excess profitability, while goodwill impairment, an item in income statement, will reduce company's net income. Obviously, the impact of balance sheet items on the company's

¹The statistics is based on data from Yidong Data Platform. There were 360 cases punished by CSRC and the Shanghai or the Shenzhen Stock Exchange due to the items in balance sheet from 2014 to 2018, among which 109 cases were punished for misrecognition of goodwill or goodwill impairment.

future cash flows is much higher than income statement items. Therefore, goodwill and goodwill impairment convey different information to analysts. Second, many companies have goodwill, but have no goodwill impairment. Theoretically, there is no necessary correlation between the net amount of goodwill and goodwill impairment. If M&A is a good buy for acquirer, the goodwill generated from M&A may be high but has no bubbles. On the contrary, if the goodwill is inflated and the performance of acquiree is much lower than expected, an impairment should be recognised even if only a small amount of goodwill is recognised in M&A. Will the quality of goodwill affect analysts' forecasts? If yes, to what extent? Current literatures on goodwill impairment give no answers to these questions. Third, goodwill impairment is usually involved in earnings management. In practice, companies tend either not to recognise impairment or to take a big bath (Qu et al., 2016). Goodwill is different from goodwill impairment and its amount is not necessarily related to earnings management. Besides earnings management, managers' optimistic tendency or overconfidence can also lead to goodwill bubble. To sum up, analysts can obtain different information from goodwill and goodwill impairment, and the path by which they impact on analysts' forecasts is different.

Theoretically, goodwill, as one of important asset items, is highly uncertain and difficult to be verified (Ramanna, 2008; Ramanna & Watts, 2012). Can analysts see through the quality of goodwill? Even if analysts realise that there are bubbles in goodwill, it is difficult for them to accurately estimate the degree of bubbles contained in goodwill. Thus, analysts may make optimistic and inaccurate earnings forecasts based on overvalued goodwill. Of course, different from common information users, analysts spend more energy on analysing the value of goodwill and they have more professional knowledge and experience (Huang et al., 2018). If analysts could fully 'see through' the goodwill and estimate the degree of goodwill bubbles, the quality of goodwill will not significantly affect analysts' forecasts. Therefore, it is an empirical question to be investigated.

The quality of goodwill is extremely difficult to be identified. A larger amount of goodwill from an M&A with high premium does not necessarily imply more bubbles and while a small amount of goodwill from an M&A with low premium may be seriously inflated. We attempt to measure the quality of goodwill from two dimensions: the situation or the trend of capital market when goodwill is recognised (bull or bear market) and whether company's founder is chairman of the board or CEO. We find that: (1) Goodwill can intensify optimistic bias and reduce accuracy of analysts' forecasts. (2) The reason why goodwill has negative impact on analysts' forecasts is that goodwill has bubbles and analysts cannot see through the quality of goodwill. When the goodwill is overvalued (that is, the quality of information is lower), such as when a higher proportion of goodwill is recognised in bull market or when there is no founder-management, analysts' forecasts are more optimistic and less accurate. These conclusions remain robust after further excluding the alternative explanations such as analysts' motivation, the impact of M&A events and endogeneity.

The contributions of this study lie in several aspects: First, this paper studies the impact of goodwill other than goodwill impairment on analysts' forecasts, which expands literature on goodwill. Some scholars have studied the impact of goodwill on investors, auditors and stock price (Yang et al., 2018; Ye et al., 2016), but there is no study on the impact of goodwill on analysts' forecasts. Second, the measures of goodwill quality are

limited, which hinders empirical research on goodwill. We measure the quality of goodwill from the perspective of whether the founder is chairman or CEO, which provides new angle to measure the quality of goodwill. Third, our findings enrich the research on analysts' forecasts. Previous studies on analysts' forecasts mostly focus on the motivations of analysts (Brown et al., 2015; Cao & Zhu, 2011; Chu et al., 2019; Hong and Kubik, 2003; O'Brien et al., 2005; Xu et al., 2012; Zhao et al., 2013) and the impact of earnings quality on analyst's forecasts (Behn et al., 2008; Lehavy et al., 2011). This paper explores the effect of goodwill quality on analysts' forecasts and finds that even analysts cannot see through the quality of goodwill. Fourth, our conclusions also have important implications for capital market participants. Investors should understand that analysts' forecasts based on goodwill may have larger errors. The accounting standards setting organisations should consider how to improve information quality of goodwill and regulators are expected to strengthen supervision on the quality of goodwill.

The rest of this paper is organised as follows: [Section 2](#) is literature review, theoretical analysis and hypothesis development; [Section 3](#) introduces the research designs; [Section 4](#) presents the main empirical results; [Section 5](#) is further analysis and robustness tests, and [Section 6](#) concludes.

2. Literature review, theoretical analysis and hypotheses development

The economic consequence of goodwill has been a hot issue since amortisation method was replaced by impairment method in the subsequent measurement of goodwill. Most literatures on goodwill focus on three topics. The first is the connotation and accounting treatment of goodwill (Du et al., 2011; Ge, 1996; Johnson & Petrone, 1998; Y. Li et al., 2010; J. Lu & Wang, 2018; Zhao, 1997). The second is the factors which influence goodwill (K. K. Li & Sloan, 2017; D. Li et al., 2018). The third is the economic consequences of goodwill, including the impact of goodwill on information transparency (Wang et al., 2017), companies' performance (Chauvin & Hirschey, 1994; Wei & Zhu, 2019; Zheng et al., 2014), risk of stock price collapse (Yang et al., 2018), auditors (Ye et al., 2016; Zheng & Li, 2018) and investors (Yang et al., 2018). These studies find that the uncertainty of goodwill reduces companies' information transparency, harms companies' future performance, intensifies the risk of stock price crash, increases auditors' conservatism and audit costs. However, the impact of goodwill on analysts' forecasts remains an untested issue.

Theoretically, there are two main factors affecting the optimism and the accuracy of analysts' forecasts: the effectiveness of forecasts and the information quality used by analysts. The effectiveness of analysts' forecasts will be damaged by opportunistic behaviours. Analysts may deliberately release optimistic forecasts to please brokerage houses which have relationship with them (Brown et al., 2015; Cao & Zhu, 2011; Hong & Kubik, 2003; O'Brien et al., 2005), catering to institutional investors (Xu et al., 2012), maintaining a good relationship with companies' management (Das et al., 1998; Francis & Philbrick, 1993; Lim, 2001), obtaining private information (Zhao et al., 2013) and grabbing higher commission (Chu et al., 2019). In addition to the effectiveness of forecasts, the quality of the information used by analysts also has an impact on the accuracy of their forecasts. Bias in information would cause systematic errors of analysts' forecasts (Behn et al., 2008; Lehavy et al., 2011). When the amount of goodwill is large and the quality of goodwill is lower, the accuracy of analysts' forecasts may be damaged.

Compared with other assets in the balance sheet, goodwill has the following properties. First, goodwill is hard to be verified. The identification of goodwill is different from other intangible assets. To recognise or measure goodwill, the cash-generating unit to which goodwill belongs must be determined. The estimation of fair value of identified assets in the unit is difficult. Goodwill is the difference between the total fair value of cash-generating unit as a whole and the fair value of identified assets. That is, the goodwill is a 'residual' which can be regarded as a waster bin to hold all unrecognised or difficultly recognised items and estimate errors in both M&A year and subsequent fiscal years after M&A. So, it is difficult to identify and verify what kinds of unrecognised assets are contained in goodwill and what their values are. The inherent opaque of goodwill intensifies information asymmetry between companies and analysts. Second, current accounting standards leave much to the discretion of management in goodwill recognition and impairment (Li & Sloan, 2017; Ramanna, 2008; Ramanna & Watts, 2012), which provides an opportunity for management to manipulate goodwill. Specifically, managers generally tend to overestimate goodwill (Du et al., 2011; Jensen, 2005).

Goodwill is one of important inputs used by analysts to make their forecasts (Ayres et al., 2019; Chen et al., 2015). Due to the unverifiability and the opaque of goodwill, analysts find it difficult to fully identify degree of goodwill overvaluation and to judge impairment risk of goodwill. Given analysts cannot see through the quality of goodwill, their forecasts tend to be optimistic even if they have no opportunistic motivation. Optimism will reduce the accuracy of forecasts. We thus propose the following hypothesis:

H1: Goodwill increases the optimism and reduces the accuracy of analysts' earnings forecasts.

Goodwill is the difference between the consideration paid by acquirer in M&A and the fair value of acquiree's identifiable net assets (acquisition premium, hereafter). The inflated acquisition premium of M&A is the source of goodwill bubbles. First, during the hot wave of mergers and acquisitions in Chinese capital market, a huge amount of capitals compete for high-quality assets, pushing up the assets price. When these assets are injected into listed companies, the stock prices of acquirers are inflated further. Bull market offers a hotbed of such a cycle than bear market. Overestimated price and premium of assets are eventually reflected in book value of goodwill and goodwill bubbles accumulate in this cycle (Hu & Li, 2019; Lin et al., 2017). Second, in bull market, the stock price is more likely to be overvalued, and companies would conduct more M&As and tend to pay with stock (Hu & Li, 2019; Jensen, 2005; Shleifer & Vishny, 2003). The overvaluation of acquirer's stock price reduces actual cost paid by acquirer and reduces acquirer's incentives and efforts to bargain with acquiree. The stock price bubbles will eventually be transmitted to goodwill through M&A, forming goodwill bubbles. Third, chasing hot concepts and hyping hot topics have always been a fashion in M&As and such a fashion is even hotter in bull market. Some irrational acquirers which are not driven by achieving synergy underestimate M&As' risks. After large amount of goodwill is recognised, the performance of acquiree is difficult to meet expectations (Lin et al., 2017). Therefore, goodwill bubbles are symbiotic with bull market in which goodwill is recognised initially.

The 'house money effect' and 'overconfidence' provide another explanation for goodwill bubbles. The 'house money effect' is developed by Thaler and Johnson (1990) based on the famous prospect theory (Kahneman & Tversky, 1979). According to this theory, the profits gained in the early stage have a buffering effect on the losses in the later stage, thus weakening the degree of investor's aversion to losses and increasing his willingness to take greater risks. *Vise versa*, the losses in the early period will enhance investor's aversion to losses and risks. Therefore, asset price rising in bull market will reduce investors' aversion to losses and risks (Barberis et al., 2001). The house money effect is amplified by overconfidence. Because of attribution bias, investors who make good investments tend to overestimate their ability and to be more overconfident. Compared with the bear market, investors tend to be overconfident during bull market because they are inclined to attribute profits brought by the rise of whole market to the own ability, which leads to their lower risk aversion (Gervais & Odean, 2001). According to the hypothesis of 'house money effect' and 'overconfidence', investors in bull market are less averse to risks and losses, more optimistic about future, more sensitive to positive information, and thus more aggressive to make investments (Liu et al., 2013; Lu & Xu, 2014; Shi et al., 2009; Xiao, 2013). In bull market stock prices generally rise whether the companies' performances are good or poor. The acquirer would be more optimistic and more likely to overestimate the value of acquiree, which leads to goodwill bubbles. Conversely, in bear market investors have a higher aversion to risks and losses, along with a pessimistic attitude to the future and a relatively higher degree of conservatism. The acquirer tends to hold a more cautious attitude in evaluating acquiree, hence the goodwill bubbles in bear market are lower than in bull market. Thus, analysts' forecasts based on goodwill recognised in bear market should be less opportunistic and more accurate. We thus propose the following hypothesis:

H2: Compared with goodwill recognised in bear market, goodwill recognised in bull market is likely to lead to more optimistic and less accurate analysts' forecasts.

Another reason for inflated acquirement premium in M&As is that there is a certain interest relationship between acquirer and acquiree. Although the inflated premium in M&As will lead to goodwill bubbles and bring negative impact on acquirer's future performance, the decision-makers of acquirer could enjoy individual benefits of inflated premium together with acquiree. In some M&As, although acquirers have no interest relationship with acquirees, the decision makers may have motivation to push up stock price in the short term, such as when the controlling shareholder has pledged the company's stocks or plans to sell stocks. In this case, M&A is just an action to catering the market. When the individual benefits gained by M&A's decision makers from inflated premium are greater than the loss caused by inflated premium, the decision makers would also accept the inflated price in M&As.

Usually, chairman and CEO are decision makers. Whether the chairman or CEO is the founder of acquirer has a direct impact on their tradeoff between benefits and costs of M&As. First, founders usually own a significant percentage of stocks of the company (Fahlenbrach, 2009; Li & Srinivasan, 2011; Xia et al., 2012), and have a high convergence with company's interests (He, 2008). Founders will bear a higher proportion of costs of

M&A's premium, so they would be more conservative when bargaining with acquiree. Second, compared with professional managers, founders are the original designers of companies' strategy and organisational structure (Nelson, 2003). Founders have made great efforts for companies' survival and development, and their feeling and sense of belonging to companies are much stronger than professional managers (Xia et al., 2012), which largely reduces their incentives to overpay in M&As. Compared with professional managers, founders regard companies as achievements in their life and have a long-term investment horizon. They tend to care about long-term interest of shareholders and to avoid short-sighted investment (Fahlenbrach, 2009; He, 2008; Xia et al., 2012). That is, agency problem in companies with founder-chairman or founder-CEO is smaller. In M&As, founders have stronger incentive to bargain with acquiree. Third, compared with professional managers, the individual reputation of founders is highly tight to the success of companies they founded, so they would pay more attention to companies' reputation and future development (He, 2008; Li & Srinivasan, 2011; Xia et al., 2012). So, founders are more motivated to reduce M&A premium and they will try to avoid the negative impact of goodwill bubbles on companies. Finally, founders have devoted their talent and human capital to the companies they have founded and the value of founders is highly company-specific. The liquidity of their human capital is lower and it is more costly and risky for founders to work in other companies once the companies they founded go bankrupt (He, 2008). As a result, founders would be more conservative in M&As. To sum up, founders are expected to pay much more attention to long-term benefits of M&A, the impact of M&A on companies' future development and founders' individual reputation. Hence, agency problem is relatively small for founder-acquirer, and the goodwill bubbles are expected to be lower or the quality of goodwill is higher. We thus propose the following hypothesis:

H3: Goodwill has a greater negative impact on analysts' forecasts for companies without founder-management than for companies with founder-management.

3. Research design

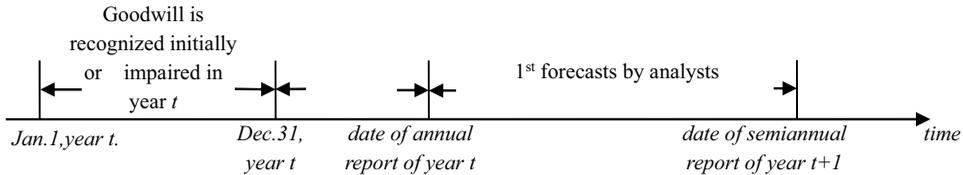
3.1. Sample selection and data sources

According to *the Accounting Standards for Business Enterprises* issued by the Ministry of Finance in 2006, the subsequent measurement of goodwill changed from amortisation method to impairment method. So, we take A-share listed companies with goodwill from 2007 to 2016 as initial sample (data of analyst's forecasts are from 2008 to 2017). After deleting companies in financial industry, ST companies and observations with missing data, we got 4180 firm-years for empirical tests (see Table 1).

To ensure the information on which analysts rely when making forecasts for year $t+1$ comes from annual report of year t , the analysts' forecasts are the first forecasts released by analysts between the date of annual report of year t and the date of semi-annual report of year $t+1$ (as shown in Figure 1). Data of provincial marketisation are from *China*

Table 1. Sample selection.

Process of sample selection	Number of observaitons
Original samples: non-financial and non-ST companies with analysts' forecasts between the date of annual report of year t and the date of semi-annual reports of year $t+1$	7640
Sample after eliminating observations without goodwill in year t	4212
sample after eliminating observations with missing data	4180
Final sample	4180

**Figure 1.** Analysts' forecasts used in empirical tests.

Provincial Marketisation Index Report, data of industrial policy are collected manually on the website of the Central Government of the PRC (www.gov.cn), and financial data are from CSMAR.

3.2. Variable definitions

3.2.1. Dependent variables

The dependent variables are the optimism ($FOPT_{t+1}$) and the accuracy ($FERROR_{t+1}$) of analysts' forecasts for year $t+1$. Following Behn et al. (2008) and Chu et al. (2019), $FOPT_{t+1}$ and $FERROR_{t+1}$ are defined, respectively, as follows:

$$FOPT_{t+1} = (\text{Mean}(FEPS_{t+1}) - MEPS_{t+1}) / PRICE_{t+1}$$

$$FERROR_{t+1} = |(\text{Mean}(FEPS_{t+1}) - MEPS_{t+1})| / PRICE_{t+1}$$

$\text{Mean}(FEPS_{t+1})$ is the mean of first forecasts for earnings per share (EPS) for company i by analysts during the period shown in Figure 1, $MEPS_{t+1}$ is actual EPS, and $PRICE_{t+1}$ is the stock price at the beginning of year $t+1$. The higher the $FOPT_{t+1}$, the greater the optimism of analysts' forecasts. The higher the $FERROR_{t+1}$, the lower the accuracy of analysts' forecasts.

3.2.2. Independent variable

Independent variable is goodwill. We define goodwill (GW_t) as follows:

$$GW_t = \text{Net goodwill in the end of year } t / \text{Total assets in the end of year } t$$

Net goodwill equals gross book value of goodwill minus accumulated goodwill impairment.

Table 2. Variable definition.

Variable type	Variable name	Variable symbol	Measurement
Dependent variable	Optimism of analysts' forecasts	$FOPT_{t+1}$	$(Mean(FEPS_{t+1}) - MEPS_{t+1}) / PRICE_{t+1}$
	Accuracy of analysts' earnings forecast	$FERROR_{t+1}$	$ Mean(FEPS_{t+1}) - MEPS_{t+1} / PRICE_{t+1}$
Independent variable	Goodwill	GW_t	Net goodwill in the end of year t / Total assets in the end of year t
Control variable	Information transparency	TSP_t	It equals 1 if the quality of information disclosure is A according to the rating of the Shenzhen Stock Exchange or the Shanghai Stock Exchange, 0 otherwise
	Annual return	$YISR_t$	The stock return considering the reinvestment of cash dividends in year t
	Stock turnover ratio	TS_t	Number of shares traded in year t / Total number of shares outstanding at the end of year t
	PE ratio	PER_t	Price per share at the end of year t / Earnings per share in year t
	Size	$SIZE_t$	The natural logarithm of total assets at the end of year t
	Debt ratio	LEV_t	Total liabilities at the end of year t / Total assets at the end of year t
	Return on total assets	ROA_t	Net profit in year t / Average of total assets in year t
	Market to book ratio	MB_t	Market value at the end of year t / Book value of equity at the end of year t .
	Proportion of shares held by actual controller	$SHAC_t$	The proportion of shares held by actual controller at the end of year t .
	Age of company	AGE_t	The natural logarithm of number of years for which company has been listed plus 1.
	Quality of audit	$BIG4_t$	It equals 1 if auditor is one of Big4 accounting firms in year t , and 0 otherwise.
	No. of analysts	AN_t	The natural logarithm of number of analysts tracking in the year t plus 1.
	Analysts' forecast horizon	$DAYS_t$	The natural logarithm of average number of days between the date of analysts' forecasts and the date of annual reports of year $t+1$.
	Marketisation	$MARKET_t$	Marketisation index of the region where company is located.
	Industrial policy	$POLICY_t$	It is set to 1 (-1) if the industry to which company i belongs is encouraged (restricted) by government policy, 0 otherwise.
	Ownership	SOE_t	It equals 1 if it is a state-owned enterprise, and 0 otherwise.
Year	$YEAR_t$	Year effects.	
Industry	IND_t	Industry effects.	

3.2.3. Control variables

Following current literature (Byard et al., 2006, 2011; Chu et al., 2019; Huang et al., 2018; Lang & Lundholm, 1996), we control following variables: information transparency (TSP_t), annual return ($YISR_t$), stock turnover rate (TS_t), price-to-earnings ratio (PER_t), size of company ($SIZE_t$), debt ratio (LEV_t), return on total assets (ROA_t), market to book ratio (MB_t). The other control variables include proportion of shares held by controlling shareholder ($SHAC_t$), the age of company (AGE_t), the quality of audit ($BIG4_t$), the number of analysts (AN_t), analysts' forecast horizon ($DAYS_t$), marketisation ($MARKET_t$) and ownership (SOE_t), industrial policies ($POLICY_t$). Lastly, we control both the year effect ($YEAR_t$) and the industry effect (IND_t).

To mitigate the effect of outliers, all continuous variables are winsorised at 1% and 99% levels. The detailed definitions of all variables are shown in Table 2.

3.3. Empirical models

To test H1, we design models (1) and (2) to test the impact of goodwill on the optimism and the accuracy of analysts' forecasts, respectively.

$$FOPT_{t+1} = \beta_0 + \beta_1 GW_t + \beta_2 CV_t + \varepsilon \quad (1)$$

$$FERROR_{t+1} = \beta_0 + \beta_1 GW_t + \beta_2 CV_t + \varepsilon \quad (2)$$

In model (1) and (2), CV_t are control variables. To test H2, we divide samples into two groups according to the median of proportion of goodwill recognised in bull market or the times of M&As occurred in bull market, respectively. Then we run regressions for models (1) and (2) for the two groups, respectively. Following Chu et al. (2019) and Pagan and Sossounov (2003), we define market of 2007, 2009, 2014 and 2015 as bull market, and the other years as bear market.

To test H3, we divide samples into two groups according to whether the founder is chairman or CEO, and then compare the regression results between groups for models (1) and (2), respectively.

In addition, to control potential cross-sectional correlation, robust standard errors clustered at company level are reported (Petersen, 2009).

4. Empirical analysis

4.1. Descriptive statistics and correlation test

Descriptive statistics of variables is presented in Panel A in Table 3. The mean (standard deviations) of $FOPT$ and $FERROR$ are 0.0108 (0.0181) and 0.0147 (0.0162) respectively. The mean, median and standard deviation of GW are 0.0390, 0.0069, and 0.0763, respectively, suggesting that goodwill varies greatly among companies.

To distinguish goodwill from goodwill impairment, Panel B in Table 3 reports descriptive statistics of goodwill impairment. It shows that the proportion of observations with impairment recognised is only 8.8%, while the proportion of samples which have recognised impairment at least once by the end of year t is only 24.71%. Moreover, Panel B also shows that the proportion of companies which recognise goodwill impairment losses in both of year $t-1$ and t is 2.66%, while the proportion of companies which recognise goodwill impairment losses in year $t-1$, t and $t+1$ is only 1.48%. These evidences show that goodwill is different from goodwill impairment.

4.2. Empirical results and analysis

4.2.1. The impact of goodwill on analysts' forecasts (H1)

Table 4 reports the regression results of the impact of goodwill on analysts' forecasts. Panel A in Table 4 shows the results with entire samples. Column (1) shows that the coefficient of goodwill (GW) is significantly positive at the level of 1%, indicating that goodwill has a positive impact on optimism of analysts' forecasts. Column (2) shows that the coefficient of GW is significantly positive at the level of 1%, indicating that the higher the goodwill, the larger the error of analysts' forecasts or the lower the accuracy of forecasts.

Table 3. Descriptive statistics.

Panel A: Descriptive statistics of variables							
Variable	Obs.	Min.	Mean	Median	Max.	Std. Dev.	
<i>FOPT</i>	4180	-0.0429	0.0108	0.0079	0.0875	0.0181	
<i>FERROR</i>	4180	0.0002	0.0147	0.0098	0.0926	0.0162	
<i>GW</i> ¹	4180	0.0000	0.0390	0.0069	0.4172	0.0763	
<i>TSP</i>	4180	0.0000	0.1967	0.0000	1.0000	0.3975	
<i>YISR</i>	4180	-0.7109	0.2778	0.0978	2.8418	0.6868	
<i>TS</i>	4180	0.5350	5.5742	4.5884	19.1344	3.8698	
<i>PER</i>	4180	-46.8982	48.9454	32.0772	489.3554	66.0878	
<i>SIZE</i>	4180	20.2643	22.6273	22.3753	26.9546	1.3783	
<i>LEV</i>	4180	0.0657	0.4475	0.4477	0.8474	0.1996	
<i>ROA</i>	4180	-0.0364	0.0669	0.0595	0.2264	0.0474	
<i>MB</i>	4180	0.6425	3.8585	3.1506	15.1866	2.7038	
<i>SHAC</i>	4180	0.0000	32.4727	32.0103	73.9600	17.9877	
<i>AGE</i>	4180	1.6094	2.6079	2.5649	3.2581	0.4396	
<i>BIG4</i>	4180	0.0000	0.1086	0.0000	1.0000	0.3112	
<i>AN</i>	4180	1.0986	2.6124	2.6391	3.7842	0.5878	
<i>DAYS</i>	4180	5.1705	5.8082	5.8221	6.1283	0.0937	
<i>MARKET</i>	4180	-0.3000	7.8412	7.9400	10.0000	1.6654	
<i>POLICY</i>	4180	-1.0000	0.4091	0.0000	1.0000	0.5621	
<i>SOE</i>	4180	0.0000	0.4043	0.0000	1.0000	0.4908	

Panel B: Descriptive statistics on goodwill impairment							
Variable	Measurement	Obs.	Min.	Mean	Median	Max.	Std. Dev.
<i>GWID</i>	A dummy that equals 1 if goodwill impairment has been recognised at least once by the end of year <i>t</i> and 0 otherwise.	4180	0.0000	0.2471	0.0000	1.0000	0.4314
<i>GWI</i>	Accumulated goodwill impairment/Gross value of goodwill	4180	0.0000	0.0525	0.0000	0.8893	0.1599
<i>WIAD</i>	A dummy which equals 1 if goodwill is impaired in year <i>t</i> and 0 otherwise.	4180	0.0000	0.0880	0.0000	1.0000	0.2834
<i>GWIA</i>	Goodwill impairment recognised in year <i>t</i> / gross value of goodwill	4180	0.0000	0.0111	0.0000	0.4354	0.0563
<i>SGWIA1</i>	A dummy that equals 1 if goodwill is impaired in both of year <i>t</i> and year <i>t-1</i> , 0 otherwise	4180	0.0000	0.0266	0.0000	1.0000	0.1608
<i>SGWIA2</i>	A dummy that equals 1 if goodwill is impaired in year <i>t</i> , <i>t-1</i> and <i>t-2</i> , 0 otherwise	4180	0.0000	0.0148	0.0000	1.0000	0.1209

Goodwill bubbles can be extruded through goodwill impairment recognition, which will push inflated goodwill closer to its intrinsic value. Existing studies find that goodwill impairment affects analysts' forecasts. To exclude alternative explanation of goodwill impairment, we carry out the following tests: (i) Control goodwill impairment (*GW*) in models (1) and (2). (ii) Deleting observations with goodwill impairing in year *t* and then run model (1) and (2), respectively. (iii) Deleting observations with goodwill impairment by the end year *t* and then run model (1) and (2), respectively. The results are reported in Panel B, Panel C and Panel D in [Table 4](#) respectively. These results show that the effect of goodwill on the optimism and accuracy of analysts' forecasts remains after controlling or excluding the impact of goodwill impairment. To sum up, the results in [Table 4](#) support H1.

4.2.2. Market trend, goodwill and analysts' forecasts (H2)

H2 predicts that the impact of bull-market goodwill on the optimism and the accuracy of analysts' forecasts is greater than bear-market goodwill. To test H2, we divide the full sample into two groups by the median of the number of M&As occurred in bull market or the proportion of goodwill recognised in bull market. Panel A in [Table 5](#) reports the

Table 4. The impact of goodwill on analysts' forecasts (H1).

Panel A: full samples		
Variable	<i>FOPT</i> (1)	<i>FERROR</i> (2)
<i>GW</i>	0.013*** (4.29)	0.007*** (2.59)
<i>TSP</i>	-0.000 (-0.55)	-0.001 (-1.27)
<i>YISR</i>	-0.002*** (-4.11)	-0.002*** (-3.93)
<i>TS</i>	0.000** (2.44)	0.000** (2.19)
<i>PER</i>	0.000*** (2.66)	0.000** (2.10)
<i>SIZE</i>	-0.000 (-0.10)	0.001 (1.64)
<i>LEV</i>	0.014*** (5.54)	0.017*** (7.65)
<i>ROA</i>	0.045*** (4.94)	0.036*** (4.24)
<i>MB</i>	-0.001*** (-6.58)	-0.001*** (-7.81)
<i>SHAC</i>	0.000 (0.36)	0.000 (0.37)
<i>AGE</i>	-0.003*** (-3.35)	-0.001 (-0.57)
<i>BIG4</i>	-0.005*** (-3.84)	-0.004*** (-2.91)
<i>AN</i>	0.000 (0.76)	-0.000 (-0.70)
<i>DAYS</i>	-0.002 (-0.54)	-0.002 (-0.58)
<i>MARKET</i>	-0.001*** (-3.18)	-0.000 (-1.52)
<i>POLICY</i>	-0.000 (-0.15)	0.000 (0.23)
<i>SOE</i>	-0.001 (-0.93)	-0.002** (-2.16)
<i>YEAR/IND</i>	Yes	Yes
<i>CONSTANT</i>	0.046** (2.24)	0.018 (1.00)
<i>N</i>	4,180	4,180
<i>Adj. R²</i>	0.110	0.169
Panel B: goodwill impairment(<i>GW</i>) is controlled in full sample		
Variable	<i>FOPT</i> (1)	<i>FERROR</i> (2)
<i>GW</i>	0.013*** (4.50)	0.009*** (3.10)
<i>GW</i>	0.003 (1.20)	0.006*** (3.06)
<i>CV</i>	Yes	Yes
<i>YEAR/IND</i>	Yes	Yes
<i>CONSTANT</i>	0.046** (2.24)	0.018 (0.99)
<i>N</i>	4,180	4,180
<i>Adj. R²</i>	0.110	0.171

(Continued)

Table 4. (Continued).

Panel C: firm-years without goodwill impairing in year t		
Variable	<i>FOPT</i>	<i>FERROR</i>
	(1)	(2)
<i>GW</i>	0.012*** (4.08)	0.007** (2.25)
<i>CV</i>	Yes	Yes
<i>YEAR/IND</i>	Yes	Yes
<i>CONSTANT</i>	0.044** (2.05)	0.025 (1.24)
N	3,812	3,812
Adj. R ²	0.112	0.172
Panel D: firm-years without goodwill impairment by the end of year t		
Variable	<i>FOPT</i>	<i>FERROR</i>
	(1)	(2)
<i>GW</i>	0.012*** (3.33)	0.006* (1.67)
<i>CV</i>	Yes	Yes
<i>YEAR/IND</i>	Yes	Yes
<i>CONSTANT</i>	0.039* (1.81)	0.010 (0.50)
N	3,147	3,147
Adj. R ²	0.110	0.179

T values clustered by firms are presented in brackets. *, ** and *** represent significance at the level of 10%, 5% and 1% respectively. YEAR/IND refers to the fixed effect for year and industry. The same as in the following tables.

results. The results show that under both grouping benchmarks, the more the goodwill recognised in bull market, the greater the impact of goodwill on the optimism and the error of analysts' forecasts. The difference is significant at least at 10% between each pair of groups. These results suggest that compared with bear-market goodwill, bull-market goodwill leads to greater optimism and lower accuracy of analysts' forecasts, thus H2 is supported.

We eliminate forecasts released in bull market and rerun the regressions. The results are shown in Panel B of Table 5 and the conclusion remains unchanged.

If the quality of bull-market goodwill is poor, its impairment in the subsequent years may be larger, which means that the results of Panel A and B in Table 5 may be weakened by impairments afterwards. We analyse the difference of impairment for bull-market goodwill and for bear-market goodwill and the results are reported in Panel C of Table 5. The results show that compared with bear-market goodwill, bull-market goodwill is not impaired more in the subsequent years, indicating that the goodwill bubbles usually last for a long time.

4.2.3. Founder management, goodwill and analysts' forecasts (H3)

According to H3, the founder-led M&As are expected to produce less bubbles of goodwill. We use founder-management as proxy of goodwill bubbles. We divide the full samples into founder group with founder-chairman or founder-CEO and non-founder group and then compare the regression results between them. The results are reported in Table 6.



Table 5. The impact of goodwill on analysts' forecasts: bull-market goodwill vs. bear-market goodwill (H2).

Variable	FOPT		FERROR		FOPT		FERROR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	More M&As in bull market	Less M&As in bull market	More M&As in bull market	Less M&As in bull market	Higher proportion of goodwill in bull market	Lower proportion of goodwill in bull market	Higher proportion of goodwill in bull market	Lower proportion of goodwill in bull market
GW	0.014*** (4.13)	0.001 (0.19)	0.011*** (3.28)	-0.007 (-1.43)	0.014*** (4.16)	0.002 (0.25)	0.011*** (3.29)	-0.007 (-1.40)
CV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YEAR/IND	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CONSTANT	0.047* (1.80)	0.042 (1.41)	0.005 (0.20)	0.036 (1.40)	0.048* (1.84)	0.041 (1.37)	0.005 (0.22)	0.036 (1.37)
N	2,000	2,180	2,000	2,180	1,995	2,185	1,995	2,185
Adj. R ²	0.110	0.109	0.174	0.162	0.112	0.108	0.174	0.162
Suest test	Chi2 = 3.22* (P = 0.0726)		Chi2 = 9.12*** (P = 0.0025)		Chi2 = 3.07* (P = 0.0797)		Chi2 = 8.99*** (P = 0.0027)	
Panel B: subsamples in bear market								
Variable	FOPT		FERROR		FOPT		FERROR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	More M&As in bull market	Less M&As in bull market	More M&As in bull market	Less M&As in bull market	Higher proportion of goodwill in bull market	Lower proportion of goodwill in bull market	Higher proportion of goodwill in bull market	Lower proportion of goodwill in bull market
GW	0.021*** (3.55)	-0.001 (-0.07)	0.016*** (2.93)	-0.011* (-1.78)	0.021*** (3.59)	-0.000 (-0.05)	0.016*** (2.95)	-0.010* (-1.77)
CV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YEAR/IND	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CONSTANT	0.116** (2.43)	0.057 (1.54)	0.059 (1.37)	0.049 (1.55)	0.131*** (2.72)	0.047 (1.30)	0.060 (1.39)	0.051 (1.63)
N	1,058	1,594	1,058	1,594	1,056	1,596	1,056	1,596
Adj. R ²	0.126	0.107	0.182	0.158	0.129	0.105	0.182	0.158
Suest test	Chi2 = 5.54** (P = 0.0186)		Chi2 = 11.27*** (P = 0.0008)		Chi2 = 5.55** (P = 0.0185)		Chi2 = 11.23*** (P = 0.0008)	

(Continued)

Table 5. (Continued).

Panel C: impairment for bull-market goodwill and bear-market goodwill			
Benchmark of bull market	group	% of companies with accumulated impairment ratio less than 1%	% of companies with accumulated impairment ratio less than 5%
No. of M&As in bull mkt	more	77.95%	85.70%
% of goodwill recognised in bull mkt	less	82.94%	85.83%
	high	77.99%	85.81%
	low	82.88%	85.77%

Table 6. The impact of goodwill on analysts' forecasts: founder group vs. non-founder group (H3).

Variable	FOPT		FERROR	
	(1) Non-founder group	(2) Founder group	(3) Non-founder group	(4) Founder group
GW	0.023*** (3.74)	0.006* (1.90)	0.013** (2.19)	0.002 (0.81)
CV	Yes	Yes	Yes	Yes
YEAR/IND	Yes	Yes	Yes	Yes
CONSTANT	0.041 (1.36)	0.036 (1.33)	0.018 (0.71)	0.018 (0.65)
N	2,435	1,745	2,435	1,745
Adj. R ²	0.114	0.117	0.180	0.142
Suest test	Chi2 = 4.69** (P = 0.0303)		Chi2 = 2.82* (P = 0.0933)	

Goodwill (GW) has a significantly greater impact on analysts' forecasts in non-founder group than in founder group whether dependent variable is *FOPT* or *FERROR* and H3 is supported.

5. Further analysis and robustness tests

5.1. Alternative explanation 1: the impact of goodwill quality vs. the motivation hypothesis

The quality of information used by analysts and their motivations are the main factors affecting the optimism and the accuracy of analysts' forecasts. The results in the main tests show that the quality of goodwill has impact on analysts' forecasts, but we have not excluded motivation hypothesis.

To exclude this alternative explanation, we conduct cross-sectional tests by the number of analysts and the number of star analysts tracking company *i*. While individual analysts may collude with a company, it is difficult for the company to collude with all analysts and it is also unlikely for all analysts to please the company at the same time. If the motivation hypothesis holds, the goodwill of more-tracked group should have a weaker impact on analysts' forecasts than the goodwill of less-tracked group.

Star analysts pay more attention to their reputation and long-term interests, which can help them resist the short-term interests of catering to company. If motivation hypothesis holds, the impact should be weaker in more star-analysts group than in less star-analysts group.

We conduct grouping tests according to the median of the number of analysts and the median of the number of star analysts, respectively. The results are presented in Panels A and B of [Table 7](#). These findings indicate that for the impact of goodwill on analysts' forecasts, the information quality hypothesis dominates motivation hypothesis.

5.2. Alternative explanation 2: the impact of goodwill vs. the impact of M&A

Goodwill comes from M&As. The impact of goodwill maybe just appearance while the impact of M&As is the essence. To exclude this alternative hypothesis, we further consider whether at least one M&A occurs in year *t*. First, we define *MOCCUR*, which equals 1 when

Table 7. Alternative explanation 1: goodwill quality hypothesis vs. motivation hypothesis.

Variable	FOPT		FERROR	
	(1)	(2)	(3)	(4)
GW	More star-analysts 0.024** (2.46)	Less star-analysts 0.022*** (3.29)	More star-analysts 0.032*** (3.16)	Less star-analysts 0.024*** (3.45)
CV	Yes	Yes	Yes	Yes
YEAR/IND	Yes	Yes	Yes	Yes
CONSTANT	0.065 (1.48)	0.041 (1.08)	0.083* (1.73)	0.065 (1.62)
N	2,188	1,992	2,188	1,992
Adj. R ²	0.129	0.127	0.122	0.095
Suest test		Chi2 = 0.03 (P = 0.8555)		Chi2 = 0.41 (P = 0.5235)
Panel B: Grouping by the number of star analysts				
Variable	FOPT		FERROR	
	(5)	(6)	(7)	(8)
GW	More star-analysts 0.023*** (2.68)	Less star-analysts 0.019** (2.53)	More star-analysts 0.028*** (3.08)	Less star-analysts 0.024*** (3.09)
CV	Yes	Yes	Yes	Yes
YEAR/IND	Yes	Yes	Yes	Yes
CONSTANT	0.068 (1.64)	0.034 (0.85)	0.097** (2.15)	0.058 (1.36)
N	2,136	2,044	2,136	2,044
Adj. R ²	0.127	0.119	0.118	0.097
Suest test		Chi2 = 0.11 (P = 0.7443)		Chi2 = 0.12 (P = 0.7323)

Table 8. Alternative explanation 2: the impact of goodwill vs. the impact of M&As.

Panel A: Controlling M&As in year t				
Variable	FOPT		FERROR	
	(1)	(2)	(2)	(2)
GW	0.014***		0.008***	
	(4.70)		(2.85)	
MOCCUR	-0.001**		-0.001*	
	(-2.44)		(-1.75)	
CV	Yes		Yes	
YEAR/IND	Yes		Yes	
CONSTANT	0.046**		0.018	
	(2.23)		(0.99)	
N	4,180		4,180	
Adj. R ²	0.111		0.169	

Panel B: Grouping by whether there is at least one M&A in year t				
Variable	FOPT		FERROR	
	(1)	(2)	(3)	(4)
	Non-M&As group	M&As group	Non-M&As group	M&As group
GW	0.017***	0.011***	0.011***	0.004
	(3.97)	(2.62)	(2.60)	(1.06)
CV	Yes	Yes	Yes	Yes
YEAR/IND	Yes	Yes	Yes	Yes
CONSTANT	0.041	0.056**	0.017	0.007
	(1.47)	(2.04)	(0.70)	(0.30)
N	2,842	1,338	2,842	1,338
Adj. R ²	0.108	0.116	0.164	0.192
Suest test	Chi2 = 0.92 (P = 0.3370)		Chi2 = 1.43 (P = 0.2322)	

Table 9. Alternative explanation 3: the impact of company characteristics vs. the impact of goodwill.

Variable	FOPT	FERROR
	(1)	(2)
GW	0.014***	0.007**
	(4.32)	(2.23)
CV	Yes	Yes
YEAR/IND	Yes	Yes
CONSTANT	0.040**	0.009
	(2.20)	(0.53)
N	5,563	5,563
Adj. R ²	0.102	0.150

there is at least one M&A in year t and 0 otherwise, and then add it as a control variable in Model (1) and Model (2). If M&As are the source of impact, then coefficient of *MOCCUR* should be significantly positive. Second, we run the models for M&A group and non-M&A group, respectively. If M&As are the source of impact, then the goodwill impact in the M&As group should be greater than that in non-M&As group.

The results are reported in Panel A and Panel B of Table 8 respectively. The results of Panel A show that when *MOCCUR* is controlled, the impact of goodwill on analysts' forecast remains. Moreover, the coefficients of *MOCCUR* are negative, which is



Table 10. (Continued).

Variable	FOPT		FERROR	
	(1)	(2)	(3)	(4)
	Non-founder group	Founder group	Non-founder group	Founder group
GW	0.023*** (3.74)	0.006* (1.90)	0.013** (2.20)	0.002 (0.81)
IMR	0.001 (0.57)	0.001 (0.76)	-0.001 (-0.44)	0.001 (0.38)
CV	Yes	Yes	Yes	Yes
YEAR/IND	Yes	Yes	Yes	Yes
CONSTANT	0.040 (1.32)	0.030 (1.05)	0.019 (0.73)	0.015 (0.52)
N	2,435	1,745	2,435	1,745
Adj. R ²	0.114	0.117	0.180	0.142
Suest test	Chi2 = 4.67** (P = 0.0307)			Chi2 = 2.84* (P = 0.0920)

Table 11. Adding samples never having goodwill.

Variable	Adding samples never having goodwill	
	<i>FOPT</i> (1)	<i>FERROR</i> (2)
<i>GW</i>	0.015*** (4.79)	0.006* (1.91)
<i>CV</i>	Yes	Yes
<i>YEAR/IND</i>	Yes	Yes
<i>CONSTANT</i>	0.056*** (3.09)	0.034* (1.95)
<i>N</i>	6,159	6,159
Adj. <i>R</i> ²	0.123	0.199

inconsistent with M&A explanation. The grouping tests are shown in Panel B and there is no significant difference between the coefficient of M&As group and that of non- M&As group. The results of Table 8 exclude the alternative explanation of M&A.

5.3. Alternative explanation 3: the impact of goodwill vs. the impact of company characteristics

The results in main tests may simply because analysts evaluate companies with goodwill highly, rather than the impact of goodwill quality itself. To eliminate this concern, we further examine the dynamic change between goodwill and analysts' earnings forecasts. Specifically, we compare the goodwill impact when a company has goodwill with that when it has no goodwill (goodwill equals 0). If it is the company's characteristics other than goodwill that impact analysts, the coefficient of *GW* will be insignificant. The results are shown in Table 9. We can see that the coefficients of *GW* are still significant, indicating that for the same company, analysts still make more optimistic and less accurate forecasts when the company has goodwill on its balance sheet. These results can rule out company characteristics hypothesis.

5.4. Other robustness tests

(1) Self-selection consideration. The samples used so far are companies with goodwill, in other words, they all have M&As. Heckman two-stage method is employed to alleviate this concern. In the first stage of Heckman two-stage method, companies without goodwill are also included. The dependent variable is *GWW*, equals 1 if there is goodwill, and 0 otherwise. Following D. Li et al. (2018), we control the number of shares held by management the natural logarithm of the number of shares held by the management, duality of chairman and CEO, competition in the product market, *SIZE*, *LEV*, ratio of shareholdings of the largest shareholder, *AGE*, number of analysts and *SOE*. The year and the industry are also controlled. From the first-stage regression, we got Inverse Mills Index (*IMR*). In the second stage, only samples with goodwill are taken and the *IMR* is added as an additional independent variable in model (1) and (2). The results are shown in Table 10 and the conclusions remain. It can also be seen that *IMR* is insignificant in all regressions, which indicates that there is no serious self-selection problem in the main tests.

(2) To control the endogeneity of unobserved factors which change with time and the impact from the companies which had goodwill before year t but have no goodwill in year t , we add samples never having goodwill and rerun model (1) and (2). These regressions are estimated to compare analysts' forecasts between companies with goodwill in year t and companies never having goodwill. The results are reported in [Table 11](#). The results show that analysts issued more optimistic and less accurate forecasts for companies with goodwill than for companies never having goodwill, and so our conclusions are robust.

6. Conclusions and implications

With the wave of M&As in Chinese capital market, goodwill has accumulated to a huge amount and bursts of goodwill bubbles in recent years have damaged investors' confidence badly. Thus, goodwill and its impairment have become hot topic both in academic and practice. Taking A-share listed companies from 2007 to 2016 as samples, we investigate the impact of goodwill on the optimism and the accuracy of analysts' earnings forecasts. We define the quality of goodwill or goodwill bubbles from the prospective of the time of goodwill recognised initially and whether there is a founder-management, respectively. The empirical results show that the higher the goodwill, the greater the optimism and the lower the accuracy of analysts' forecasts. When there are more bubbles in goodwill, such as when the proportion of bull-market goodwill is higher or when there is no founder-management, the goodwill has a greater negative impact on analysts' forecasts. We further exclude alternative explanations of goodwill impairment, analysts' catering, M&As effect and companies' characteristics. Our conclusions are also robust when goodwill quality is measured by excessive goodwill (Fu et al., 2015; Guo & Huang, 2020; Wei & Zhu, 2019; Zhang et al., 2018). These findings imply that analysts cannot fully identify or see through goodwill bubbles.

This paper first defines the goodwill bubbles by market trends when goodwill is recognised and whether there is at least one founder-management, respectively, and analyzes the impact of goodwill quality or goodwill bubbles on analysts' earnings forecasts, which enriches the literature on the quality of goodwill and analysts' forecasts. The findings also provide empirical evidences and implications for analysts, investors and regulators in the capital market. Specifically, it is found that goodwill is likely to embody more bubbles and has a greater negative impact on analysts' forecasts when goodwill is recognised initially in bull market or when the founder is not chairman or CEO. These conclusions provide stakeholders important implications, that is, bull-market goodwill or goodwill in non-founder companies tends to have more bubbles and needs to be paid more attentions.

Lastly, we know the factors that affect goodwill quality and the paths by which goodwill impacts analysts are complicated. We hope more researches on goodwill quality and the economic consequences of goodwill bubbles from other perspectives. The direct measurement of goodwill bubbles is also expected.

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