

The Value Relevance of Goodwill and Goodwill Amortization: Evidence from Listed Japanese Companies

Noriaki Yamaji and Jun'ichi Miki

Abstract

The results of this paper suggest that goodwill has a positive significant relationship with stock prices. And information of goodwill is more value relevant for non-manufacturing companies than for manufacturing companies. Moreover, the results indicate that earnings before amortization are more relevant than earnings after amortization. These findings suggest that goodwill amortization provides incremental information that is useful for assessing stock prices.

Key Words: value relevance, goodwill, goodwill amortization, impairment, business combinations, purchase method

I Introduction

When a company acquires another company, it usually expects greater benefits than the fair value of the net assets acquired. Whatever the expected benefit, to the extent that acquisition costs exceed the fair value of the net assets acquired, goodwill¹⁾ that shows the excess earnings power is created. There has been much discussion as to whether purchased goodwill should be capitalized as an asset, with or without amortization. Even though the accounting for goodwill is converged into the impairment approach rather than the amortization method, the amortization method is still adopted in Japan.

In Japan, goodwill is treated as an asset, but does the market perceive goodwill to the same degree it perceives other assets? In order to clarify this question this paper first analyzes the market perception of goodwill as an asset in the determination of a firm's valuation. If the amortization method is adopted, goodwill is systematically amortized in Japan. In order to evaluate the effect of goodwill amortization on the usefulness of earnings, this paper secondly evaluates the value relevance of earnings before goodwill amortization and earnings after goodwill amortization.

II Accounting for Goodwill

I Institutional background

In the USA, APB Opinion No. 16, *Business Combinations* (August 1970) required that the pooling of interests method should be used to account for business combinations meeting certain requirements and the purchased method should be used to account for all other business combinations. APB Opinion No. 17, *Intangible Assets* (August 1970) required that goodwill should be amortized over periods not exceeding 40 years.

Then, the FASB issued the Exposure Draft, *Business Combinations and Intangible Assets* (September 1999) , which proposed that only the purchase method should be used to account for business combinations and the maximum amortization period for goodwill should be 20 years. In deliberating on the proposals in the 1999 Exposure Draft, the FASB issued a revised Exposure Draft that proposed changes to the 1999 Exposure Draft with regard to the accounting for goodwill. The FASB issued SFAS No. 142, *Goodwill and Other Intangible Assets* (June 2001) which required that goodwill should be recognized as an asset without allowing a reduction for systematic amortization.

On the other hand, the IASB issued IFRS 3, *Business Combinations* (March 2004). It required that all business combinations within its scope should be accounted for by applying the purchase method (acquisition method) and prohibited the amortization of goodwill acquired in a business combination. Instead, it required that goodwill should be tested for impairment annually, or more frequently if events or changes in circumstances indicate that the asset might be impaired, in accordance with IAS 36, *Impairment of Assets* (March 2004).

In Japan, The Accounting Standards Board of Japan (ASBJ) issued the Accounting Standard for Business Combinations (ASBJ Statement No.21) in December, 2008. It abolished the pooling of interests method. If it has been determined that a business combination is an acquisition, it should be accounted for by the purchase method. Goodwill should be amortized systematically, on a straight-line basis, over the period during which it has effect, up to a maximum of 20 years. Since goodwill is an asset that is subject to the BADC's Accounting Standards for Impairment of Fixed Assets, its impairment should be accounted for under those standards, even though it is being systematically amortized²⁾.

2 Theoretical background

Goodwill can be accounted for by several methods: (1) the amortization approach, (2) the impairment approach, and (3) the write-off approach.

Under the amortization approach, goodwill is regarded as an asset embodying future economic benefits for which consideration has been given. It is considered that goodwill is a cost of resources that will be used up and that, therefore, it should be systematically amortized against earnings. Under this approach, it is possible to account separately for (a) the revenue generated as a result of the business combination, and (b) the expense of amortizing the goodwill. Given the fact that goodwill is a part of the acquisition cost, the method of systematic amortization would be consistent with the principle that any amount recovered in excess of an acquisition cost should be accounted for as profit. Furthermore, since (a) purchased goodwill may, over time, be replaced by internally generated goodwill, and (b) purchased goodwill, if not amortized, can itself generate goodwill internally, systematic amortization can effectively prevent internally generated goodwill from being included in the assets³⁾.

Under the impairment approach, goodwill is capitalized and is impaired when the value of the goodwill is impaired. This approach is adopted by SFAS 142 and IFRS 3. The impairment approach is supported by the following reasons⁴⁾.

- (a) The useful life of goodwill and the pattern in which it diminishes are both difficult to predict, yet its amortization depends on such predictions.
- (b) Not all goodwill declines in value and that goodwill that does decline in value rarely does so on a straight-line basis.
- (c) Straight-line amortization of goodwill over an arbitrary period does not reflect economic reality and thus does not provide useful information.

Under the write-off approach, goodwill is not regarded as an asset, therefore it is immediately written-off against reserves. Goodwill is not separable or independently realizable but exists only by virtue of a valuation of the company or business as a whole. It is not a resource consumed or used up similar to other productive resources⁵⁾. This approach was adopted by Statement of Standard Accounting Practice (SSAP) in the UK. The reasoning behind immediate write-off of goodwill and SSAP 22's preference for this method was (a) consistency with treatment of non-purchased goodwill, (b) write-off should not go through profit and loss account because goodwill is written off for accounting reasons and not because of any diminution in value of the asset, and (c) the write-off is

unrelated to the results for the year⁶).

III Previous Empirical Research

McCarthy and Schneider (1995) analyze the market perception of goodwill as an asset in the determination of the US firm's valuation for the period 1988 to 1992. The results indicate a positive and significant relationship between reported goodwill and firm market value. Moreover, the results indicate that goodwill has coefficient values greater than those of other assets in all years. Therefore the results suggest that the market perceives goodwill as an asset and incorporates the information in valuation of a firm.

Jennings *et al.* (1996) examine how goodwill asset and expense numbers relate to market-determined equity values of US firms for the period 1982 to 1988. The results indicate a strong positive cross-sectional association between equity values and recorded goodwill asset amounts, after controlling for other components of net assets. Moreover, the results show a negative association between equity values and goodwill amortization, after controlling for other components of expected earnings.

Morehrle *et al.* (2001) assess the relative information content of earnings before amortization, traditional accounting earnings, and operating cash flows of US firms for the period 1988 to 1998. They find that the relative information of earnings before amortization and earnings before extraordinary items do not differ significantly, and also find that both earnings before amortization and earnings before extraordinary items are more informative than cash flow from operations.

Nagata (2002) investigates the market perception of goodwill as an asset and the association between equity values and goodwill amortization of Japanese firms for the period 1997 to 1999. The results show that the market perceives goodwill as an asset and therefore as incremental information of firm value. Moreover, the results show a negative association between equity values and goodwill amortization, so earnings before amortization are more relevant than earnings after amortization.

Nishiumi (2002) examines the market reaction of a capital market to goodwill and negative goodwill of Japanese firms for the period 1997 to 2001 (goodwill) and for the period 2000 to 2001 (negative goodwill). The results show that the market perceives goodwill as an asset, but it does not perceive negative goodwill as a liability. Nishiumi (2003) examines the association between equity values and goodwill amortization of

Japanese firms for the period 1997 to 1998 and for the period 2000 to 2001. The results indicate that the relative information of earnings before amortization and earnings before extraordinary items do not differ significantly.

IV Empirical Research

I Research Design

First, in order to investigate the value relevance of goodwill, the book value model that modified the Ohlson (1995) Model is utilized (Model 1). This model considers the association between stock price (P), goodwill (X_a), earnings (X_b), and net assets (book value of equity) excluding goodwill (X_c), where the independent variables are considered on a per share basis using adjusted outstanding stocks and adjusted stock prices at the time prices are measured. Since the dependent variable (P) is assumed to follow a normal distribution, it is transformed to a natural logarithm.

$$\ln P = \alpha + \beta X_a + \gamma X_b + \delta X_c + u \quad (\text{Model 1})$$

Where,

P : stock price per share

X_a : goodwill per share

X_b : earnings per share

X_c : net assets (excluding goodwill) per share

$\alpha, \beta, \gamma, \delta$: parameter

u : error terms

Second, in order to investigate the characteristics by category of industry, a Model using Dummy variable coefficients and dummy variable constant terms (Model 2) is utilized.

$$\ln P = \left(\varepsilon + \sum_{i=1}^n \zeta_i D_i \right) + \left(\eta + \sum_{i=1}^n \theta_i D_i \right) X_a + \iota X_b + \kappa X_c + u \quad (\text{Model 2})$$

Where,

P : stock price per share

X_a : goodwill per share

X_b : earnings per share

X_c : net assets (excluding goodwill) per share

$\varepsilon, \zeta, \eta, \theta, \iota, \kappa$: parameter

D_i : industry dummy

u : error terms

When investigating the manufacturing industry and the non-manufacturing industry⁷⁾, the suffix i changes 1 if it falls into the manufacturing industry. Otherwise, it is zero. Furthermore, when investigating all the categories of industry, the suffix i changes from 1 to 21 according to the following category of industry. The industry dummy D_i is 1 if it falls into the appropriate category of industry. Otherwise, it is zero. In the case of the Service industry, it all falls into zero.

Third, in order to investigate the value relevance of goodwill amortization, the earnings capitalization model (Model 3 and Model 4), as in Jennings *et al.* (2000) is utilized.

$$\ln P = \lambda + \mu X_b + u \quad (\text{Model 3})$$

$$\ln P = \nu + \xi X_d + u \quad (\text{Model 4})$$

Where,

P : stock price per share

X_b : earnings per share

X_d : earnings per share before goodwill amortization

λ, μ, ν, ξ : parameter

u : error terms

Finally, in order to provide evidence as to whether goodwill amortization has any incremental information beyond that contained in earnings before goodwill amortization, the model for incremental analysis (Model 5) is utilized.

$$\ln P = o + \pi X_d + \rho X_e + u \quad (\text{Model 5})$$

Where,

P : stock price per share

X_d : earnings per share before goodwill amortization

X_e : goodwill amortization

o, π, ρ : parameter

u : error terms

2 Data and Sample

Of the data used in this study, financial data were obtained from *Nikkei Financial Data* provided by the Nikkei Media Marketing. Stock prices were taken from *Kabuka Data* provided by the Toyokeizai Shimpo and *NEEDS Kabuka Shihyo* provided by the Nikkei Media Marketing. We used stock prices two months after fiscal year-end. The stock prices affected by capital changes or changes in par values were adjusted.

The sample includes all companies listed on the Tokyo Stock Exchange with 12-month fiscal years ending on March 31st between 1999 and 2009 for the book value model, and between 2000 and 2009 for the earnings capitalization model. But non-industrial companies (e.g. financial and insurance companies), companies that adopt US-GAAP, companies that don't disclose goodwill, and companies with negative book value of equity are excluded. On the other hand, outliers have been eliminated because all those values falling outside the interval of the mean plus/less three times the standard deviation should be eliminated, so the definitive sample size is 3,837 for the book value model, and 2,286 for the earnings capitalization model.

V Empirical Results

1 Results of Book Value Model

Table 1 presents selected descriptive statistics of the sample companies used in Model 1 and Model 2. Since the stock prices (P) as the dependent variable are transformed to a natural logarithm, the standard deviation is small, and both the kurtosis and skewness come close to zero.

Table 1 Descriptive Statistics

N = 3,837	$\ln P$	X_a	X_b	X_c
Mean	6.504	21.870	41.087	797.958
Std. Dev.	1.057	56.139	90.548	686.665
Minimum	2.833	0.010	-721.896	1.154
Maximum	9.203	901.836	593.918	5472.843
kurtosis	-0.251	65.075	11.398	5.247
skewness	-0.024	6.574	-0.334	1.809

Table 2 indicates the Pearson's correlation coefficients among the independent variables of Model 1 and Model 2. There was not a strong correlation to bring about multicollinearity

Table 2 Correlation Matrix

N = 3,837	X_a	X_b	X_c
X_a	1		
p-value			
X_b	0.105	1	
p-value	0.000		
X_c	0.185	0.517	1
p-value	0.000	0.000	

between the variables.

Table 3 shows the results of Model 1. The explanatory power is high at 60.0%. The standardized partial regression coefficients are positively significant and the largest one was X_c (net assets), followed in order by X_b (earnings), and X_a (goodwill). The coefficients of X_a (goodwill) are significantly positive. Therefore, the results suggest that the market perceives goodwill as an incremental factor in valuing a firm.

Table 3 Results of Book Value Model 1

	Partial Regression Coefficients	Standardized Partial Regression Coefficients	p-value	F-value	Adj. R ²
Constant	5.625		0.000	1916.593	0.6000
X_a	0.002	0.129	0.000		
X_b	0.003	0.264	0.000		
X_c	0.001	0.569	0.000		

Table 4 shows the results of Model 2. The partial regression coefficients are 0.03 (positively significant) for X_a (goodwill) and -0.001 (negatively significant) for X_a (goodwill) $\times D$. As compared with the coefficients of the non-manufacturing companies, those of the manufacturing companies are positively negative. This corresponds to a relatively weak association with stock price for the manufacturing companies. Furthermore, we conducted additional multiple regression analyses with 22 categories of industry. The results show that the partial regression coefficients are negatively 1% significant in Food (-0.003) and Machine (-0.002), and positively 1% significant in Constructions (0.011) and Commerce (0.02). One of the possible reasons is that the quality of materials is so homogeneous among manufacturing companies that there is not much difference among them. On the other hand, there are many ways to render a service

Table 4 Results of Book Value Model 2

	Partial Regression Coefficients	Standardized Partial Regression Coefficients	p-value	F-value	Adj. R ²
Constant	5.616		0.000	1151.448	0.6000
X_a	0.003	0.149	0.000		
X_b	0.003	0.265	0.000		
X_c	0.001	0.570	0.000		
D	0.014	0.006	0.000		
$X_a \times D$	-0.001	-0.030	0.000		

* D is industry dummy and the suffix 1 is omitted here because the number of dummy variable is only one.

among non-manufacturing companies.

2 Results of the Earnings Capitalization Model

Table 5 presents selected descriptive statistics of the sample companies used in Model 3, Model 4 and Model 5. Since the stock prices (P) as the dependent variable are transformed to a natural logarithm, the standard deviation is small and both the kurtosis and skewness come close to zero.

Table 5 Descriptive Statistics

N = 2,286	$\ln P$	X_b	X_d	X_e
Mean	6.513	43.924	47.907	3.983
Std. Dev.	1.089	96.033	97.271	7.785
Minimum	2.197	-986.647	-936.369	0.011
Maximum	10.894	958.460	981.346	98.437
kurtosis	0.023	18.289	16.809	40.059
skewness	0.045	0.505	0.673	5.097

Table 6 reveals the results of model 3 and model 4. The coefficients (μ and ξ) on both X_b (earnings) and X_d (earnings before goodwill amortization) are significant at the 1% level. The explanatory power of model 4 (38.7%) is greater than that of model 3 (36.5%). Therefore, the results suggest that earnings before amortization are more relevant than earnings after amortization.

Table 6 Results of Earnings Capitalization Model

Model	λ (p-value)	μ (p-value)	Adj. R²
3	6.212(0.000)	0.0068(0.000)	0.365
Model	ν (p-value)	ξ (p-value)	Adj. R²
4	6.179(0.000)	0.0069(0.000)	0.387

Moreover, we conducted the Vuong non-nested test to determine which model has significantly more explanatory power. Table 7 reports the results of the Vuong test that statistically verify the difference of R² between the two models. The Vuong Z-value is negative and significant at the 1% level, which suggests the superiority of model 4 over model 3. These results statistically show that earnings before amortization are more relevant than earnings after amortization.

Table 7 Results of Vuong Test

Model 3	Model 4	Vuong Z-value	p-value
0.365	0.387	-9.1363	0.0000

Table 8 reports the results for model 5. The explanatory power of model 4 exceeds that of model 3. The coefficient (ρ) on X_e (goodwill amortization) is positive and significant at the 1% level. These results suggest that goodwill amortization contains incremental information that is useful for assessing share prices. Therefore, the presence of positive goodwill amortization has a positive relationship with stock prices. This implies that investors might consider the presence of goodwill amortization as representing a positive factor in valuing a firm's value.

Table 8 Incremental Information Content of Goodwill Expenses

σ (p-value)	π (p-value)	ρ (p-value)	Adj. R²
6.0916(0.000)	0.0065(0.000)	0.0273(0.000)	0.423

VI Conclusions

This paper examines the value relevance of goodwill and goodwill amortization in Japan. The results of the book value model indicate that goodwill has a positive significant relationship with stock prices, and the information of goodwill is more value relevant for

non-manufacturing companies than for manufacturing companies. Moreover, the results of the earnings capitalization model show that earnings before amortization are more relevant than earnings after amortization. Goodwill amortization provides incremental information that is useful for assessing stock prices.

Notes

- 1) In this paper we don't consider negative goodwill.
- 2) Accounting Standards for Business Combinations, FASF Japanese Accounting Standards on CD-ROM, 2005 (September 2005), Financial Accounting Standards Foundation, English Translations.
- 3) *Ibid.*
- 4) FASB, SFAS No.142 (2001), B75 and B79.
- 5) Radebaugh, Gray and Black (2006), pp.204-205.
- 6) Pierce and Brennan (2003), p.378.
- 7) Manufacturing industries include Food, Textile, Pulp and Paper, Chemistry and Drug, Oil, Coal and Rubber, Ceramics, Iron and Steel, Nonferrous metal and Metal, Machine, Electric, Transport equipment, Precision machine, and Other products. On the other hand, non-manufacturing industries include Agriculture, Forestry and Fisheries, Mining, Construction, Commerce, Real estate, Land Transportation, Marine and Aviation Transportation, Warehousing and Transportation, Information and Communication, Electricity and Gas and Service.

References

- Bugera, M., and N. Galley, "Is Older Goodwill Value Relevant?," *Accounting and Finance* 46 (2006), pp. 519-535.
- Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 142, *Goodwill and Other Intangible Assets* (June 2001).
- Henning, S. L., B. L. Lewis and W. H. Shaw, "Valuation of the Components of Purchased Goodwill," *Journal of Accounting Research* Vol. 38, No. 2 (Autumn 2000), pp. 375-386.
- International Accounting Standards Board, International Financial Reporting Standards 3, *Business Combinations* (March 2004).
- Jennings, R., J. Robinson, R. B. Thompson and L. Duvall, "The Relation Between Accounting Goodwill Numbers and Equity Values," *Journal of Business Finance and Accounting*, 23(4) (June 1996), pp. 513-533.
- Jennings, R., M. LeClere, and R. B. Thompson, "Goodwill Amortization and the Usefulness of Earnings," *Financial Analysts Journal and Accounting*, vol 57, (September/October 2001), pp. 20-28.
- McCarthy, M. G. and D. K. Schneider, "Market Perception of Goodwill: Some Empirical Evidence," *Accounting Business Research*, Vol. 26, No. 1, (1995), pp. 69-81.

- Moehrle, S. R., J. A. Reynolds-Moehrle and J. S. Wallace, "How Informative Are Earnings Numbers That Exclude Goodwill Amortization?," *Accounting Horizons*, Vol. 15, No. 3 (September 2001), pp. 243-255.
- Nagata, K., "The Stock Market Valuation of the Japanese Capital market for goodwill on consolidated financial statements," *Accounting (Kigyo Kaikei)*, Vol. 54, No. 2 (February 2002), pp. 114-121.
- Nishiumi, S., "The Reaction of a Capital Market to Goodwill on Consolidated Financial Statements," *Yokohama Journal of Social Sciences*, Vol. 7, No. 2 (August 2002), pp. 67-79.
- Nishiumi, S., Accounting for Goodwill: International Development and Reactions of Capital Markets, *Yokohama Journal of Social Sciences*, Vol. 8, No. 4 (December 2003), pp. 165-184.
- Ohlson, J. A. "Earnings, Book Values and Dividends in Equity Valuation," *Contemporary Accounting Research*, Vol. 11, No. 2 (Spring, 1995), pp. 661-687.
- Ota, K. and A. Matsuo, "The Vuong (1989) Test for Model Selection and Non-nested Hypotheses," *KAIKEI (ACCOUNTING)*, Vol. 167, No. 1 (January 2005), pp. 52-66.
- Pierce, A. and N. Brennan, *Principles and Practice of Group Accounts: a European Perspective* (International Thomson Business Press, 2003).
- Radebaugh, L. H., S. J. Gray and E. L. Black, "International Accounting and Multinational Enterprises (John Wiley & Sons Inc, 2006).
- Vuong, Q. H., "Likelihood Ratio Tests for Model Selection and Non-nested Hypotheses," *Econometrica*, Vol. 57, No. 2 (March 1989), pp. 307-333.

Acknowledgements

This work was supported by JSPS KAKENHI, Grant-in-Aid for Scientific Research (C) (21530487).