MALAYSIAN ACCOUNTING REVIEW

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VALUE-RELEVANCE OF ACCOUNTING NUMBERS: AN EMPIRICAL INVESTIGATION OF PURCHASED GOODWILL

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Abstract

We examine the value-relevance of accounting numbers in the balance sheet to investors. Specifically, we investigate the association between purchased goodwill and the value placed on the firm by the stock market. An equity valuation model based on the modified balance sheet identity is used to permit purchased goodwill, other assets and liabilities to have separate empirical coefficient values. This study finds evidence consistent with the notion that be market incorporates the information on purchased goodwill in the valuation of a firm and results also show that the market seems to perceive purchased goodwill at least with a value equal to other assets. Several empirical extensions are explored to examine whether the basic finding can be made more robust.

INTRODUCTION

Accounting goodwill has been referred to as "the most intangible of the intangibles" (Davis, 1992). Furthermore, goodwill issues have been the subject of many debates in the accounting and related literature. However, despite their having been a long debate held on the issue in the academic and financial communities, accounting for goodwill remains a contentious and controversial problem. As mentioned by Lee (1971), the debate was initiated by Francis More in 1891 and it has continued over the years by eminent accountants and academicians such as Nelson (1953), Spacek (1964), Lee (1971), Ma and Hopkins (1988), Grinyer et al. (1990), Nobes (1992), and more recently by Grinyer (1995), Bryer (1995), McCarthy and Schneider (1995), Jennings et al. (1996), Deng and Lev (1998), and Ibrahim *et al.* (1999). Many of the earlier papers in which goodwill issues were discussed were analytical and descriptive in nature. In recent years, however, a number of empirical studies have been published in the literature. Arguably the main problem of accounting for goodwill stems from lack of agreement in defining the real nature of goodwill. What is goodwill?. And how should this item be treated? In the High Court of Australia, the statement of Lord Macnaghten in *Inland Revenue Commissioners v Muller & Co.'s Margarine* summarised the difficulty in defining goodwill (Walpole, 1999). He said:

> "What is goodwill? It is a thing very easy to describe, very difficult to define. It is the benefit and advantage of the good name, reputation, and connection of a business. It is the attractive force, which brings in custom. It is the one thing, which distinguishes an old established business from a new business as its first start. The goodwill of business must emanate from a particular centre or source. However widely extended or diffused its influence may be, goodwill is worth nothing unless it has power of attraction sufficient to bring customers home to the source which it emanates. Goodwill is composed of a variety of elements. It differs in its composition in different trades and in different businesses in the same trade"

(This paper benefited from helpful comments and suggestions from workshop and seminar participants at the *Conference on Business, University of Hawaii and Accounting Colloqium* at MARA University of Technology, Johor).

Generally, goodwill may exist in any business and its amount will vary as the business develops and response to changes in the value of the business as a whole. Changes in the value of a business may occur for many reasons, for example changes in economic expectations, forecasts for that sector or perceived value. The value of goodwill may be constantly changing and is often highly volatile. It is therefore difficult to reach a valuation for goodwill at any point, particularly as goodwill is by definition not capable of being valued independently of the business as a whole. The only time at which the value of goodwill may be known with reasonable certainty is at the point where a cost is established in a transaction. This will happen when the business and the goodwill inherent in it are sold.

Basically there are two types of goodwill. First, internally generated goodwill that results from a favourable attitude or good perception on the part of the customer toward the business due to the businessperson's reputation for honesty, fair dealing etc. The value of goodwill exists with respect to a business, whether or not that business is being sold or absorbed in a

business combination. Second, the purchased goodwill where in business combination the cost of goodwill acquired must be determined before deciding the proper accounting treatment. The amount allocated to goodwill is said to be the difference between the purchase consideration for the business as a whole and the total fair value of its net resources that are identifiable and separable.

Analysis of the relevant shows that the arguments are split between two main schools of thought. One school considers that goodwill poses measurability difficulties and, unlike other assets, in most cases cannot be separately sold. In these circumstances, carrying the asset in the balance sheet is of little value to users of accounts. Consequently, this school maintains that purchased goodwill should be written off directly against reserves on acquisition. The second main school of thought believes that

goodwill is an asset that (on going basis) in principle is no different from any other asset. Thus, since goodwill eventually has a finite useful life, it follows that purchased goodwill should be capitalised and amortised through the profit and loss account over its useful life.

In the meantime, the issue has remained firmly on the agenda, particularly the standard-setting agenda, in spite of several attempts to resolve the central issues. One good example where the 'goodwill controversy' can be found is in the history and regulation of accounting for goodwill in the UK. Basically, Accounting for goodwill is, arguably, one of the longest running and controversial of accounting issues in the UK. Although UK standard-setters started their work on this subject in 1974, accounting for goodwill is still worth mentioning in the new millennium.

The ASC issued their first Discussion Paper relating to goodwill in June 1980. Subsequently they published the following: (a) Exposure Draft No. 30 (ED 30) in October 1982; (b) the somewhat contentious SSAP 22 *(Accounting for Goodwill)* in December 1984; and (c) yet another exposure draft (ED 47) in 1990. In July 1990, the ASC was wound up and was able to pass on ED 47 and the responses to it to the Accounting Standards Board (ASB). In 1993 the ASB issued a discussion paper entitled Goodwill and Intangible Assets that prompted a mixed response, followed in 1995 by a new version of the discussion paper albeit with the same title. The ASB then published a Financial Reporting Exposure Draft (FRED 12) in June 1996 followed by the Financial Reporting Standard 10 *(Goodwill and Intangible Assets)* issued in December, 1997 which effective on financial statements relating to accounting periods ending on or after 23 December 1998.

The 'controversy' status of accounting for goodwill might be due to many factors. One of the most important factors which has been suggested is the behavioural aspects of managers who have personal interests at stake and who consequently engage in a lobbying process to help determine the standard practice of accounting in the UK (Grinyer *et al.,* 1992). Also, it has been reported that (during ASC era) most of the ASC members were in a poor position to resist lobbying because they were generally full-time employees of, or colleagues of or providers of services to interested parties (Nobes, 1992).

However, one could pose the question as to whether the controversy surrounding goodwill is really important or whether the choices of accounting method just create 'noise' in the security market. This situation merits further investigation in order to attempt to clarify this question.

One of the possibilities is to examine whether market perceives purchased goodwill as an important variable in the determination of the value of a company. Henning (1994), McCarthy and Schneider (1955) and Jenning *et al.* (1996) based on the US environment already examined whether purchased goodwill is value-relevance to the investors. All of them concluded that goodwill reported in the balance sheets of US companies is of value relevance to investor. On the other hand, Ibrahim *et al.* (1999) based on UK companies also concluded that purchased goodwill that has been written off is an important determinant of market value.

Both of the prior studies were concerned with accounting for goodwill for the firms operating in the developed country. It is interesting to note whether the situation is similar for firms operating in developing country such as Malaysia. Against the backdrop of the contemporary debate surrounding accounting for goodwill, the empirical aims of this study are to investigate the association between goodwill disclosures in accounts and market values and the relationship between purchased goodwill with other assets based on Malaysian firms.

RESEARCH METHOD AND DESCRIPTION OF THE DATA

The Modified Balance Sheet Model

The main objective of this study is to examine whether the market perceives purchased goodwill as an important variable in the determination of the value of a company. The second objective is to test whether the market treats purchased goodwill in the same manner as other assets. In order to examine the first objective, we estimate the following multiple cross-sectional regression for each of the years 1992-1997:

$$MVE_j = a_0 + a_1 BVOA_j + a_2 BVGW_j - a3BVLj + a_4 EARN_j + e_j \qquad (1)$$

Where
MVE_j	= Market value of shareholders' equity in firm j,
$BVOA_j$	= Book value of the assets of firm j excluded goodwill
$BVGW_j$	= Book value of the purchased goodwill of firm j
BVL_j	= Book value of the liabilities of firm j
$EARN_j$	= Net profit of firm j

The model adopted for this study has been used in a prior study by Ibrahim (1999) to test the market's perception of a firm's assets and liabilities, in the particular context of goodwill reserve write-off using balance sheet data for firms operating in the UK. On the other hand, McCarthy and Schneider (1995) and Jennings *et al.* (1996) based on the US environment employed the same model to examine whether purchased goodwill is value-relevant to the investors. However, many empirical works in accounting research that employed market value and book value relationship in determining the market value are used continuously in the accounting research literature.

The model based on balance sheet identity was first mentioned by Landsman (1986). In his study, Landsman empirically examined the accounting treatment for pension fund assets and liabilities. Harris and Ohlson (1987), Kane and Unal (1990), Shevlin (1991), Gopalkrishnan and Sugrue (1993) Barth (1994), and Aboody and Lev (1998) are among other researchers

who based their work on this model. The focuses of these studies include market's valuation of banking firms, research and development, oil and gas properties, investment securities and intangible assets and goodwill.

Hypotheses

The first research question to be addressed in this study is whether purchased goodwill should be considered as an important element when determining a firm's market value. In order to answer this question, a2 is the coefficient of main interest. If the market places value on the reported goodwill of a firm, then goodwill should be significant and positively correlated with the firm's market value. To check for this relationship the following null hypothesis is tested:

$H1 : a_2 = 0$

If goodwill is a significant variable, then further examination should test how the market perceives goodwill in relation to all other assets. In other words, is it priced differently from other assets? To answer this question, we established the following null hypothesis:

$H2 : a_1 = a_2$

Description of Data Collected

In this study, we examine the market valuation of Malaysian firms reporting purchased goodwill during the period 1992-1997. The data for this study were obtained from the *Corporate Handbook* database. We organised sample selection on the basis of two criteria: (i) to include any listed firm on the Kuala Lumpur Stock Exchange, except firms in the banking sector; and (ii) to include any firms which recorded positive purchased goodwill for any year during the period 1992-1997. As a result, the final sample consists of various sample sizes during the period under study. A summary of the said companies is presented in Table 1, along with and industry decomposition of the sample as a whole showing the broad spread of involved.

Table 1
Sample Classified by Industry Groups*

Sector	1992 (%)	1993 (%)	1994 (%)	1995 (%)	1996 (%)	1997 (%)
Building Material	12 (12.6)	14 (13.2)	19 (17.6)	23 (16.1)	21(13.4)	22 (13.0)
Construction	8 (08.4)	8 (07.6)	11 (10.2)	16 (11.2)	14 (08.9)	18 (10.7)
Consumer Products	8 (08.4)	8 (07.6)	7 (06.5)	13 (09.1)	14 (08.9)	14 (08.3)
Food & Beverages	9 (09.4)	10 (09.4)	9 (08.3)	12 (08.4)	11 (07.0)	13 (07.6)
Gaming	2 (02.1)	2 (01.9)	2 (01.8)	2 (01.4)	3 (01.9)	2 (01.2)
Hotels	2 (02.1)	2 (01.9)	1 (00.9)	1 (00.7)	2 (01.3)	3 (01.8)
Investment	11 (11.6)	10 (09.4)	7 (06.5)	8 (05.6)	8 (05.1)	9 (05.3)
Industrial Products	12 (12.6)	11 (10.4)	15 (13.9)	15 (10.4)	16 (10.2)	16 (09.5)
Mining	1 (01.1)	2 (01.9)	2 (01.8)	3 (02.1)	3 (01.9)	2 (01.2)
Plantation	2 (02.1)	4 (03.8)	5 (04.6)	4 (02.8)	7 (04.4)	6 (03.6)
Property	11 (11.5)	19 (17.9)	12 (11.3)	23 (16.1)	30 (19.1)	33 (19.5)
Publishing & Media	2 (02.1)	1 (00.9)	2 (01.8)	2 (01.4)	2 (01.3)	3 (01.3)
Retail	3 (03.2)	3 (02.8)	3 (02.7)	2 (01.4)	3 (01.9)	1 (00.6)
Trading & Services	9 (09.6)	9 (08.5)	10 (09.3)	16 (11.2)	18 (11.5)	22 (13.0)
Transportation	3 (03.2)	3 (02.8)	3 (02.7)	3 (02.1)	5 (03.2)	5 (02.9)
Total	**95 (100)**	**106 (100)**	**108 (100)**	**143 (100)**	**157 (100)**	**169 (100)**

(*Classification is based on Corporate Handbook's listing)

A summary of the variables of interest is presented in Table 2. Market value of shareholders' equity (MVE) is defined to be share price multiplied by the number of shares outstanding at the end of accounting year. The book value of total assets excluding goodwill (BVOA), purchased goodwill (BVGW), total liabilities (BVL) and the earning figure (EARN) are also taken directly from *Corporate Handbook* without amendment, but combining variables in some cases as shown.

Table 2
Variables Required for Regression from Corporate Handbook

Variables Required for Regression	Variables	Symbol
Market Value of Equity	Ordinary Share Outstanding x Share Price	MVE
Book Value of Total Assets excluded Goodwill	Total Asset	BVOA
Book Value of Total Liabilities	Total Liabilities	BVL
Book Value of Purchased Goodwill	Goodwill	BVGW
Earning	Profit attributable to Shareholders	EARN
Net Assets	BVOA - BVL	BVNA
Total Sales	Turnover	

Estimates of correlation between variables and descriptive statistics are presented in Tables 3 and 4 respectively. Two of the potential econometric problems when estimating cross-sectional valuation models are scale-related: *i.e.* scale bias, heteroskedastic disturbances. The problem arises from the fact that large or small firms tend to produce large or small disturbances. Following Ibrahim *et al.* (1999) and Landsman (1986), we address scale bias and heteroskedastic disturbances by estimating the model in deflated form. According to Landsman (1986), in the case of the two-variable linear model, one common deflation technique involves transforming the variables by deflating the independent variable. This procedure implies that the true error variance is proportional to the square of the independent. In this paper, again following Ibrahim *et al.* (1996). The third econometric problem is multicollinearity which will be discussed in detail in the following section.

We deflated all variables by total sales. Heteroskedasticity is also addressed by using White-corrected t-statistics following procedures described in Ibrahim et al. (1996). The third econometric problem is multicollinearity which will be discussed in detail in the following section.

Table 3
Estimated Correlation Matrix of Variables

Variables	BVOA	BVL	BVGW	EARN
1992 **MVE** **BVOA** **BVL** **BVGW**	0.733	0.426 0.740	0.153 0.185 0.604	0.601 0.501 0.085 -0.076
1993 **MVE** **BVOA** **BVL** **BVGW**	0.737	0.431 0.798	0.202 0.081 0.203	0.568 0.574 0.368 -0.040
1994 **MVE** **BVOA** **BVL** **BVGW**	0.565	0.201 0.791	0.114 0.071 0.248	0.460 0.354 0.083 -0.038
1995 **MVE** **BVOA** **BVL** **BVGW**	0.384	0.025 0.847	0.139 0.089 0.167	0.487 0.186 0.071 -0.044
1996 **MVE** **BVOA** **BVL** **BVGW**	0.507	0.143 0.820	0.206 0.104 0.252	0.374 0.235 0.028 -0.132
1997 **MVE** **BVOA** **BVL** **BVGW**	0.472	0.212 0.836	0.215 0.028 0.179	0.339 0.189 0.068 -0.284

Table 4
Descriptive Statistics
(Deflated Form - Total Sales as Deflator)

Variables	N	Mean	Std. Deviation	Median
1992	95			
Market Value of Equity		2.363	1.811	1.729
Book Value of Assets		2.014	2.006	1.345
Book Value of Liabilities		1.062	1.356	0.736
Purchased Goodwill		0.169	0.417	0.054
Earning		0.112	0.186	0.076
1993	106			
Market Value of Equity		1.859	1.614	1.474
Book Value of Assets		2.465	2.787	1.563
Book Value of Liabilities		1.073	1.082	0.700
Purchased Goodwill		0.161	0.288	0.060
Earning		0.097	0.163	0.066
1994	108			
Market Value of Equity		2.750	1.784	2.716
Book Value of Assets		1.836	1.172	1.550
Book Value of Liabilities		0.926	0.650	0.758
Purchased Goodwill		0.111	0.178	0.049
Earning		0.102	0.094	0.077
1995	143			
Market Value of Equity		2.271	1.584	1.801
Book Value of Assets		2.012	1.554	1.659
Book Value of Liabilities		1.004	1.219	0.774
Purchased Goodwill		0.115	0.192	0.050
Earning		0.107	0.098	0.084
1996	157			
Market Value of Equity		2.731	1.995	2.232
Book Value of Assets		2.547	2.209	1.859
Book Value of Liabilities		1.249	1.388	0.848
Purchased Goodwill		0.127	0.275	0.048
Earning		0.101	0.144	0.088
1997	169			
Market Value of Equity		1.913	2.050	1.141
Book Value of Assets		2.938	2.642	1.897
Book Value of Liabilities		1.495	1.412	1.044
Purchased Goodwill		0.104	0.187	0.044
Earning		0.063	0.248	0.057

EMPIRICAL RESULTS

The Basic Model

The previous section discussed the empirical problems that are likely to be encountered when estimating the basic model given by equation (1), namely, scale bias, heteroskedasticity and multicollinearity. As mentioned before, we deflated all variables by total sales to address scale bias. Table 5 provides the estimates obtained from fitting equation (1) from the deflated regression model. However, the extension results and regressions due to the heteroskedasticity and multicollinearity problems are presented and discussed in the following sub-section.

Table 5
Market Value Predictions (The Basic Model)

Predicted Sign	a_0 ?	a_1 +	a_2 +	a_3 -	a_4 +	R^2	N
1992 OLS-t	0.923*** 5.560	0.754*** 5.718	0.986** 2.406	-0.467*** -2.251	2.235*** 2.635	0.620	95
1993 OLS-t	0.822*** 6.066	0.574*** 9.114	1.263*** 3.849	-0.705*** -4.832	1.800** 2.577	0.663	106
1994 OLS-t	1.053*** 4.326	1.572*** 8.197	2.186** 3.100	-1.877*** -5.614	3.014** 2.102	0.527	108
1995 OLS-t	0.618** 3.506	1.157*** 9.274	1.716** 3.556	-1.243*** -7.862	3.506** 3.349	0.533	143
1996 OLS-t	1.107*** 6.601	1.075*** 12.234	2.444*** 6.233	-1.327*** -9.518	2.294** 2.986	0.592	157
1997 OLS-t	0.594** 3.162	0.733*** 8.054	3.998*** 5.986	-0.912*** -5.382	1.828** 3.384	0.453	169

Notes: The table indicates significance at 1% (***) and 5%(**) levels.

Model: $MVE_j = a_0 + a_1 BVOA_t + a_2 BVGW_j - a_3 BVL_j + a_4 EARN_j + e_j$
Where
  MVE_j = Market value of shareholders' equity in firm j,
  $BVOA_t$ = Book value of the assets of firm j excluded goodwill
  $BVGW_j$ = Book value of the purchased goodwill of firm j
  $BVLj$ = Book value of the liabilities of firm j
  $EARN_j$ = Net profit of firm j

There are several prominent general findings associated with the results appearing on Table 5. The intercept term (a_0) is systematically non-zero and significant at 0.05 level. The presence of a statistically significant intercept suggests that the empirical intercept may be picking up some omitted variable. In this context, following the argument presented by Kane and Unal (1990) the intercept would be interpreted as unbooked assets and liabilities. They believed that accountants' misvaluations of portfolio positions that accounting principles designate as on-balance-sheet items and the systematic neglect of off-balance-sheet sources of value not formally booked becomes sources of hidden capital. In other words, Kane and Unal (1990) interpreted the estimated intercept as a net source of (drain on) unbookable assets and liabilities.

All other variables have coefficients of the correct sign. For BVOA and BVL, coefficients systematically show some pattern over time. It is obvious that this finding is consistent with the premise that book assets and book liabilities carried at historical cost may systematically understate or overstate the true values of the theoretical variables due to economic factors (Kane and Unal, 1990). One possible explanation for the understatement includes the possible existence of non-purchased goodwill and other off-balance sheet assets and liabilities. On the other hand, if the amortisation or depreciation of purchased goodwill or other assets is slower than the true value then book assets may overstate. However, the estimated coefficients of BVOA and BVL are significant at 0.01 level for all cases except for BVL for 1992 which is significant at 0.05 level. Thus, at this point these findings confirm that the investors were taking into consideration the accounting assets and liabilities in determining the market value of the firms.

The main interest of this study is on a_2, the slope coefficient for purchased goodwill (BVGW). According to Jenning et al. (1996), at the time of an acquisition, the amount recorded as purchased goodwill represents the present value of a stream of expected cash flow. If the market places value on the reported goodwill of a firm then purchased goodwill should be significant and positively correlated with the firm's market value. In contrast, if the correspondence between the book value of purchased goodwill and its economic value diminishes rapidly following the acquisition then we would expect to observe no relationship between market value and equity value. We find that the a_2 coefficient for purchased goodwill is significantly non-zero and consistently near 1 or higher. This suggests that, from the investors' point of view, purchased goodwill represents an economic resource. As a result, these findings confirm the belief that the market was taking into consideration purchased goodwill in determining the firm's equity value.

Heteroscedasticity Issue

As mentioned before, one potential econometric problem when estimating cross-sectional valuation models is the problem of heteroscedastic disturbances, which arises from the fact that large or small companies tend to produce large or small disturbance. On the other hand, if the model is estimated in undeflated form, this also potentially leads to another scale-related problem that is scale bias. To address these issues we transformed the entire variables by deflating them with the independent variable, which in this case is total sales, to produce a constant (but still unknown) variance. By using this 'deflation technique' we hope to remove the scale bias and heteroscedasticity problems. This technique is not new in the accounting literature as it has already been employed by previous researchers such as Landsman (1986), Gopalakrishnan and Sugrue (1993), Shevlin (1991), McCarthy and Schneider (1995), Jennings *et al.* (1996) and Ibrahim *et al.* (1999).

As a result, all elements of data for the basic model reported in the previous sub-section are deflated by total sales to reduce the heteroscedasticity problems. As heteroscedasticity was one of the major problems in previous studies, we analysed the heteroscedasticity test statistics which is available with the MICROFIT software package. The null hypothesis that the variance of the residuals of the model is constant throughout the whole sample is rejected at the 0.01 level of significance for all cases except for 1992. Thus, there is strong evidence that the variance of the residuals is not constant in this sample. As a result the standard testing procedure reported in Table 5 might be very misleading although heteroscedasticity does

not destroy the unbiasedness and consistency properties of the OLS estimators (Gujarati, 1995).

However, White (1980) established a procedure, which is known as heteroscedasticity-consistent covariance matrix estimators (HCCME) to obtain consistent estimates of the variances and covariances of OLS estimators even if there is heteroscedasticity. White's heteroscedasticity-corrected standard errors are available with the MICROFIT software package as a standard output so it is possible to compare the results from the regular OLS (as reported in Table 5) with the adjusted one. Tables 6 list the summary statistics from the basic regression models that based on White's heteroscedasticity adjusted standard error's.

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Table 6
Market Value Predictions (White's heteroscedasticity Adjusted Standard Error's)

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Predicted Sign	a_0 ?	a_1 +	a_2 +	a_3 -	a_4 +	R^2	N
1992 White-t	0.923*** 6.557	0.754*** 4.927	0.986** 2.908	-0.467** -2.135	2.235*** 2.807	0.620	95
1993 White -t	0.822*** 5.586	0.574*** 6.780	1.263*** 4.063	-0.705** -3.495	1.800* 1.922	0.663	106
1994 White -t	1.053*** 4.991	1.572*** 7.984	2.186** 2.403	-1.877*** -5.861	3.014** 2.111	0.527	108
1995 White -t	0.618** 3.896	1.157*** 6.580	1.716** 2.150	-1.243*** -7.282	3.506** 2.462	0.533	143
1996 White -t	1.107*** 6.876	1.075*** 9.908	2.444*** 4.454	-1.327*** -7.285	2.294** 2.249	0.592	157
1997 White -t	0.594** 2.916	0.733*** 5.611	3.998*** 5.960	-0.912*** -4.741	1.828** 2.556	0.453	169

Notes: The table indicates significance at 1% (***) and 5%(**) levels.

Model: MVE_j $= a_0 + a_1 BVOA_t + a_2 BVGW_j - a_3 BVL_j + a_4 EARN_j + e_j$
          Where
          MVE_j = Market value of shareholders' equity in firm j,
          $BVOA_t$ = Book value of the assets of firm j excluded goodwill
          $BVGW_j$ = Book value of the purchased goodwill of firm j
          $BVLj$ = Book value of the liabilities of firm j
          $EARN_j$ = Net profit of firm j

Comparing these two results, obviously the White's heteroscedasticity-corrected standard errors are considerably larger than the OLS standard errors and therefore the estimated t values are much smaller than those obtained by OLS. Although most of the t values are smaller, the overall results are consistent with the results reported in the previous sub-section. Based on these findings, it appears that the market takes into consideration the amount of purchased goodwill in their determination of the company's valuation. Therefore, after taking into consideration the heteroscedasticity problems in the models, we still can conclude that purchased goodwill is value - relevance to the investor.

Multicollinearity Issue

Another major assumption of the classical regression model is that there is no multicollinearity among the regressors included in the regression model. If multicollinearity is perfect the regression coefficients of the variables are indeterminate and their standard errors are infinite. If multicollinearity is less than perfect, the regression coefficients, although determinate, possess large

standard errors (in relation to the coefficients themselves), which means the coefficients cannot be estimated with great precision or accuracy. Therefore, the presence of a severe multicollinearity problem could result in drawing misleading inferences from sample t-statistics.

As mentioned by Kmenta (1971), "multicollinearity is a question of degree and not of kind. The meaningful distinction is not between the presence and the absence of multicollinearity, but between its various degrees. Therefore we do not 'test for multicollinearity' but can, if we wish, measure its degree in any particular sample". In fact that BVOA and BVL in our study are highly correlated with one another (correlations between 0.74 to 0.84).

The high correlations suggest that multicollinearity is a severe problem if we employed model (1). However, BVOA and BVL are, in principle, jointly determined variables affected by many of the same unknown exogenous variables. According to Kane and Unal (1990), treating them as separate exogenous regressors could introduce interpretative problems. One way to increase the precision of the estimates of the coefficients in the basic model is to re-estimate using a measure of net assets (BVOA less BVL). Based on this argument, the apparently severe collinearity problem might be reduced by estimating (1) in net asset value. The model is as follows:

$$MVE_j \qquad = a_0 + a_1 BVNA_j + a_2 BVGW_j + a_3 EARN_j + e_j \qquad (2)$$

Where
MVE_j = Market value of shareholders' equity in firm j,
$BVNA_j$ = Book value of the net assets of firm j excluded goodwill
$BVGW_j$ = Book value of the purchased goodwill of firm j
$EARN_j$ = Net profit of firm j

Fitting the above model is justifiable only if the estimated coefficients from model (1) fulfill a necessary statistical condition for netting that is $a_1 = -a_3$. An assessment of this restriction can be carried out readily using the Wald Test, and Table 7 contains the result with respect to the restrictions imposed on $a_1 = -a_3$. In all cases (except for 1992), the null hypothesis that $a_1 = -a_3$ is accepted, thus supporting the netting procedure of the basic model. Following the test, it is appropriate to extend the basic model in order to address the problem of multicollinearity in an attempt to increase precision of the estimated coefficients. The net assets model was estimated with the summary statistics appearing in Table 8 based on White's heteroscedasticity adjusted standard error's.

Table 7
Wald Test Restriction Imposed on Parameters of Market Value Predictions

Year	Coefficient		Chi-Square	p-Value
	a_1	a_3		
1992	0.754	-0.467	10.217	0.001
1993	0.574	-0.705	0.679	0.410
1994	1.572	-1.877	2.488	0.115
1995	1.157	-1.243	2.151	0.142
1996	1.075	-1.327	5.504	0.019
1997	0.733	-0.912	3.262	0.071

Model: $MVE_j = a_0 + a_1BVOA_t + a_2BVGW_j - a_3BVLj + a_4EARN_j + e_j$
Restriction: $a_1 + a_3 = 0$

Table 8
Market Value Predictions (Net Assets model)

Predicted Sign	a_0 ?	a_1 +	a_2 +	a_3 -	a_4 +	R^2	N
1992	1.027***	0.879***	1.675***	-0.467**	1.931***	0.599	95
White-t	6.987	5.745	5.997	-2.135	2.286		
1993	0.754***	0.538***	1.162***	-0.705**	1.740*	0.662	106
White -t	6.591	6.153	4.128	-3.495	1.849		
1994	0.886***	1.458***	1.863**	-1.877***	3.253**	0.521	108
White -t	4.752	7.854	2.138	-5.861	2.222		
1995	0.551***	1.132***	1.620**	-1.243***	3.670**	0.533	143
White -t	3.768	6.148	2.088	-7.282	2.550		
1996	0.946***	0.979***	2.093**	-1.327***	2.459**	0.569	157
White -t	6.193	9.217	3.289	-7.285	2.377		
1997	0.466**	0.644***	3.759***	-0.912***	2.060**	0.446	169
White -t	2.673	5.264	5.301	-4.741	3.137		

Notes: The table indicates significance at 1% (***) and 5%(**) levels.

Model: MVE_j $= a_0 + a_1BVOA_t + a_2BVGW_j - a_3BVL_j + a_4EARN_j + e_j$
Where
MVE_j = Market value of shareholders' equity in firm j,
$BVNA_t$ = Book value of the net assets of firm j excluded goodwill
$BVGW_j$ = Book value of the purchased goodwill of firm j
$BVLj$ = Book value of the purchased of firm j
$EARN_j$ = Net profit of firm j

Net asset, which is defined to be BVOA - BVL, are denoted as BVNA in Table 8. The expected signs of a1 should be positive. Examination of Table 8 reveals that in all cases the BVNA coefficients are significantly non-zero at one per cent level. The most important results are regarding coefficients of goodwill, which show a positive sign that are consistent with the basic model. In general, the net assets model improved the basic model. The likely cause of the increase in the robustness is most likely attributable to the reduction in the collinearity of the two regressors, BVOA and BVL.

The Balance Sheet Model

This is another extension model, which can be tested that includes only the balance sheet variables in the regression equation, as in Landsman (1986). By removing earning as one of the explanatory variables, there is no longer a weighted average between the income variable and the balance sheet variable. The model is as follows:

$$MVE_j = a_0 + a_1 BVNA_j + a_2 BVGW_j + e_j \qquad (3)$$

Where
MVE_j = Market value of shareholders' equity in firm j,
$BVNA_j$ = Book value of the net assets of firm j excluded goodwill
$BVGW_j$ = Book value of the purchased goodwill of firm j

Table 9 contains summary statistics for the balance sheet regression model. Results show that the entire coefficients are significantly non-zero at least at 0.05 level. According to this model, purchased goodwill is still highly significant to investors when determining the value of a firm. These results show some consistency, but this model also has a slightly lower value of R^2 compared to earlier models, which shows that the models lost their explanatory power. As a result, we conclude that the combination of balance sheet and income variables in the model specification is more suitable for our study, which are consistent with Ohlson (1995) and McCarthy and Schneider (1995) arguments.

Table 9
Market Value Predictions (The Balance Sheet Model)

Predicted Sign	a_0 ?	a_1 +	a_2 +	R^2	N
1992 White-t	1.042*** 7.035	1.067*** 10.621	1.812*** 6.572	0.582	95
1993 White -t	0.815*** 6.322	0.620*** 8.498	1.122*** 4.284	0.644	106
1994 White -t	1.045*** 5.636	1.646*** 9.697	1.882** 2.244	0.502	108
1995 White -t	0.750*** 4.504	1.323*** 8.159	1.603** 2.516	0.494	143
1996 White -t	1.090*** 7.341	1.072*** 10.569	1.963** 3.054	0.545	157
1997 White -t	0.517** 3.071	0.747*** 6.762	3.079*** 4.814	0.398	169

Notes: The table indicates significance at 1% (***) and 5%(**) levels.

Model: MVE_j = $a_0 + a_1 BVNA_t + a_2 BVGW_j + e_j$
Where
MVE_j = Market value of shareholders' equity in firm j,
$BVNA_t$ = Book value of the net assets of firm j excluded goodwill
$BVGW_j$ = Book value of the purchased goodwill of firm j

The Market Valuation of Goodwill

Given that goodwill appears to be a significant factor in valuing a company, the second hypothesis examines the magnitude of the market: book multiplier compared to other assets. This hypothesis is tested by comparing the coefficients of BVGW and BVOA. If the two coefficients were not significantly different, then this would suggest that the market treat goodwill like any other assets. Answering this question would provide insight into the relative importance of reported goodwill in valuing a firm compared to other assets, and then such results provide additional evidence for the recognition of goodwill in the balance sheet.

First, let's discuss the absolute values of BVOA and BVGW coefficients from the basic model presented in Table 6. It is obvious that the absolute values of BVGW's coefficients are higher than BVOA for all cases which indicates that the investors value BVGW higher than BVOA. Secondly, after considering the absolute values of both coefficients, we test the hypothesis to examine the magnitude of the market perception of purchased goodwill in relation to other assets as explained earlier. The results of this test are presented in Table 10.

Table 10
Wald Test Restriction Imposed on Parameters of Market Value Predictions

Year	Coefficient		Chi-Square	p-Value
	a_1	a_2		
1992	0.754	0.986	0.830	0.362
1993	0.574	1.263	4.640	0.031
1994	1.572	2.186	0.484	0.487
1995	1.157	1.716	0.484	0.487
1996	1.075	2.444	6.061	0.014
1997	0.733	3.998	23.209	0.000

Model: $MVE_j = a_0 + a_1 BVOA_t + a_2 BVGW_j - a_3 BVLj + a_4 EARN_j + e_j$
Restriction: $a_1 - a_2 = 0$

The null hypothesis of equal coefficients is accepted at 0.05 levels for 1993, 1996 and 1997. As mentioned by previous researchers, i.e., Jennings *et al.* (1996) and McCarthy and Schneider (1995), one statistical problem with this study is the use of book values as proxy for market values. The market value of purchased goodwill is unknown. However the other variable, BVOA, representing the remaining assets has some components where the market value is equal to book value, such as cash and debtors, and some components where the market value may be greater than book value such as stock and property, plant and equipment. This most likely will result in measurement error. The extent of influence measurement error has on the results is unknown. As a result, the previous researchers conclude with a more conservative interpretation, that the purchased goodwill appears to be perceived by the market with a value at least equal to other assets and possibly greater.

CONCLUSION

The study seeks to investigate empirically the association between goodwill accounting numbers and market values and to describe the relationship between purchased goodwill and other assets for the firms operating in developing countries. In doing so, we focus on

firms that are operating in Malaysia, one of the most prominent developing countries. In essence, our modified balance sheet model is able to substantiate the concerns expressed over goodwill accounting during recent detailed discussions by providing evidence that purchased goodwill is an important determinant of market value. These results are consistent with the overall findings by Henning (1994), McCarthy and Schneider (1995), Jenning *et al* (1996) and Ibrahim et al. (1999), which stated that goodwill numbers are of value relevance to investors. Nevertheless, our analysis also confirms that goodwill is an asset of considerable magnitude and is valued at least equal to other assets. As a general conclusion, the results indicate that investors do use information in the balance sheet. Of course, this finding is not new to the literature: Bowman (1980), Dhaliwal (1986), Landsman (1986), Beaver *et al.* (1989), Shevlin (1990), Barth (1994), Amir and Lev (1996), Aboody (1996), Aboody and Lev (1998) and Pfeiffer (1998), among others, report similar findings.

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