Can Investors Unravel the Effects of Goodwill Accounting?

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Under current U.S. accounting standards, the cost of an acquired company in excess of the fair value of its identifiable net assets must be capitalized and amortized over a period not to exceed 40 years.[1] This accounting treatment for "purchased goodwill" has been controversial since its adoption in 1970, primarily due to the amortization requirement. Some critics of the current standard view goodwill as having an indefinite life, and argue that the *APB 17* amortization requirement systematically penalizes reported earnings for many firms. Others view goodwill as having a finite (and often short) life, and argue that the wide range of amortization periods permitted by the standard allows reported earnings to be systematically overstated.

These diverse criticisms suggest that investors may wish to adjust firms' financial statements to conform to their own views on the nature and quality of recorded goodwill. However, if firms do not adequately disclose goodwill balances, amortization expense, and amortization policy, investors may find it difficult to unravel and evaluate the financial statement effects of current goodwill accounting rules. In this paper we provide evidence on the extent to which current goodwill disclosures enable investors to determine the financial statement effects of the current accounting treatment for purchased goodwill.

To explore this issue, we examined goodwill disclosures in the 1988 financial statements of nearly six hundred New York and American Stock Exchange firms. We also requested goodwill information directly from each of these firms. Based on these data, we are able to provide a description of the nature and extent of goodwill asset, expense, and amortization policy disclosures made by firms in this sample. We also provide evidence on the materiality of net goodwill and goodwill amortization for sample firms that do and do not explicitly disclose these numbers. Finally, we investigate whether amortization expense for nondisclosing firms can be accurately estimated based on other information available in the financial statements. Our results indicate that a substantial number of firms do not disclose goodwill amortization, even when it is material in relation to revenue or net income. Moreover, estimates of goodwill amortization for nondisclosing firms that are based on available financial statement information can result in material errors.

THE GOODWILL CONTROVERSY

Since the adoption of *APB 17* in 1970, the principal issue in the ongoing goodwill accounting debate has been whether goodwill expense numbers produced in compliance with the standard distort reported earnings.[2] Some

[1] American Institute of Certified Public Accountants, *Accounting Principles Board Opinion No. 17 — Intangible Assets* (1970).

[2] There appears to be relatively little disagreement among members of the financial reporting community as to the appropriateness of recognizing purchased goodwill as an asset. However, the question has been debated. For a summary of the issues, see George R. Catlett and Norman O. Olson, *Accounting Research Study No. 10 — Accounting for Goodwill* (American Institute of Certified Public Accountants, 1968).

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critics of the standard argue that required amortization may result in earnings reductions that have little to do with the present or future performance of the firm. This view was clearly stated in 1970 by four APB members who voted against adoption:

> Messrs. Burger, Davidson, Hellerson, and Horngren dissent to the required amortization of goodwill and other intangible assets ... having indeterminate lives. Whether amortization is appropriate depends on the particular circumstances of each case, including the evidence of increases or decreases in the value of such assets. In some cases, the facts may indicate maintenance or enhancement rather than diminution of value of the intangibles. In such cases, amortization is inappropriate.[3]

More recently, the view that the *APB 17* amortization rule may impose an unwarranted penalty on earnings has been expressed by both preparers and users of financial statements. One preparer's perspective is illustrated by the following discussion in Capital Cities/ABC's 1989 annual report to shareholders:

> In accordance with [*APB 17*], the Company amortizes substantially all [purchased goodwill] over 40 years. This practice is arbitrarily mandated by [*APB 17*] without regard to whether these assets have or have not declined in value. All of the Company's [goodwill has] resulted from the acquisition of broadcasting and publishing properties. Historically, such intangible assets have substantially increased in value and have long and productive lives. We believe that ... the requirements of [*APB 17*] when applied to such publishing and broadcasting assets understate net income and stockholders' equity.[4]

A user's perspective is illustrated by the following excerpt from a recent *Wall Street Journal* discussion of an initial public offering of securities by AnnTaylor:

> ...For instance, though some investors put AnnTaylor's pro forma earnings for this fiscal year at around 80 cents a share, per-share profit would be $1.30 if one ignored a yearly 50 cent-a-share charge to write off goodwill. On that basis, says Fidelity's Mr. Frank, AnnTaylor one day "could be a very big stock." ...Shares of RJR Nabisco Holdings, another LBO that recently went public, were "initially priced low," he says, but "then sophisticated investors looked through the amortization [charges] and saw they had a really good deal with RJR."[5]

APB 17 is also criticized because the standard allows such wide latitude in the selection of amortization periods that provisions for goodwill expense may be unduly optimistic. This argument has been expressed by writers on financial statement analysis:

> Since *APB Opinion No. 17* provides for a forty-year amortization period for intangibles, some firms tend to ignore economic reality by making minimum amortization provisions. Further, intangibles acquired prior to the effective date of the *Opinion* are not even subject to such minimum amortization.[6]

The same argument has been made implicitly in recent regulatory actions by the Corporate Finance Division of the Securities and Exchange Commission. The SEC has reportedly caused some firms to reduce amortization periods for purchased goodwill associated with "high technology" acquisitions.[7]

These points of view suggest that if goodwill is material in relation to net assets, or goodwill amortization is material in relation to earnings, investors may wish to restate financial statements to conform to their own views on "appropriate" goodwill accounting. This can be done easily if the firm explicitly discloses the amount of net goodwill and the amount of current goodwill amortization. However, if one or the other of these numbers is not explicitly disclosed, it must be estimated, and the quality of such estimates will depend on the nature of the goodwill disclosures (if any) that the firm does choose to make.

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[3]*Accounting Principles Board Opinion No. 17, op. cit.*

[4]For CC/ABC, goodwill is about 67 percent of net assets, and 1989 goodwill amortization is about 13 percent of reported earnings.

[5]Linda Sandler, "AnnTaylor Nears Offering; Warrant Zips Up, Down," *The Wall Street Journal*, May 2, 1991, p. C2.

[6]Joel Siegel, *How to Analyze Businesses, Financial Statements and the Quality of Earnings* (Prentice Hall, 1982).

[7]See Lee Berton and Kevin G. Salwen, "SEC Seems to Be Taking Tougher Stance on Accounting for Cash-Based Takeovers," *The Wall Street Journal*, May 23, 1991, p. A5.

The level of goodwill disclosure is not entirely discretionary. For publicly traded firms, current goodwill-related disclosure requirements are contained in the SEC's *Regulation S-X* and in *APB Opinions 16* and *17*.[8] These disclosure rules appear to be designed to achieve two different goals. The first of these is to force disclosure of net goodwill and goodwill amortization in cases where these items are "material." Under Rule 5-02 of *Regulation S-X*, commercial and industrial firms must disclose net goodwill on the face of the balance sheet or in a note if it exceeds five percent of total assets.[9] Under Rules 5-04 and 12-11, intangibles amortization (including goodwill amortization) expensed during a period must be disclosed in the financial statements, notes, or in Schedule X of Form 10-K if it exceeds one percent of total revenue.[10] The second goal is to provide financial statement users with data that can be used to assess the reasonableness of the firm's amortization policy. Under *APB 17*, firms must disclose the method used to amortize goodwill and the period or periods over which goodwill is amortized. Under *APB 16*, firms must also disclose goodwill amounts recognized in connection with individual acquisitions, and the periods over which these amounts will be amortized.

On the surface, these disclosure rules suggest that investors should have little difficulty in identifying the financial statement effects of current goodwill accounting rules when it is important to do so. However, the extent to which firms comply with these rules is unknown. Moreover, the disclosure thresholds defined in *Regulation S-X* are not necessarily consistent with the information requirements of investors. For example, equity investors may be most directly interested in goodwill as a fraction of net assets, and goodwill amortization as a fraction of the typical level of earnings. For a highly leveraged firm, goodwill that does not meet the SEC's disclosure threshold may nevertheless be quite large in relation to net assets. Similarly, goodwill amortization that does not exceed one percent of revenue may nevertheless be important for investors if revenues are generally large in relation to earnings.

In order to determine whether the financial statement effects of the *APB 17* goodwill accounting rules can be identified by interested investors, we examined goodwill disclosures in the 1988 financial statements of a large sample of firms traded on the New York and American Stock Exchanges. The composition of this sample is discussed in the next section of the paper.

THE SAMPLE

Our sample includes all 621 firms listed in the 1988 *Compustat* database that met four conditions:

1. reported an intangible asset balance at some time during the period 1981-1987;[11]
2. domiciled in the U.S.;
3. listed on the New York Stock Exchange or the American Stock Exchange;
4. issued financial statements on a calendar year basis.

These conditions were designed to identify publicly traded firms that were subject to U.S. accounting and disclosure rules during 1988, and that were likely to have some purchased goodwill. Sample firms are distributed across 63 different two-digit and 249 different four-digit SIC codes. About one-third of the sample falls into 5 industries at the two-digit level: Chemical and Allied Products (7.4 percent); Machinery, except Electrical (6.1 percent);

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[8]Securities and Exchange Commission, *Regulation S-X*, Rules 5-02, 5-04, 9-03, 12-11; American Institute of Certified Public Accountants, *Accounting Principles Board Opinion No. 16 — Business Combinations* (1970), ¶ 95; and *APB 17* (*op. cit.*), ¶ 30.

[9]For bank holding companies and banks the disclosure threshold, established in Rule 9-03, is 30 percent of net assets.

[10]A firm may also be required to disclose "material" goodwill amortization under Rule 5-03, depending on how the expense is normally classified in the firm's income statement. If goodwill amortization is normally classified as "selling, general and administrative expense," separate disclosure is not required. On the other hand, if goodwill amortization is normally classified as "other operating expense" or as "nonoperating expense," disclosure is required. Rule 5-03 provides no quantitative definition of materiality.

[11]Neither net goodwill nor periodic goodwill amortization were reported in the 1988 *Compustat*.

Electrical and Electronic Machinery, Equipment and Supplies (5.8 percent); Transportation Equipment (5.3 percent); and Banking (9.4 percent). Every other two-digit industry accounts for less than 5 percent of the sample.

CURRENT GOODWILL DISCLOSURE PRACTICE

We attempted to locate and read both the 1988 annual report to shareholders and the 1988 Form 10-K for each of the 621 firms in the sample described above. Specifically, we searched the financial statements and accompanying notes and schedules in each report for evidence of purchased goodwill, and recorded the particulars of each firm's goodwill and goodwill-related disclosures. As Table 1 indicates, we were able to examine the 1988 annual report or Form 10-K (usually both) for 583 firms, or 94 percent of the sample.[12] In this section of the paper, we summarize the 1988 goodwill asset, expense, and amortization policy disclosure practices of the "goodwill subsample" — the 485 sample firms whose financial statements contained evidence of the existence of purchased goodwill.[13]

TABLE 1
Results of Annual Report/Form 10-K Examination

1988 Annual Report and/or Form 10-K:	Firms	Percent
Not available[1]	38	6.1
Available, but no evidence of goodwill	98	15.8
Available, evidence of goodwill[2]	485	78.1
Total	621	100.0

[1]Fourteen of these firms were acquired or taken private during 1988.
[2]For firms not explicitly disclosing goodwill balances, the following were interpreted as evidence of the existence of purchased goodwill: a statement of goodwill amortization policy; a statement that intangibles included goodwill; a reference to goodwill in connection with an acquisition, divestiture, or asset writedown; a reference to goodwill amortization in the note on income taxes.

Asset Disclosures

Table 2 reports frequencies of goodwill asset disclosures for the 485 firms in the goodwill subsample. The first two columns of the table show that 79 percent of these firms disclosed net goodwill asset balances in 1988, usually in the balance sheet itself. The remaining firms in the subsample (21 percent) had some purchased goodwill, but did not explicitly disclose a net goodwill balance.[14]

The third and fourth columns of Table 2 indicate that only 42 percent of the goodwill subsample firms reported 1988 balances for accumulated goodwill amortization. Stated differently, nearly half of the sample firms that disclosed *net* goodwill did not reveal *gross* goodwill balances. Information on gross goodwill is potentially useful to investors for two reasons. First, gross and net goodwill can be used in combination to estimate the average "age" of a firm's goodwill. Second, if periodic goodwill amortization is not explicitly disclosed, it can be estimated based on an analysis of changes in the accumulated amortization balance.

For firms that explicitly disclosed net goodwill in 1988, Table 3 shows percentiles of the distributions of two ratios that can be used to assess the materiality of purchased goodwill. The first of these, net goodwill/assets, is the measure on which the Rule 5-02 disclosure threshold is based. The second, net goodwill/ |net assets|, may express the importance of purchased goodwill more clearly from the

[12]We examined both the annual report and Form 10-K for 522 firms. For 37 (24) firms, we examined the annual report (Form 10-K) only.

[13]For firms not explicitly disclosing goodwill asset or expense balances, the following were interpreted as evidence of the existence of purchased goodwill: a statement of goodwill amortization policy; a statement that intangibles included goodwill; a reference to goodwill in connection with an acquisition, divestiture, or asset writedown; or a reference to goodwill amortization in the note on income taxes.

[14]Of the 104 firms in the goodwill subsample that did not explicitly disclose net goodwill, 66 did provide a balance sheet disclosure of net intangible assets. This gives financial statement readers a useful upper bound on net goodwill.

TABLE 2
1988 Goodwill Asset Disclosures by Firms in Goodwill Subsample[1]

Disclosure Source	Net Goodwill Firms	Net Goodwill Percent	Accumulated Amortization Firms	Accumulated Amortization Percent
Balance sheet[2]	312	64.3	112	23.1
Notes	68	14.0	93	19.2
Form 10-K	1	0.2	1	0.2
Total disclosing	381	78.5	206	42.5
Not disclosing	104	21.5	279	57.5
Total	485	100.0	485	100.0

[1]The "goodwill subsample" consists of the 485 firms in our sample whose 1988 financial statements contained evidence indicating the existence of purchased goodwill.
[2]For net goodwill (accumulated amortization), the sample includes 11 (3) firms that disclosed net intangibles (accumulated intangibles amortization) on the balance sheet, but revealed in notes to the financial statements that intangibles are "primarily" goodwill.

perspective of an equity investor.[15] These distributions suggest that goodwill is substantial in relation to total assets, and very substantial in relation to net assets, for a large proportion of disclosing firms. For example, net goodwill is at least 12.3 percent of total assets and 36.9 percent of net assets for 30 percent of the firms in the sample.

[15]The absolute value of net assets was used in computing this ratio because net assets may take negative values. For this reason we also use the absolute value of net income when calculating ratios based on net income.

TABLE 3
Distributions of 1988 Goodwill-Related Balance Sheet Ratios for Disclosing Firms in Goodwill Subsample[1]

Percentile	Ratio of Net Goodwill to Total Assets	Ratio of Net Goodwill to |Net Assets|
100 (maximum)	.699	11.048
90	.259	.897
80	.172	.575
70	.123	.369
60	.077	.284
50 (median)	.053	.192
40	.036	.114
30	.021	.084
20	.012	.047
10	.005	.021
0 (minimum)	.000	.000
Number of firms disclosing[2]	381	381

[1]The "goodwill subsample" consists of the 485 firms in our sample whose 1988 financial statements contained evidence indicating the existence of purchased goodwill. Ratios are based on balance sheet amounts at December 31, 1988.
[2]Two firms have missing total assets and net assets.

Expense Disclosures

Table 4 provides details of 1988 goodwill amortization disclosure practice for firms in the goodwill subsample. The picture here is quite different from that conveyed by Table 2 for goodwill asset disclosures. Only 115 (24 percent) of the 485 firms in the subsample explicitly disclosed 1988 goodwill amortization, compared with 381 (79 percent) firms that reported 1988 net goodwill asset balances. About half of these goodwill amortization disclosures appeared either in the income statement or the statement of cash flows. Most others were made in notes to the financial statements, and a few appeared in Schedule X of Form 10-K.[16]

For firms that explicitly disclosed goodwill amortization in 1988, Table 5 shows percentiles of the distributions of goodwill amortization/total revenue and goodwill amortization/ | net income |. These distributions suggest that, while goodwill amortization exceeds the Rule 12-11 reporting threshold (one percent of total revenue) for less than 20 percent of the 115 disclosing firms, it is substantial in relation to earnings for a much larger proportion of these firms. For example, more than half of the disclosing firms have goodwill amortization that exceeds five percent of net income.

TABLE 4
1988 Goodwill Amortization Disclosures by Firms in Goodwill Subsample[1]

Disclosure Source	Firms	Percent
Balance sheet	1	0.2
Income statement[2]	24	5.0
Statement of cash flows	29	6.0
Both income statement and statement of cash flows[2]	8	1.6
Notes	39	8.0
Schedule X of Form 10-K	14	2.9
Total Disclosing	115	23.6
Not Disclosing	370	76.3
Total	485	100.0

[1]The "goodwill subsample" consists of 485 of the 621 firms in our sample whose 1988 financial statements contained evidence indicating the existence of purchased goodwill.
[2]Includes two firms that stated in the notes to the financial statements that amortization of intangibles is "primarily" related to goodwill.

Amortization Policy Disclosures

Under *APB 17*, firms must disclose both the amortization method selected and the period or periods over which the asset is amortized.[17] The standard requires straight line amortization unless the firm can justify an alternative method, and the chosen amortization period must be the smaller of the period expected to be benefited or 40 years.[18]

Most firms in the goodwill subsample provided some information in their 1988 financial statements about the amortization periods they employ. As Table 6 indicates, about 37 percent of the subsample firms reported amortizing all post-1970 purchased goodwill over 40 years, while an additional nine percent reported a single amortization period less than 40 years for all goodwill. For the remaining 54 percent of the subsample, amortization period disclosures were less informative, uninformative, or nonexistent. For example, 22 percent of all subsample firms disclosed multiple amortization periods, but generally did not indicate how these periods were dis-

[16]Of the 370 firms in the goodwill subsample that did not explicitly disclose 1988 goodwill amortization, 52 (14 percent) did report intangibles amortization in the income statement or statement of cash flows.

[17]Firms with goodwill acquired prior to November 1, 1970 may account for this "old" goodwill either by applying the *APB 17* amortization rules on a prospective basis, or in accordance with Chapter 5 of *Accounting Research Bulletin No. 43*. Under the *ARB 43* rules, goodwill need not be amortized or written off unless evidence arising subsequent to acquisition indicates that the life of the asset is limited, or that the asset has become worthless. Although there is no specific requirement to disclose the accounting disposition of "old" goodwill, 67 firms in the goodwill subsample (14 percent) disclosed the existence of pre-November 1, 1970 goodwill that is not being amortized. Forty-nine of these firms disclosed the amounts involved; these range from less than one percent to 100 percent of total goodwill, and from less than one percent to ten percent of total assets.

[18]With the exception of depository institutions, none of these firms reported an amortization method other than the straight line method.

TABLE 5
Distributions of 1988 Goodwill-Related Income Statement Ratios for Disclosing Firms in Goodwill Subsample[1]

Percentile	Ratio of Goodwill Amortization to Total Revenue	Ratio of Goodwill Amortization to |Net Income|
100 (maximum)	.038	2.556
90	.013	.431
80	.009	.276
70	.007	.149
60	.005	.093
50 (median)	.004	.059
40	.003	.048
30	.002	.037
20	.001	.024
10	.000	.007
0 (minimum)	.000	.000
Number of firms disclosing	115	115

[1]The "goodwill subsample" consists of the 485 firms in our sample whose 1988 financial statements contained evidence indicating the existence of purchased goodwill. Ratios are based on income components for year ending December 31, 1988.

TABLE 6
Disclosures of Goodwill Amortization Period by Firms in Goodwill Subsample[1]

Disclosure	Firms	Percent
Forty years only	179	36.9
Single period < 40 years	43	8.9
Multiple periods including 40 years	85	17.5
Multiple periods < 40 years	24	4.9
Total disclosers	331	68.2
Boilerplate disclosure[2]	92	19.0
No disclosure	62	12.8
Total	485	100.0

Distribution of Amortization Periods:[3]	Firms	Percent
40 years	264	54.4
30-39 years	89	18.4
20-29 years	117	24.1
10-19 years	83	17.1
< 10 years	49	10.1

[1]The "goodwill subsample" consists of the 485 firms in our sample whose 1988 financial statements contained evidence indicating the existence of purchased goodwill.
[2]A disclosure that goodwill is amortized "over a period not to exceed 40 years."
[3]Percentages in this panel sum to more than 100 because some firms disclosed multiple amortization periods.

tributed across total goodwill. Nineteen percent of all disclosures were uninformative "boilerplate" statements (e.g., "goodwill is amortized over a period not to exceed 40 years"). Finally, 13 percent of all subsample firms made no amortization period disclosures.

Table 6 also shows a wide variation in the length of amortization periods selected. Thirty-seven percent of the firms in the goodwill subsample amortize all goodwill, and an additional 18 percent amortize some (undisclosed) component of goodwill, over 40 years. Thus, depending on the practice of the "boilerplate" disclosers and firms making no disclosure, as much as 86 percent of all subsample firms *may* be amortizing a substantial fraction of goodwill over the maximum period allowed by *APB 17*. On the other hand, at least 31 percent of all subsample firms amortize *some* fraction of goodwill over shorter periods.

MATERIALITY OF GOODWILL NUMBERS FOR NONDISCLOSING FIRMS

As Tables 2 and 4 indicate, a substantial number of firms in the goodwill subsample did not explicitly disclose net goodwill balances (21 percent) and goodwill amortization (76 percent). From an investor's point of view, however, nondisclosure is unlikely to be important unless the asset and expense amounts involved are "material." In this section of the paper, we provide evidence on the materiality of net goodwill and goodwill amortization for firms that *did not* explicitly disclose these numbers.

To address this issue, we requested information on goodwill accounting policies and goodwill balances from each of the 621 firms in the initial sample. As Table 7 shows, we constructed a "survey subsample" consisting of 231 firms that revealed positive 1988 goodwill balances and goodwill amortization in their survey responses, and for which 1988 financial statements were available. The second panel of Table 7 indicates that the 1988 financial statements of most firms in the survey subsample contained evidence of the existence of purchased goodwill. However, the survey subsample also includes 19 firms (8 percent) whose 1988 financial statements contained no such evidence. The second panel also indicates that survey subsample disclosure rates for net goodwill (73.6 percent) and goodwill amortization (24.7 percent) are similar to the disclosure rates for the goodwill subsample as reported in Tables 2 and 4.

TABLE 7
Construction and Composition of Survey Subsample

	Firms	Percent
Firms surveyed	621	100.0
No survey response	(277)	(44.6)
Incomplete survey response	(56)	(9.0)
Complete response, no goodwill	(54)	(8.7)
Complete response, with goodwill	234	37.7
AR/10-K not available	(3)	(0.5)
Survey subsample	231	37.2
Firms in Survey Subsample:		
Financial statements contain evidence of purchased goodwill	212	91.8
No evidence of purchased goodwill	19	8.2
Total	231	100.0
Firms in Survey Subsample Whose Financial Statements Contain Evidence of Purchased Goodwill:		
Net goodwill balances disclosed	170	73.6
Goodwill amortization disclosed	57	24.7

The first panel of Table 8 shows the distributions of net goodwill/total assets and net goodwill/| net assets | for firms in the survey subsample. Separate distributions are reported for firms that did and did not explicitly disclose 1988 net goodwill balances. These distributions indicate, as one would expect, that goodwill tends to be "more material" for disclosing firms than for nondisclosing firms. At the same time, however, goodwill is large in relation to assets and net assets for a substantial fraction of nondisclosers. For example, net goodwill exceeds the Rule 5-02 disclosure threshold (five percent of assets) for more than 20 percent of the nondisclosing firms, and exceeds 10 percent of shareholders' equity (net assets) for about 40 percent of these firms.

The second panel of Table 8 shows the distributions of goodwill amortization/total revenue and goodwill amortization/| net income | for disclosing and nondisclosing survey subsample firms. Again, goodwill amortization appears to be "more material" for disclosing firms than for nondisclosing firms. However, the expense number meets the Rule 12-11 disclosure threshold (one percent of total revenue) for nearly 10 percent of the nondisclosing firms, and exceeds ten percent of earnings for 20 percent of these firms. Taken together, the results in Table 8 indicate there are a substantial number of firms with material goodwill who do not disclose it in their financial statements.

ESTIMATING GOODWILL AMORTIZATION

Relatively few firms in either the goodwill subsample (less than 24 percent) or the survey subsample (less than 25 percent) explicitly disclosed goodwill amortization in their 1988 financial statements. However, this lack of disclosure should not be a problem for the investor if goodwill amortization can be eas-

TABLE 8
Distributions of 1988 Goodwill-Related Financial Ratios for Firms in the Survey Subsample[1]

Percentile	Net Goodwill to Total Assets: Discl.	Net Goodwill to Total Assets: Non-Discl.	Net Goodwill to |Net Assets|: Discl.	Net Goodwill to |Net Assets|: Non-Discl.
100 (maximum)	.620	.629	11.048	2.629
90	.270	.140	.854	.824
80	.175	.075	.595	.383
70	.131	.035	.422	.202
60	.084	.020	.323	.104
50 (median)	.062	.011	.228	.063
40	.040	.007	.171	.038
30	.022	.006	.100	.028
20	.013	.004	.061	.016
10	.006	.002	.031	.008
0 (minimum)	.000	.000	.000	.000
Number of firms	170	61	170	61

Percentile	Goodwill Amortization to Total Revenue: Discl.	Goodwill Amortization to Total Revenue: Non-Discl.	Goodwill Amortization to |Net Income|: Discl.	Goodwill Amortization to |Net Income|: Non-Discl.
100 (maximum)	.028	.068	.700	1.898
90	.014	.008	.275	.174
80	.009	.005	.156	.106
70	.007	.003	.104	.075
60	.006	.002	.088	.044
50 (median)	.004	.002	.064	.032
40	.003	.001	.052	.019
30	.002	.001	.044	.012
20	.001	.000	.029	.006
10	.001	.000	.007	.002
0 (minimum)	.000	.000	.000	.000
Number of firms	57	174	57	174

[1]The "survey subsample" consists of the 231 firms in our sample that supplied 1988 goodwill asset and expense data in response to our survey, and for which a 1988 annual report or Form 10-K was available.

Ratios are based on balance sheet amounts at December 31, 1988, and income components for year ending December 31, 1988.

ily and accurately estimated based on other available data. In this section, we report on the accuracy of two sets of goodwill amortization estimates for a stratified random sample of 110 nondisclosing firms from the survey subsample.

The first set of estimates was made by students enrolled in a course in "financial accounting issues in business decisions."[19] The students were divided into 22 teams of three or four students, and each team prepared con-

[19]This is a graduate-level financial accounting course. Most students enrolled in the course had previously taken courses in both intermediate and advanced accounting.

sensus estimates of 1988 goodwill amortization for five nondisclosing survey subsample firms. Before assigning firms to teams, the 144 survey subsample firms that did not disclose goodwill amortization were divided into three groups: (1) those that disclosed both net goodwill and accumulated amortization (58 firms); (2) those that disclosed net goodwill only (32 firms); and (3) those that disclosed no goodwill asset numbers (54 firms). Each team was then assigned two firms from the first group, one firm from the second group, and two firms from the third group, all selected at random (without replacement). Students were encouraged to use 1988 financial statements, previous years' financial statements, and any other relevant public information in forming their estimates. To provide motivation for the exercise, a substantial cash prize was awarded to the team achieving the smallest average absolute percentage deviation from goodwill amortization amounts revealed by survey respondents.

The second set of estimates is based only on data in the 1988 financial statements. The algorithm used to construct these estimates, described briefly in the Appendix, was developed without reference to amortization amounts revealed by survey respondents.[20] This algorithm was applied to the same 110 survey sample firms that were assigned to the student teams described above.

For each of the "student" and "algorithm" estimates, we calculated three error measures. The first of these is the absolute value of the estimation error expressed as a percentage of goodwill amortization for 1988 as reported by survey respondents. The second is the absolute value of the estimation error expressed as a percentage of total revenue for 1988. The third is the absolute value of the estimation error expressed as a percentage of the absolute value of reported earnings for 1988.

Table 9 summarizes the distributions of these error measures for both student and algorithm estimates. When viewed in relation to goodwill amortization, neither the student estimates nor the algorithm estimates appear to be very precise. For example, estimation error is in excess of 50 percent of amortization for at least 40 percent of all student estimates, and for at least 30 percent of all algorithm estimates. In an investment decision context, however, a large error with respect to amortization may be trivial if amortization is not "material." The second and third error measures in Table 9, which can be viewed as "materiality-weighted" versions of the first, reflect this notion. When considered in relation to revenue and earnings, estimation errors for most firms do not appear to be as large: for at least 80 percent of all estimates, the error is less than one half percent of revenue, and less than 10 percent of reported earnings. Nevertheless, errors in the upper 10 percent of the distribution appear to be economically significant.

SUMMARY OF RESULTS AND RECOMMENDATIONS

This paper investigates whether goodwill disclosures by publicly traded firms are sufficient to enable investors to determine the financial statement impact of the *APB Opinion No. 17* accounting rules. The results of our examination, which is based on 1988 financial statements and survey data for various subsets of an initial sample of 621 New York and American Stock Exchange firms, can be summarized as follows:

1. Most (but not all) firms that have purchased goodwill disclose some evidence of its existence.
2. Firms vary substantially in their goodwill asset and expense disclosures. Twenty-one percent of the firms in our goodwill subsample did not disclose net goodwill, 58 percent did not disclose accumulated goodwill amortization, and 76 percent did not disclose goodwill amortization expense.
3. Firms vary substantially in their choice and disclosure of goodwill amortization periods. Nearly one third of the firms in the

[20]Before the algorithm was applied to the nondisclosing firms, it was tested and refined based on a small sample of firms that did disclose 1988 goodwill amortization in their annual report or Form 10-K.

TABLE 9
Distribution of 1988 Goodwill Amortization Estimation Errors for 110 Nondisclosing Survey Sample Firms

Error Measure	Percentile	Students	Algorithm
	90	576.667	412.784
	80	132.685	165.385
	70	83.105	88.116
	60	57.045	38.198
$\frac{\lvert \text{Error} \rvert}{\text{Actual GW Amortization}} \times 100$	50	36.324	25.974
	40	12.115	9.102
	30	2.462	1.548
	20	0.000	0.000
	10	0.000	0.000
	90	0.658	0.521
	80	0.273	0.265
	70	0.208	0.133
	60	0.117	0.080
$\frac{\lvert \text{Error} \rvert}{\text{Revenue}} \times 100$	50	0.030	0.030
	40	0.014	0.014
	30	0.005	0.005
	20	0.000	0.000
	10	0.000	0.000
	90	11.256	11.444
	80	5.621	3.477
	70	3.207	2.246
	60	1.923	1.169
$\frac{\lvert \text{Error} \rvert}{\lvert \text{Net Income} \rvert} \times 100$	50	0.548	0.577
	40	0.227	0.323
	30	0.094	0.088
	20	0.000	0.000
	10	0.000	0.000

goodwill subsample did not disclose the period or periods over which goodwill is amortized.

4. Net goodwill and goodwill amortization tend to be larger for disclosing firms than for nondisclosing firms. However, net goodwill is more than five percent of net assets and goodwill amortization is more than three percent of net income for half of the nondisclosing firms in our survey subsample.
5. Estimates of goodwill amortization for nondisclosing firms exhibit large errors in relation to amortization, but relatively small errors in relation to revenue and earnings. However, errors for ten percent of our estimates exceeded one half percent of revenue and ten percent of earnings.

These results suggest that investors cannot easily identify the financial statement effects of current goodwill accounting rules for a substantial number of firms with material goodwill. Further, while investors can "successfully" estimate goodwill amortization in many cases when it is not disclosed, such estimates occasionally contain material errors.

These difficulties faced by investors will undoubtedly increase as the frequency of transactions involving goodwill continue to increase.

Whether current goodwill disclosures are "complete enough" is a question that must be decided ultimately by policy makers and their constituents. However, we believe that more complete and uniform goodwill disclosures would allow investors to more easily and accurately determine the impact of goodwill on the financial statements, and would constitute an improvement in financial reporting. Therefore, we make the following recommendations: If goodwill is not material, firms should provide a statement to that effect. If goodwill is material, firms should provide a schedule reconciling ending and beginning net goodwill balances, and a second schedule containing details for each acquisition whose net goodwill comprises a substantial portion of total net goodwill (e.g. more than 15 percent). The second schedule should include the name and date of the acquisition, the unamortized balance and the remaining amortization period. For all other acquisitions, the second schedule should include their combined unamortized goodwill balance and the weighted average remaining amortization period. We believe that adoption of these disclosure requirements would greatly assist investors attempting to unravel the financial statement effects of current goodwill accounting.

APPENDIX

Algorithm for Estimating Goodwill Amortization

For each firm in the stratified random sample of nondisclosers described in the paper, the algorithm outlined below was used to calculate *ESTEXP*, an estimate of 1988 goodwill amortization expense based on data in the 1988 financial statements.

Step 1

Read 1988 financial statements (annual report and Form 10-K) to obtain as many of the following data items as possible:

GW_B, GW_E	Net goodwill at beginning and end of year.
AA_E, AA_B	Accumulated goodwill amortization at beginning and end of year.
N	New goodwill arising from acquisitions during year. If the gross goodwill balance is disclosed, and does not change during the year, assign $N = 0$. If there is no acquisitions note, or if the acquisitions note indicates that acquisitions during the year were treated as poolings of interests, assign $N = 0$. If the note discloses a goodwill amount related to acquisitions during the year, assign N = amount. Otherwise, treat N as missing.
R	Reductions in goodwill arising from dispositions during year. If the gross goodwill balance is disclosed, and does not change during the year, assign $R = 0$. If no significant disposition is disclosed in notes, assign $R = 0$. If notes disclose a goodwill amount related to dispositions during the year, assign R = amount. Otherwise, treat R as missing.
I_B, I_E	Net intangibles at beginning and end of year.
AMI	Intangibles amortization from Schedule X of Form 10-K or from statement of cash flows.
IAA_B, IAA_E	Accumulated intangibles amortization at beginning and end of year.
DAM	Depreciation and amortization from statement of cash flows.
$DAMP$	Depreciation and amortization of property, plant and equipment from Schedule VI of Form 10-K.
P	Simple average of disclosed amortization periods for goodwill. If no disclosure, assign P = 40.
OGW	"Old" goodwill that is not amortized. If an amount is not disclosed, assign $OGW = 0$. Otherwise, assign OGW = amount.

Step 2

Take EST_k, the first estimate from the list below that can be calculated from available goodwill data, as a tentative estimate of 1988 goodwill amortization expense. Then go to Step 3. If data are not available to calculate any of EST_1 - EST_5, go to Step 4.

$$EST_1 = AA_E - AA_B + \frac{4.5R}{P - 4.5}$$

$$EST_2 = AA_E - AA_B$$

$$EST_3 = \frac{GW_B + GW_E}{I_B + I_E} \times AMI$$

$$EST_4 = \frac{GW_B - OGW}{P - 4} + \frac{N}{2P} + \frac{R}{2(P-4) - 1}$$

$$EST_5 = \begin{cases} EXP_B + \dfrac{GW_E - GW_B + EXP_B}{2P - 1} & (\text{for } GW_E - GW_B \geq 0) \\ EXP_E + \dfrac{EXP_B - EXP_E}{2} & (\text{for } GW_E - GW_B < 0) \end{cases}$$

where: $$EXP_B = \frac{GW_B - OGW}{P - 4}$$

$$EXP_E = \frac{GW_E - OGW}{P - 5}$$

Notes on Step 2 Estimates: The first, fourth, and fifth estimates are based on one or both of the following assumptions:

- the average dollar of amortizable goodwill on the books at 1/1/88 was acquired on 1/1/84.
- a half-year's amortization was recognized on new goodwill acquired during 1988, and on any goodwill disposed of during 1988.

EST_4 is used in cases where either N is nonzero, R is nonzero, or both are nonzero. Where both N and R are zero, EST_5 is used.

Step 3

Compare EST_k, the tentative estimate of goodwill expense from Step 2, to a measure of total intangibles amortization. If available, use the latter as an upper bound on *ESTEXP*.

a. If *AMI* is disclosed, *ESTEXP* = min(*AMI*, EST_k).

b. If *AMI* is not disclosed, but *DAM* and *DAMP* are disclosed,

   ESTEXP = min(*DAM* - *DAMP*, EST_k).

c. Otherwise, *ESTEXP* = EST_k.

Step 4

If none of the estimates in Step 2 could be calculated due to lack of goodwill data, set *ESTEXP* equal to the first estimate in the list below that can be calculated from data on intangibles. If none of these estimates can be calculated, set $ESTEXP = 0$.

$EST_6 = AMI$

$EST_7 =$ same as EST_1 above, except that IAA_E and IAA_B replace AA_E and AA_B.

$EST_8 =$ same as EST_2 above, except that IAA_E and IAA_B replace AA_E and AA_B.

$EST_9 = DAM - DAMP$

$EST_{10} =$ same as EST_4 above, except that I_B replaces GW_B

$EST_{11} =$ same as EST_5 above, except that I_B replaces GW_B

$EST_{12} =$ same as EST_6 above, except that I_B and I_E replace GW_B and GW_E