

Recognizing Retiree Health Benefits: The Effect of SFAS 106

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■ In December 1990, the Financial Accounting Standards Board (FASB) [8] issued *Employers' Accounting for Postretirement Benefits Other than Pensions* — Statement of Financial Accounting Standards No. 106 ("Statement No. 106") to apply to financial statements with fiscal years beginning after December 15, 1992. With final promulgation of this accounting standard, the FASB expressed definitively its view that retiree health benefits are a form of deferred compensation and not merely a gratuity. Accordingly, the FASB required that accrual accounting be used for these benefits. The FASB also gave explicit guidelines about most of the assumptions and attribution methodologies to be used in valuing retiree health benefits.

Prior to the adoption of Statement No. 106, companies sponsoring a retiree health plan were required to disclose

only limited information. In 1984, as a temporary measure pending the promulgation of final guidelines, the FASB [5] required employers to disclose the annual cash outlays (pay-as-you-go costs) for retiree health benefits in their annual statements, if such costs were deemed to be material. The interim standard, *Disclosure of Postretirement Health Care and Life Insurance Benefits* — Statement of Financial Accounting Standards No. 81 ("Statement No. 81") also required a brief description of the benefits provided, the employee groups covered, and the accounting and funding policies followed for these benefits.

For firms that sponsor comprehensive retiree health plans, the shift to Statement No. 106 is expected to have substantial negative effects on balance sheets and income statements. The primary purpose of this study is to quantify and examine these effects. This study complements the Coopers and Lybrand [3] study by using less detailed firm-specific information but a much larger sample of firms. Hence, our study may be thought to be more evocative of the aggregate impact of the new accounting stan-

The views expressed in this paper do not necessarily reflect the views of the Board of Governors or its official staff. This paper has benefitted from the comments of the Editor and two anonymous referees and discussions with T. Mittelstaedt and W. Sellner.

dard and also allows some consideration of distributional effects. In particular, the study analyzes which industries will be most affected by the new pronouncement, presents a method for estimating Statement No. 106 expense and liability from Statement No. 81 pay-as-you-go costs, and discusses the financial implications of Statement No. 106. The estimation method can be used by investors to evaluate the sensitivity of company disclosures to alternate assumptions and to make adjustments when performing time-series analyses.¹

In the first section, the provisions of Statement No. 106 are described in detail. Section II discusses sample selection and analyzes cross-industry differences in the percentage of companies sponsoring retiree health plans. Section III details a method for estimating Statement No. 106 expense and liability from Statement No. 81 pay-as-you-go cost. Using this method, Section IV provides an analysis of the impact of Statement No. 106 on financial statements of firms with material pay-as-you-go costs and evaluates the effect. This section also compares study estimates with recent disclosures by some sponsoring firms. Section V discusses the financial implications of the prior accounting analysis. The final section summarizes results and conclusions.

I. Provisions of Statement No. 106

In general, the method of accounting for retiree health benefits promulgated in the new standard parallels the method adopted in *Employers' Accounting for Pensions*—Statement of Financial Accounting Standard No. 87 (“Statement No. 87,” FASB [6]).² In particular, both meth-

¹Many firms are expected to early adopt Statement No. 106 in their 1992 financial statements. Others, however, will wait until 1993. Securities and Exchange Commission (SEC) Staff Accounting Bulletin 74 requires discussion of the impact of a new accounting pronouncement when the impact is expected to be material (see Price Waterhouse [12]). As a consequence, many firms will provide estimates of the effects of Statement No. 106 in 1992 financial statements released in 1993, but will not disclose assumptions. As a result, reported measures may not be comparable across firms, and financial statement readers may not have enough information to make the adjustments that could improve comparability. Similarly, 1993 first quarter earnings reports will report material income effects of changing to Statement No. 106, but assumptions will not be disclosed until the annual reports are released in 1994. Two significant advantages of the method used in this study are that assumptions are disclosed, and the estimation method is identical across firms. The difference between the estimates in this study and in some recent firm disclosures are discussed in greater detail in the final empirical portion of this paper.

²The new standard applies to all types of postretirement benefits, including life insurance, housing assistance, and so on. In dollar terms, however, only retiree health benefits are significant.

ods produce an accrued liability which is the actuarial present value of benefits attributed to employee service rendered up to a specified date. Expense recognition for both methods uses a benefits/years-of-service approach that attributes the employer's expected benefit obligation to each year of service in the attribution period.

A. Liability Recognition and Disclosure

The liability for retiree health benefits (accumulated postretirement health obligation) is measured using actuarial assumptions which include the discount rate, and the amount and timing of future benefit payments, which in turn depend on assumptions about per capita claims cost by age, health care cost trend rates, and the Medicare reimbursement rate. The discount rate must reflect rates of return available on high-quality fixed-income investments. The trend rate of health care costs should reflect factors other than changes in the demographics of plan participants, such as health care inflation, changes in health care utilization, and technological advances. The assumed rate of Medicare reimbursement should be consistent with current law; future changes in the program may not be anticipated unless such changes are already enacted into law. An employer is, however, allowed to anticipate his own intended changes in a plan's cost-sharing provisions, if such changes reflect the employer's policy of cost-sharing, as evidenced by past practice or communications with workers. In addition to assumptions specific to retiree health plans, actuarial assumptions must be made about employee turnover, retirement age, mortality, and the number of covered dependents.

Upon adoption of Statement No. 106, a firm may elect immediate or delayed recognition of the total accumulated postretirement health obligation. (The effect of this election on income is discussed more fully below.) Under either choice, the liability must be disclosed in the footnotes to financial statements. Although the Exposure Draft contained minimum liability provisions similar to those in Statement No. 87, the final pronouncement excluded minimum liability provisions.

B. Expense Recognition and Disclosure

Retiree health expense is comprised of service cost, interest on the accumulated postretirement health obligation, expected return on plan assets, amortization of actuarial gains and losses, and (when applicable) amortization of the transition liability. The service cost component is the portion of the expected postretirement benefit obligation earned by employee service during the current period.

Retiree health benefits are assumed to be fully accrued by the date the employee is eligible to receive benefits rather than at the expected retirement date. For example, if active workers are eligible for retiree health benefits after ten years of service and attainment of the early retirement age, say 55, the accounting standard for retiree health benefits would require complete accrual of benefits by age 55 for those workers with ten or more years of service even though they are expected to continue working until, say, age 63. In contrast, for pensions, the accounting standard generally allows an attribution period extending to the expected age of retirement.

If the retiree health plan is funded, retiree health expense is reduced by an assumed return on plan assets. However, most plans are not funded, in part because tax laws do not fully exempt fund earnings from taxation. The assumed return should be based on actual experience. The interest component of expense equals the discount rate used to compute the accumulated postretirement benefit obligation multiplied by the accumulated postretirement benefit obligation existing at the beginning of the year. Amortization of actuarial gains and losses is included in the expense only when cumulative actuarial gains and losses are large with respect to the accumulated postretirement benefit obligation.

As stated previously, an employer can immediately recognize its accrued liability for retiree health benefits by taking a one-time charge on the income statement, designated as a cumulative effect of a change in accounting principle. Alternatively, the employer can recognize the liability owing to past service on a pro rata basis over a period not to exceed twenty years. This study provides estimates of expense for both transition methods.

C. Interaction Between Statement No. 106 and Income Tax Accounting

The interaction between the new method of accounting for postretirement health benefits and the evolving methods of accounting for income taxes has been a source of considerable confusion and controversy. While the FASB was considering the standard for retiree health benefits, it was changing and amending the standard for income taxes. Under a strict interpretation of the liability method of accounting for income taxes, as appeared in December 1987 when the FASB [7] issued *Accounting for Income Taxes* — Statement of Financial Accounting Standard No. 96 (“Statement No. 96”), companies would not have been allowed to book a deferred tax asset for their retiree health obligations because that statement did not allow the antici-

pation of future taxable income. In early 1992, however, the FASB [9] issued *Accounting for Income Taxes* — Statement of Financial Accounting Standards No. 109 (“Statement No. 109”), representing a more lenient version of the liability method. In particular, companies will now be allowed to anticipate future income and hence to report the *net* after-tax liability recognized for retiree health benefits.³ In this study, we focus on the after-tax effect of Statement No. 106, consistent with the treatment afforded retiree health liabilities under the new rules of income tax accounting.

The next section describes the sample and discusses the retiree health benefit disclosures made prior to adoption of Statement No. 106.

II. Sample Statistics and Current Disclosures

The sample is comprised of firms that do and firms that do not sponsor health plans. Firms are identified as sponsoring or not sponsoring plans on the basis of word searches in the May 1990 Edition of *Corporate Text*. Careful examination of footnotes in annual financial statements identified 666 firms that sponsored retiree health plans and 1,560 firms that did not sponsor retiree health plans in 1988. The information, hand-gathered from *Corporate Text*, was then matched to financial and other data obtained from COMPUSTAT. Some firms were lost due to missing COMPUSTAT data. For firms sponsoring plans, approximately seven percent were lost due to missing data, and for firms not sponsoring plans, approximately 11% were lost. The final sample consists of 620 firms sponsoring plans and 1,383 firms not sponsoring plans. Of the 620 firms that sponsor retiree health plans, approximately 20% stated that the pay-as-you-go costs were immaterial and, as a result, did not report any amounts. Pay-as-you-go costs and Statement No. 106 estimates reported in subsequent exhibits include only the 476 firms that disclose the costs and are not already accruing retiree health benefits for active workers.

Exhibit 1 shows that there are distinct cross-industry differences in the percentage of firms sponsoring retiree health plans.⁴ For instance, of the firms in the glass, cement

³It should be noted that the net after-tax liability measure, calculated using a pre-tax discount rate, may be an underestimate of the sponsor's true economic obligation for retiree health benefits, given that there are no *widely available* tax-favored full funding mechanisms similar to pensions.

⁴For the definition of industry composition used here, see Biddle and Scow [2].

Exhibit 1. Sample by Industry

Industry	Two- and/or Three-Digit SIC	Firms With Retiree Health Plans	Firms Without Retiree Health Plans
Agriculture	01-08	1	4
Mining	10-12, 14	11	13
Oil & gas exploration	13, 353	10	59
Construction	09, 15-17, 24, 25	8	39
Food and tobacco	20, 21	26	32
Textiles and apparel	22, 23	9	40
Paper	26	16	14
Publishing	27	10	26
Chemicals	280-282	17	11
Pharmaceuticals	283	11	23
Specialty chemicals	284-289	17	20
Petroleum refining	29	21	7
Rubber, plastic, leather	30-31	6	35
Glass, cement, ceramic	32	15	2
Steel	331-332	14	14
Metalworks	333-336	11	2
Metal parts	339, 34	15	32
Industrial equipment	351, 352, 354	21	9
Small industrial machines	355, 356, 358, 359	15	35
Electrical machinery	360-364, 369	9	29
Telecommunications equipment	365-366	4	25
Electronic components	367	4	34
Computers	357, 368	9	32
Automobiles	371, 375	17	17
Aircraft	372, 376	19	7
Miscellaneous manufacturing	38, 39	22	76
Commercial transport	373, 374, 379, 40, 42, 44, 46	13	18
Air transport	45, 47	10	10
Telecommunications	48	18	21
Electric utilities	491	47	8
Natural gas	492	37	12
Other utilities	493-499	49	18
Wholesalers	50-51	10	79
Building materials - retail	52	0	6
Department stores	53	5	18
Specialty stores	55-59, except 591	4	73
Grocers	54, 591	6	15
Financial services	60-62	52	123
Insurance	63	17	38
Investors	64-67	3	152
Personal services	70, 72, 739, 76-80, 82-83	2	86
Business services	73(except 739), 75, 87, 89	9	69
Total		620	1,383

and ceramics, metalworks, and electric utilities industries, over 80% have retiree health plans, while in construction, textiles and apparel, rubber, plastic and leather, telecommunications equipment, electronic components, wholesalers, building materials — retail, specialty stores, personal services, and business services industries less than 20% of

the firms sponsor such plans. These differences across industries likely reflect the degree of unionization, the average size of firms (as further noted below), average profitability, and the length of time employees remain with the firms. In general, a large, profitable firm with unionized workers who make lifelong careers with the firm is most

Exhibit 2. Descriptive Statistics

Characteristic	Firms With Retiree Health Plans		Firms Without Retiree Health Plans	
	Mean Median Standard Deviation	Minimum Maximum	Mean Median Standard Deviation	Minimum Maximum
Market value of common stock (in millions)	2,555.8	2.8	430.7	0.595
	955.2	71,874	86.5	23,536
	5,402.6		1,275	
Total assets (in millions)	7,894.8	16.5	1,336.3	2,073
	1,971.4	207,666	170.8	97,455
	19,132.5		5,289.0	
Sales (in millions)	4,188.5	31.6	600.4	0.012
	1,493.3	121,816	140.3	25,864
	9,340.9		1,623.5	
Employees (in thousands)	25.5	0.12	5.77	0.011
	8.38	766	1.38	330
	54.7		18.7	
Debt/total assets	0.655	0.135	0.586	0.003
	0.623	2.151	0.571	3.417
	0.208		0.281	
After-tax income from continuing operations/total assets	0.040	-1.635	0.034	-2.749
	0.046	0.473	0.035	4.708
	0.103		0.213	
Pre-tax pay-as-you-go reported retiree health cost (in millions) ^a	14.7	0.01	N.A.	N.A.
	2.5	1,130.0		
	62.9			
Number of observations	620		1,383	

Note:

^aReported pay-as-you-go statistics are based on the 476 firms that report the amount of pay-as-you-go costs and were not accruing expected retiree health costs for active workers during 1988.

likely to offer a retiree health plan. The financial statement effects of Statement No. 106 by industry are discussed in the results section.

Descriptive statistics for firms sponsoring health plans and those that do not are given in Exhibit 2. The first four rows contain various measures of firm size: market value of common stock, total assets, sales and number of employees. All four measures indicate that firms with retiree health plans are larger than firms that do not sponsor retiree health plans. The median retiree health plan firm has a market value of common stock of \$955 million, total assets of \$1.971 billion, sales of \$1.49 billion and 8,380 employees. In contrast, for firms not sponsoring retiree health plans, the market value of common stock is \$86.5 million, total assets are \$170 million, sales are \$140 million and the number of employees is 1,380. Wilcoxon rank-sum tests indicate the two groups are statistically different on all four size measures. This result may reflect the fact that most

retiree health plans are not prefunded, and hence, only larger, more stable and publicly prominent companies have been trusted by employees to make good on retiree health promises. It may also reflect the fact that many small firms have difficulty finding affordable health insurance for any workers, active or retired.

The exhibit shows that firms sponsoring plans also have larger debt and after-tax earnings, as a percentage of total assets, than firms not sponsoring plans. For firms sponsoring plans, the median debt/total assets ratio is 62.3%, and for firms not sponsoring plans, this ratio is 57.1%. Similarly, the median after-tax earnings/total asset ratios are 4.6% and 3.5%, respectively. Again, these differences are statistically significant using a Wilcoxon rank-sum test.

The second to the last line of Exhibit 2 provides descriptive statistics for the current disclosure of pay-as-you-go retiree health cost. The median pay-as-you-go cost is \$2.5 million; the average cost is \$14.7 million. Clearly, even

under the current disclosure requirements, retiree health costs are nontrivial.

III. Estimation of Statement No. 106 Liability and Expense Measures

Because firms were required to disclose only the pay-as-you-go cost prior to the passage of Statement No. 106, a method for converting pay-as-you-go costs to liability and expense measures is needed. The model presented here to estimate the effects of Statement No. 106 will employ prototypical demographic groups developed originally by the American Academy of Actuaries Committee on Pension Actuarial Principles and Practices (hereafter, AAAC) [1] from actual pension plan data in response to a request for an analysis of the then new accounting standard for pensions, Statement No. 87. In our model, pay-as-you-go cost, retiree health benefit liability, retiree health benefit liability to pay-as-you-go cost index (hereafter, the liability-to-cost ratio), accrued retiree health benefit expense (hereafter, accrued expense) and accrued expense to pay-as-you-go cost index (hereafter, expense-to-cost ratio) are calculated for the different AAAC demographic groups. The model is explained more fully in Warshawsky [14]⁵ and Mittelstaedt and Warshawsky [11], and is summarized in the following paragraphs.

The retiree health model entails the calculation of the expected present value of future health benefits to be received during the period of retirement for three sets of plan participants: retirees, active workers eligible for early retirement and, hence, generally eligible for retiree health benefits, and (younger) active workers potentially eligible for benefits. General assumptions are made about per capita health care costs, adjusted for age, the portions of the health cost paid by Medicare and employer-provided health insurance, discount rate, and medical inflation rate. All assumptions are based on recent medical cost and actuarial data, and represent best estimates.

The model then gets a demographic overlay, which includes assumptions about age distributions and turnover rates of employees. In the absence of information about the specific demographic characteristics of individual companies, data for five of the AAAC prototypical demographic groups are used. The groups are described in the

notes to Exhibit 3.⁶ Each group is normalized to 10,000 active participants with the participants categorized into age-tenure profiles. For example, in Group 1, 1,244 active participants are between the ages of 25 and 30 and have two to four years of credited service. Information regarding probability of leaving the firm before full eligibility (assumed to be ten years of service and attainment of age 55), probability of retiring at a given age (assumed to be between ages 55 and 66), and extent of dependent coverage is also provided by the AAAC. The number of total retired participants varies by group, and the age distribution of retirees (beginning at age 55) is based on data reported in Doran, MacBain, and Reimert [4].

In calculating the expense and liability measures, it is assumed that the earliest retirement age is 55, the per capita covered cost of health care for a retiree age 55 is \$1,500, the discount rate is nine percent, the health care cost trend rate is eight percent, and for retirees above age 65, the employer is responsible for only 30% of the cost because of Medicare. Costs are multiplied by one plus the proportion of retirees expected to have spouses covered by the retiree health benefit plan. Spouses are assumed to be three years younger than the plan participant.

The retiree health liability is the sum of the present value of the benefits owed to three sets of participants. The calculation for the present value of benefits owed to current retirees is obtained by discounting the stream of expected future health care costs for current retirees and their spouses using the discount and health care cost trend rates assumed above. The present value of benefits owed to currently eligible active employees is similar to the calculation for current retirees, except that amounts are adjusted to allow for varying retirement dates. The present value of benefits due to potentially eligible active employees expands the calculation of benefits for currently eligible employees by allowing for termination of employment prior to becoming fully eligible for retiree health benefits. The retiree health liability is the sum of these three calculations. The pay-as-you-go cost for each AAAC demographic group is obtained by summing the expected health costs in a given year for that group's retirees. The liability-to-cost ratio is given by dividing the retiree health liability by the pay-as-you-go cost.

The accrued expense measure for an unfunded plan consists of three components: amortization of the transition obligation, interest on the retiree health liability and service cost for the current year. Assuming an amortization

⁵Warshawsky [14] also reviews the legal and economic framework of retiree health plans sponsored by private employers, and explores some public policy options.

⁶Descriptions are based on those appearing in AAAC [1, p. 3].

Exhibit 3. Characteristics of Five Demographic Groups

Demographic Group ^a	Percentage of Participants Retired	Probability of Worker, Age 35, Remaining to Retirement	Expected Retirement Age	Accrued Expense/ Pay-As-You-Go Cost Index	Accrued Liability/ Pay-As-You-Go Cost Index	Δ in Employees - Basis for Group Assignment
1. Normal Group	14	0.28	62.6	5.20 ^b 3.73 ^c	29.34	$\Delta > 10\%$
2. Older Group with Long Service	10	0.32	61.7	9.25 6.61	52.77	$2\% < \Delta \leq 10\%$
3. Stable Mature Group	21	0.83	63.2	6.46 4.55	38.28	$-2\% < \Delta \leq 2\%$
4. Cyclical Bimodal	41	0.52	63.7	3.10 2.10	19.91	$-10\% < \Delta \leq -2\%$
5. Old Long Service Group	47	0.36	63.2	3.05 2.03	20.39	$\Delta \leq -10\%$

Notes:

^aThe groups are described by the American Academy of Actuaries Committee on Pension Actuarial Principles and Practices as:

1. *Normal Group*: This represents a reasonably mature and stable group which is projected to continue to grow. It is typical of many large companies.

2. *Older Group with Long Service*: This represents a currently stable group having rapid growth 10 to 20 years ago which has since tapered off. The number of employees has been level for several years and is projected to remain so. Turnover is relatively low.

3. *Stable Mature Group*: This group is a mature group with a relatively high age, long service and a large number of retirees. The number of employees has been the same for many years. It is expected to continue level. Turnover is relatively low in early years of employment and very low for longer service employees.

4. *Cyclical Bimodal*: This is an old hourly group with a substantial number of retirees and large retiree liabilities. The age distribution is bimodal. Approximately 20% of the employees are over age 55 and 25% are under age 30. Employment is cyclical, but declining overall.

5. *Old Long Service Group*: This is a group of hourly workers with high average age and years of service. Almost 50% of the employees are over age 50. Even though this group is declining, replacement of retiring employees will cause the average age and service to decline.

^bAssuming delayed recognition.

^cAssuming immediate recognition.

period of 20 years, the amortization component will be the retiree health liability (calculated above) divided by 20. The interest component is computed by multiplying the retiree health liability by the discount rate. Finally, the service cost for the year is the change in the present value of benefits owed to potentially eligible active employees. The expense is also calculated under the scenario of immediate recognition of the transition obligation. Under this scenario, retiree health expense in years after adoption of Statement No. 106 consists only of the service cost for the current year plus the interest on the liability. The expense-to-cost ratio is calculated by dividing the accrued expense by the pay-as-you-go cost.

Exhibit 3 gives the percentage of retired participants, the probability of remaining to retirement, the expected retirement age, the expense-to-cost ratios for delayed and immediate recognition and the liability-to-cost ratio for each of the five demographic groups. The liability-to-cost ratios range from 19.9 to 52.8, and the expense-to-cost ratios range from 2.03 to 9.25. In general, plans with a larger proportion of retirees have lower liability-to-cost and expense-to-cost ratios. These estimates are consistent with, although slightly higher than, Coopers and Lybrand [3, p. 90] estimates based on data obtained from 26 firms participating in a field study. Note that these ratios are pre-tax; after-tax amounts presented in subsequent exhib-

its are computed by multiplying the factor by 0.66 (one minus the top corporate tax rate).

While the ratios are calculated using best estimates for economic and actuarial assumptions, it should be noted that the relationship between the discount rate and the health care cost trend rate greatly influences the magnitude of the liability-to-cost ratio. We assume a discount rate of nine percent and a health care cost trend of eight percent. If both rates are set at eight percent for the Normal Group, the ratio increases by 19%; if the discount rate is decreased to seven percent, leaving the health care cost trend rate at eight percent, the ratio increases by 43%. On the other hand, if the discount rate remains at nine percent and the health care cost trend rate is decreased to seven percent, the ratio decreases by 14%; if the cost trend rate is set at six percent, the ratio decreases by 26%.

Firms were assigned to the AAAC demographic groups on the basis of the change in the number of employees over the period 1986 to 1989, as reported by COMPUSTAT. The classification scheme appears in the last column of Exhibit 3. Although this scheme is rather simplistic, it is thought that the rate of growth of the number of employees is negatively correlated with the relative proportion of older long-service active workers and retirees among plan participants, and is also negatively correlated, although weakly, with the probabilities of active workers remaining

with the company until eligible for retiree health benefits.⁷ For the 476 firms reporting pay-as-you-go costs, 28% were assigned to Group 1, 18% to Group 2, seven percent to Group 3, 26% to Group 4, and 21% to Group 5.

The retiree health benefit liability and accrued expense measures were then estimated by multiplying the reported pay-as-you-go cost by the appropriate liability-to-cost or expense-to-cost ratio. For example, General Motors (GM) was assigned to Group 5, and we estimated its 1991 after-tax retiree health liability as \$18.8 billion (\$1.4 billion reported cost \times 20.39 liability-to-cost ratio \times 66% after-tax rate). In early 1993, GM disclosed that its after-tax liability is \$20.8 billion. Additional comparisons of the estimates in this study with recent disclosures by several firms are discussed below.

An analyst interested in obtaining a comparable time-series of earnings may also reverse the effects of Statement No. 106 by dividing the Statement No. 106 expense by the appropriate index. To obtain earnings using pay-as-you-go costs, the accrued expense would be added to pre-tax income, and the estimated pay-as-you-go expense would be deducted.

IV. Effects of Statement No. 106

A. Effects for Full Sample

The estimated effects of Statement No. 106 are given in Exhibit 4. Income statements and balance sheets for the year 1988 are employed in the analysis. The first panel of the exhibit estimates the effects on earnings if the transition obligation is amortized over 20 years. In this case, the accrued after-tax expense measure for the median firm is \$7.8 million, which is approximately three times the currently reported pre-tax pay-as-you-go cost. This translates into an estimated eight percent drop in after-tax earnings. For the mean firm, the expense is \$45 million, resulting in a 35% decline in after-tax earnings. The difference between median and mean firms is explained by the relatively few large firms with high expenses.

The second panel of Exhibit 4 estimates the effects if the transition obligation is recognized immediately. With immediate recognition, the accrued expense, excluding the cumulative effect, for the median firm is \$5.4 million, which is 2.2 times the currently reported pay-as-you-go cost. After-tax earnings decline by an estimated 4.7%. In

Exhibit 4. Estimated Impact of Statement No. 106 for Firms Sponsoring Retiree Health Plans^a

<i>Panel A. Income Statement Effect — Delayed Recognition</i>			
Characteristic	Mean Median Standard Deviation	Minimum Maximum	
Estimated SFAS 106 expense (in millions)	45.0 7.8 156.6	0.03 2,273.8	
Percentage change in after-tax earnings	-35.1 -8.1 219.7	3,921.4 -0.1	
<i>Panel B. Income Statement Effect — Immediate Recognition</i>			
Characteristic	Mean Median Standard Deviation	Minimum Maximum	
Estimated SFAS 106 ongoing expense (in millions) (after-tax)	31.3 5.4 107.4	0.02 1,513.6	
Percentage change in after-tax earnings (ongoing expense)	-20.4 -4.7 121.4	-1,970.4 -0.04	
Percentage change in after-tax earnings (after-tax charge for cumulative effect in year of adoption)	-313.5 -72.7 2,019.4	-39,220.3 -1.5	
<i>Panel C. Effect on Debt Analysis</i>			
Characteristic	Mean Median Standard Deviation	Minimum Maximum	
Estimated SFAS 106 accrued liability (in millions) (net-of-tax)	274.0 46.4 987.9	0.193 15,204.5	
Estimated SFAS 106 accrued liability (net-of-tax)/total assets	0.056 0.031 0.086	< 0.001 0.84	
Estimated SFAS 106 accrued liability (net-of-tax)/market value of common stock	0.168 0.058 0.494	0.001 7.24	
Percentage change in debt/total assets (immediate recognition)	9.6 5.3 15.2	0.01 168.4	

Note:

^aData for 1988 and 476 observations are used in the analysis.

⁷If the reader wishes to use this estimation method and has more information on the workforce demographics, he/she may wish to apply a different method of assignment.

addition, immediate recognition of the cumulative effect of the change will cause an estimated 73% drop in after-tax earnings in the year of adoption. For the mean firm, the accrued expense, excluding the cumulative effect, is \$31 million. After-tax earnings will drop by 314% in the year of adoption and by 20% in the years thereafter. Given that the decline in ongoing earnings is 1.7 times higher under delayed recognition than under immediate recognition, it is understandable that most firms are choosing immediate recognition.

The last panel of Exhibit 4 shows the effects of the liability measure. The median estimated after-tax accrued liability is \$46 million, which is 18 times the currently reported pay-as-you-go cost. The median accrued liability measure represents 3.1% of total assets and 5.8% of the market value of common stock. The mean estimated after-tax accrued liability is \$274 million, representing almost six percent of total assets and 17% of the market value of common stock. The effect of immediate recognition on the debt ratio is to increase the debt/asset ratio of the median firm 5.3%. Measured as a mean, immediate recognition will cause a 9.6% increase in the debt ratio.

B. Effects by Industry

Exhibit 5 shows that some industries will be affected by Statement No. 106 more than others. For example, the steel industry experiences a 27% increase in its debt-to-total-asset ratio and a 15% decline in ongoing earnings under immediate recognition. Several other industries between SIC codes 30 and 39 experience increases in debt-to-total-asset ratios and decreases in ongoing earnings in excess of ten percent. Comparison of Exhibit 5 and Exhibit 1 suggests that the effects are often highest in industries where a large proportion of firms sponsor retiree health plans. For these industries, it will be especially important to make adjustments for Statement No. 106 when making intertemporal comparisons.

C. Validity Check of Estimates

Several firms have already adopted Statement No. 106 or have disclosed their estimates of the required Statement No. 106 disclosures. As a check on the validity of our measures, Exhibit 6 compares our estimates of the 1991 accrued liability to the disclosures made by 79 firms for 1991. For firms reporting ranges, we calculated the midpoint.⁸ Our estimated mean accrued liability is \$1.14 bil-

lion, while the mean company disclosure measure is \$835 million. For the median firm, our estimated accrued liability is \$329 million, while the median disclosure is \$300 million. For both mean and median measures, the liability numbers are statistically different using either parametric or nonparametric matched pairs tests. When the liability numbers are scaled by market values, our estimates of the mean and median ratios are again significantly higher than the ratios produced by the disclosures.⁹

Although there are statistically significant differences between our estimates and companies' disclosures of retiree health liabilities, they do not invalidate our approach. To the contrary, important insights can be gained by understanding the sources of the differences. First, our assumptions about future benefits may differ from those made by firms. In particular, we assume that age-adjusted dollar benefits per retiree will increase in future years. Some companies, in their negotiations with unions, have been able to impose dollar caps on retiree health benefits for the duration of the collective bargaining agreement. While, in most instances, these caps do not reduce current levels of benefits, for accounting purposes, companies consider the caps as continuing to apply in the years following the expiration of the current bargaining agreement. Hence the disclosures of retiree health liabilities made by companies using this "cap" device will be lower than our estimates. We would argue, however, that our estimates are closer to economic reality because the caps likely will be increased in future negotiations.

Second, assignment to Group 2 (see Exhibit 3) seems to result in larger differences between estimated and reported liability amounts. Although our estimates remain significantly higher when firms assigned to Group 2 are eliminated, the difference between the median accrued liability amounts is reduced by approximately 48%. Group 2 assumes that there is a high proportion of actives near

liability is recognized in full immediately or amortized over 20 years; (ii) whether the standard is adopted in 1993 or in an earlier year; (iii) whether there are any changes in benefit levels and health care trends; (iv) what discount rate will be used in determining the initial liability; and (v) whether or not tax offsets will in fact be available (from page 13 of a prospectus dated November 13, 1991, concerning an offering of 40 million preferred shares).

⁹Note that 1991 pay-as-you-go cost amounts are used to form our estimates of the accrued liability. For the firms used in Exhibit 6, the median 1991 pay-as-you-go cost exceeds 1988 median pay-as-you-go cost by 63%, and the 1991 means exceed the 1988 means by 29%. The increase is probably the combined result of high medical inflation and an increased number of retirees.

⁸In explaining its wide range of estimates, Ford noted five factors which are presently uncertain or not yet determined: (i) whether the initial

Exhibit 5. Statement No. 106 Effects by Industry

Industry	Two- and/or Three-Digit SIC	Income Statement Effect						Balance Sheet Effect	
		Delayed Recognition		Immediate Recognition				Immediate Recognition	
		Percentage Change in After-Tax Earnings		Percentage Change in After-Tax Earnings (Ongoing Expense)		Percentage Change in After-Tax Earnings (Additional Charge in Adoption Year)		Percentage Change in Debt/Total Assets	
		Mean	Median	Mean	Median	Mean	Median	Mean	Median
Mining (8) ^a	10-12, 14	-65.2	-8.3	-33.9	-5.7	-650.2	-53.2	21.8	15.6
Oil & gas exploration (7)	13, 353	-25.1	-16.1	-17.0	-10.9	-217.9	-222.9	5.8	4.8
Construction (6)	9, 15-17, 24, 25	-19.5	-11.2	-10.1	-5.6	-255.3	-147.1	17.9	4.6
Food and tobacco (18)	20, 21	-18.3	-3.5	-10.6	-1.8	-152.5	-35.2	11.8	5.1
Textiles and apparel (7)	22, 23	-35.6	-22.3	-22.3	-15.2	-265.3	-142.7	15.2	9.7
Paper (11)	26	-5.4	-3.5	-3.3	-1.8	-42.2	-28.3	5.8	4.5
Publishing (7)	27	-4.6	-4.6	-2.8	-2.8	-34.7	-31.9	5.6	5.3
Chemicals (14)	280-282	-17.7	-12.1	-11.4	-7.3	-126.9	-104.3	17.4	10.1
Pharmaceuticals (8)	283	-5.8	-4.6	-3.7	-2.6	-41.2	-30.9	9.7	8.5
Specialty chemicals (11)	284-289	-22.8	-8.5	-13.5	-4.5	-186.7	-64.4	10.4	6.8
Petroleum refining (17)	29	-44.3	-8.2	-24.0	-5.3	-418.2	-57.6	5.3	5.4
Rubber, plastic, leather (6)	30-31	-12.9	-9.6	-7.7	-6.2	-138.0	-75.7	11.8	11.7
Glass, cement, ceramic (11)	32	-25.4	-11.5	-14.3	-7.4	-258.4	-114.8	12.2	11.3
Steel (12)	331-332	-54.8	-29.3	-34.5	-15.3	-423.4	-236.8	35.2	26.9
Metalworks (8)	333-336	-327.9	-8.5	-213.4	-5.6	-2,291.1	-61.6	10.8	8.6
Metal parts (11)	339, 34	-6.9	-6.5	-4.0	-3.6	-74.9	-57.9	9.3	7.5
Industrial equipment (21)	351, 352, 354	-230.4	-21.4	-118.9	-11.1	-2,287.5	-198.0	23.7	11.7
Small industrial mach. (13)	355, 356, 358, 359	-26.3	-27.9	-16.2	-14.7	-231.9	-213.8	14.0	10.2
Electrical machinery (6)	360-364, 369	-7.9	-7.9	-4.5	-4.5	-69.7	-61.2	13.5	13.8
Electronic components (4)	367	-139.1	-48.4	-91.6	-27.2	-1,000.0	-524.7	15.6	13.1
Computers (7)	357, 368	-90.1	-3.2	-45.7	-1.7	-917.2	-29.9	16.1	4.6
Automobiles (16)	371, 375	-34.3	-23.7	-19.5	-12.5	-321.1	-243.7	15.0	10.8
Aircraft (16)	372, 376	-18.2	-16.9	-10.4	-8.5	-182.2	-167.8	10.8	9.9
Misc. manufacturing (17)	38, 39	-16.4	-12.8	-10.1	-8.3	-173.6	-132.4	12.1	10.6
Commercial transport (10)	373, 374, 379, 40, 42, 44, 46	-33.5	-4.1	-22.2	-2.2	-304.6	-103.1	3.2	2.5
Air transport (7)	45, 47	-10.8	-11.8	-6.9	-7.7	-134.4	-85.7	4.2	4.2
Telecommunications (16)	48	-15.9	-13.8	-10.0	-9.1	-143.3	-120.2	9.8	6.8
Electric utilities (33)	491	-10.2	-4.0	-6.5	-2.6	-90.6	-30.5	3.3	2.1
Natural gas (30)	492	-19.0	-12.8	-11.6	-8.0	-160.9	-113.4	7.2	5.0
Other utilities (36)	493-499	-13.6	-5.7	-8.6	-3.4	-106.0	-41.7	5.8	2.8
Wholesalers (4)	50-51	-24.6	-17.9	-16.5	-11.8	-160.9	-121.4	15.9	10.7
Department stores (4)	53	-30.3	-21.5	-18.9	-11.3	-227.9	-203.8	4.4	4.6
Financial services (46)	60-62	-4.0	-2.1	-2.6	-1.3	-50.9	-17.2	0.2	0.2
Insurance (16)	63	-4.6	-2.8	-2.4	-1.4	-56.2	-26.1	0.6	0.4

Note:

^aThe number of firms in each industry sponsoring retiree health plans and meeting data requirements appears in parentheses. Only industries with four or more firms are included in the analysis.

retirement, but that only a small proportion is actually retired. Whereas change in employees appears to work well for assigning firms to other groups, more detailed information may be needed to assign firms to Group 2.

Third, and most important, our assumption about the ultimate health care cost trend rate is higher than those

made by most firms. We assumed that the cost trend rate is eight percent, while many companies are apparently assuming final rates ranging from five to seven percent. Steinberg, Akresh, and Jensen [13] report that actuaries have assumed initial cost trend rates between eight percent and 20% and final trend rates between 5.5% and 7%.

Exhibit 6. Comparison of Study Estimates and Company Disclosures in 1991 Financial Statements^a

	Study Estimate	Company Disclosure	Matched Pair <i>p</i> -values
	Mean Median	Mean Median	
Accrued liability (in millions)	1,140.3 ^b 329.2	835.1 300.0	0.0067 ^c 0.0006 ^d
Accrued liability/market value	0.186 0.086	0.133 0.063	0.0006 0.0002
Number of observations	79		

Notes:^aAll amounts are after-tax.^bEstimates are based on 1991 pay-as-you-go costs.^cTwo-tail *t*-statistic probability.^dTwo-tail Wilcoxon statistic probability.

Steinberg, Akresh, and Jensen [13] urge auditors who are reviewing health care cost trend rates to consider how quickly trend rates are assumed to decline and to review published estimates of general and medical inflation rates. The same advice could be given to readers of financial statements when evaluating Statement No. 106 disclosures. As mentioned earlier, at a nine percent discount rate, the retiree health liability is reduced by 26% when the cost trend rate is reduced from eight percent to six percent.

Although reasonable people can differ about what is the best estimate of the ultimate health care cost trend rate, we believe our assumption is more consistent with current underlying economic trends. Health care price inflation has been running at about eight percent, and utilization has been increasing as well. Even if some future economies are introduced into the country's health care system, it strikes us that many companies may be overly optimistic when they assume an ultimate cost trend rate of six percent.¹⁰

V. Financial Implications

At the first level of analysis, one would expect no financial implications of a change in accounting standards. In efficient capital and labor markets, share prices, credit conditions, and compensation levels ("real variables") reflect all information about expected returns to capital and labor, regardless of the accounting format in which the

information appears. Because a change from cash basis to accrual accounting for retiree health benefits does not change the economic reality of the exchange between companies, workers, shareholders, and creditors, there should be no change in real variables.

Several recent occurrences and empirical findings indicate, however, that the simple application of efficient markets theory to this issue is not correct. First, since publication of the proposed standard in early 1989, several companies have announced the reduction of retiree health benefits. A few companies have even canceled the benefits altogether. In most instances, company spokespersons blamed the impending Statement No. 106. Second, a study by Espahbodi, Strock, and Tehranian [10] showed that share prices of companies offering retiree health benefits declined upon the publication of the Exposure Draft. Third, the study by Mittelstaedt and Warshawsky [11] cited above showed that while the existence of retiree health liabilities had already reduced stock prices in 1987, estimates of the liabilities seemed to be valued less than balance sheet liabilities. Finally, the bond rating agencies have backed away somewhat from their initial announcements in September 1989 that they would ignore completely the disclosures produced under the new accounting standard. All these occurrences and empirical findings are consistent with the change in accounting standard for retiree health benefits having real (adverse) implications for share prices, credit conditions, and compensation levels.

Espahbodi, Strock, and Tehranian [10] studied the impact on equity prices of nine pronouncements by the FASB over the period 1984 through 1989 related to accounting for retiree health benefits. Although they could not find any significant market reaction on the other dates, they found that around the issuance of the Exposure Draft on February 9, 1989, a group of 143 firms offering retiree health benefits suffered a significant decline in equity values of around three percent, while a control group of 100 firms not offering the benefits did not register any losses. Furthermore, Espahbodi, Strock, and Tehranian [10] found that the negative abnormal returns were most pronounced for firms with few retirees relative to active workers, firms with high debt ratios, and small firms. They interpreted their results as consistent with real losses associated with restrictions on firms' optimal contracting technology, and the possibility of debt covenant violations. The results are also consistent with a dawning realization of the extent of corporate liabilities.

¹⁰In his commentary on the calculations in Warshawsky [14, p. 143], health economist Mark Pauly suggested that 10 or 11% would be a more realistic assumption.

Mittelstaedt and Warshawsky [11] identified 500 manufacturing firms as sponsoring or not sponsoring retiree health plans and, using the method described in this article, estimated the liabilities for retiree health benefits. They then regressed stock value on several independent variables, including estimated retiree health liability, for the years 1986 through 1988. The results clearly suggested that retiree health liabilities impact stock prices. Some evidence indicated that the impact may be less than balance sheet liabilities. Although they noted that this result may be due in part to measurement error associated with the retiree health liability variable, they interpreted their finding as most consistent with market expectations that the firms or the federal government will take actions to reduce future payouts of retiree health benefits by corporate sponsors.

The discovery in this article that there is a difference between our estimates and company disclosures suggests that, like the market, companies may be assuming that they can curb medical costs. However, if firms are not able to achieve the assumed medical cost trend rates, firms will be forced to record additional liabilities and expenses related to retiree health benefits. Depending on the level of disclosure prior to such adjustments, market prices could decline as the market learns of management's inability to control retiree medical costs.

VI. Summary and Conclusions

This paper explains the main provisions of Statement No. 106, presents a method for estimating Statement No. 106 expense and liability from Statement No. 81 pay-as-you-go cost, and uses this method to evaluate the impact of Statement No. 106 on financial statements. Results suggest that if delayed recognition of the initial Statement No. 106 liability is chosen, the new standard will cause the median firm to suffer an eight percent decline in after-tax earnings. If immediate recognition is elected, the median firm will suffer an immediate 73% decrease in after-tax earnings from the cumulative effect of the change in accounting principle and an additional 4.7% decrease in earnings thereafter. Immediate recognition of the Statement No. 106 liability on the balance sheet would increase the debt/asset ratio by more than five percent for the median firm. The new standard is also expected to have a differential impact across industries and firms.

Comparison of our estimates of liability with recent disclosures by a few firms of their estimates of liability show statistically significant differences. Much of the difference seems to lie in the ultimate health care cost trend

rate used; we assume eight percent while most firms are apparently assuming five to seven percent. If our assumption is viewed as more reasonable, then plan sponsors may be forced to recognize additional liability in future years. This paper therefore provides a reasonable method to evaluate the disclosures companies make about Statement No. 106 expenses and liabilities after actual adoption and to adjust prior or subsequent financial statements for the effects of Statement No. 106. In our analysis, we moved from pay-as-you-go expense to Statement No. 106; some may wish to reverse the effects.

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