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The Effects of Enacted and Proposed Pension Accounting Changes On Leverage, Profitability and Earnings Volatility

EXECUTIVE SUMMARY

SFAS No. 158, released in September 2006, eliminates delayed recognition of pension plan and other post employment benefits (OPEB) components. For most companies, the changes caused by the adoption of SFAS No. 158 resulted in a reduction in assets, an increase in liabilities and a decline in shareholders' equity. In the first part of this research report, we examine changes to the balance sheet and its effects on measures of leverage and profitability for the 30 companies in the Dow Jones Industrial Average caused by the initial adoption of SFAS No. 158.

In the second part of the report, we concentrate on likely other future pension accounting changes that could impact financial statements even further. In particular, we examine the possible effects on pension expense and income from continuing operations if full pension costs were recognized in income, instead of flowing through other comprehensive income. Using the past five years as a guide, we see a decided increase in earnings volatility that would result from such an accounting change.

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Georgia Tech Financial Analysis Lab

The Georgia Tech Financial Analysis Lab conducts unbiased research on issues of financial reporting and analysis. Unbiased information is vital to effective investment decision-making. Accordingly, we think that independent research organizations, such as our own, have an important role to play in providing information to market participants.

Because our Lab is housed within a university, all of our research reports have an educational quality, as they are designed to impart knowledge and understanding to those who read them. Our focus is on issues that we believe will be of interest to a large segment of stock market participants. Depending on the issue, we may focus our attention on individual companies, groups of companies, or on large segments of the market at large.

A recurring theme in our work is the identification of reporting practices that give investors a misleading signal, whether positive or negative, of corporate earning power. We define earning power as the ability to generate a sustainable stream of earnings that is backed by cash flow. Accordingly, our research may look into reporting practices that affect either earnings or cash flow, or both. At times, our research may look at stock prices generally, though from a fundamental and not technical point of view.

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The Effects of Enacted and Proposed Pension Accounting Changes On Leverage, Profitability and Earnings Volatility

Companies Named in this Report

Company	**Page**
3M Co.	***6***, 7, 8, 9, 10, 11, 13, 16
Alcoa Inc.	6, 7, 8, 9, 10, 11, 13, 16
Altria Group Inc.	***5***, 6, 7, 8, 9, 10, 11, 13, 16
American Express Co.	6, 7, 8, 9, 10, 11, 13, 16
American International Group Inc. (AIG)	6, 7, ***8***, ***9***, 10, 11, 13, 16
AT&T Inc.[1]	6, 7, 8, 9, 10, 11, 13, 16
Boeing Co.	***6***, ***7***, ***8***, ***9***, ***10***, 11, 13, 16, ***17***, ***18***, ***19***
Caterpillar Inc.	6, 7, 8, 9, ***10***, 11, 13, 16
Citigroup Inc.	6, 7, 8, 9, 10, 11, 13, 16
Coca-Cola Co.	6, 7, 8, 9, 10, 11, 13, 16
Dupont E.I. de Nemours & Co.	6, 7, 8, 9, 10, 11, 13, ***14***, ***15***, 16
Exxon Mobil Corp.	6, 7, 8, 9, 10, 11, 13, 16
General Electric Co.	6, 7, 8, 9, 10, 11, 13, 16
General Motors Corp.	6, ***7***, ***8***, 9, 10, 11, 13, 16, ***19***
Hewlett-Packard Co.	4
Home Depot Inc.	4
Honeywell International Inc.	6, 7, 8, 9, 10, 11, 13, 16
Intel Corp.	6, 7, 8, 9, 10, 11, 13, 16
International Business Machines Corp. (IBM)	6, 7, 8, ***9***, 10, 11, 13, 16, ***19***
Johnson & Johnson	6, 7, 8, 9, 10, 11, 13, 16, ***19***
JP Morgan Chase & Co.	6, 7, 8, 9, 10, 11, 13, 16
McDonald's Corp.	4
Merck & Co Inc.	6, 7, 8, 9, 10, 11, ***13***, 16, ***19***
Microsoft Corp.	4
Pfizer Inc.	6, 7, 8, 9, 10, 11, 13, 16
Procter & Gamble Co.	6, 7, 8, 9, 10, 11, 13, 16
United Technologies Corp.	6, 7, 8, 9, 10, 11, 13, 16
Verizon Communications Inc.	***6***, 7, 8, 9, 10, 11, 13, 16
Wal-Mart Stores Inc.	4
Walt Disney Co.	4

[1] Historical data for AT&T is taken from pre-merger SEC filings for SBC Communications, the surviving entity in the merger of SBC and AT&T.

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The Effects of Enacted and Proposed Pension Accounting Changes On Leverage, Profitability and Earnings Volatility

SFAS No. 158, *Employers' Accounting for Defined Benefit Pension and other Postretirement Plans*, released in September 2006, marks a significant change in the way the liability associated with pension plans is recognized in the financial statements. First and foremost SFAS No. 158 eliminates delayed recognition of pension plan and other post employment benefits (OPEB) components. The delayed recognition allowed under SFAS No. 87 resulted in material differences between the true obligation and amounts represented on the balance sheet.

Since recognition of such items as gains and losses and prior service costs will now be recognized in other comprehensive income until recognition in net periodic benefit cost, such items as prepaid pension costs, pension-related intangible assets, accrued pension costs, minimum liability, and additional pension liability, will no longer appear on the balance sheet. However, SFAS No. 158 does not require the full recognition of these costs to flow through the income statement. Further reforms in pension accounting could bring even greater change to the financial statements in the future, likely increasing earnings volatility.

SFAS No. 158 is applied prospectively, meaning that the initial application will be shown as an adjustment to current balances as opposed to a restatement of prior periods. The initial adjustment to balances resulting from the adoption of SFAS No. 158 can cause unusual, sometimes large changes in measures of leverage and profitability.

This report first examines the effects that SFAS No. 158 had on the balance sheet, in particular, assets, liabilities and shareholders' equity, of the 30 companies in the Dow Jones Industrial Average (DJIA). We also look at the effects on measures of leverage, in particular, liabilities to equity, and profitability, especially return on assets (ROA) and return on equity (ROE). The second part of the report examines changes to come if pension accounting reform continues. We examine a five-year period from 2002-2006 to measure the effects on pension expense, income from continuing operations and especially, the volatility of pension expense and income from continuing operations, of bringing full pension costs onto the income statement.

Data Collection and Assumptions

We analyzed the 10-K statements of the 30 companies in the DJIA. The Home Depot and Microsoft only provide defined contribution plans for their employees and are therefore omitted from the analysis. McDonald's and Wal-Mart do not have defined benefit plans for their US operations, and have limited disclosure for their international plans. In addition, Hewlett-Packard's and Walt Disney's fiscal year ended prior to the required adoption of FAS 158 for their fiscal year end statements in 2006 and have also been omitted from sample set. We thus include 24 companies from the DJIA in this analysis.

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Part I. Balance Sheet Adjustments

Using the balance sheet, statement of shareholders' equity and the benefit plan notes, we are able to calculate total assets, total liabilities, and total shareholders' equity prior to the application of SFAS No. 158. We compare these values with those reported after SFAS No. 158 has been applied. It is assumed that the 158 adjustments can be added back to the reported numbers to arrive at a representative pre-adjustment level. Adjustments are derived, when available, from a table in the benefit plan note that details the incremental effect of applying SFAS No. 158. Using 2006 financial statement data for Altria as an example, we illustrate the balance sheet adjustments from the 10-K below in Table 1:

Table 1. Altria SFAS No. 158 Adjustment Note (2006)

(in millions)	Before Application of SFAS No. 158	Adjustments	After Application of SFAS No. 158
Other current assets	$ 2,999	$ (123)	$ 2,876
Total current assets	26,275	(123)	26,152
Prepaid pension assets	5,522	(3,593)	1,929
Other assets	6,185	620	6,805
Total consumer products assets	100,576	(3,096)	97,480
Total assets	107,366	(3,096)	104,270
Accrued liabilities — other	3,153	16	3,169
Total current liabilities	25,411	16	25,427
Deferred income taxes	6,957	(1,636)	5,321
Accrued pension costs	951	612	1,563
Accrued postretirement healthcare costs	3,595	1,428	5,023
Minority interest	3,773	(245)	3,528
Other liabilities	3,597	115	3,712
Total consumer products liabilities	57,663	290	57,953
Total liabilities	64,361	290	64,651
Accumulated other comprehensive losses	(422)	(3,386)	(3,808)
Total stockholders' equity	43,005	(3,386)	39,619
Total liabilities and stockholders' equity	107,366	(3,096)	104,270

The adjustment due to adoption of SFAS No. 158 to total assets for Altria is a reduction of $3,096 million, or -2.88%, the adjustment to total liabilities is an increase of $290 million, or 0.45%, and the adjustment to total shareholders' equity is a reduction of $3,386 million, or -7.87%. Many of the companies in the study provide a similar table of adjustments.

All 24 companies studied report a decrease in shareholders' equity. Most companies also show a decrease in total assets and an increase in total liabilities. However, because of the adjustments' impact on deferred taxes, the overall effects on total assets and total liabilities are not uniform.

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Adjustments to Total Assets

Table 2 presents the change in total assets due to the adoption of SFAS No. 158. The median change in total assets is -0.91%. The largest decline in total assets is for Boeing with a drop of -16.29%. The largest contribution to Boeing's decline in assets is the removal of $12,808 million in prepaid pension expense. Verizon shows the largest percentage increase in total assets with a rise of 2.82%. For Verizon, assets increase due to an increase of $5,174 million in deferred taxes.

Table 2. Change in Total Assets due to Adoption of SFAS 158 (2006)
Amounts in millions

Company Name	Pre-Adjustment Total Assets	SFAS 148 Adjustment to Total Assets	Total Assets After Adjustment	% Change in Assets
3M	$ 22,139	$ (845)	$ 21,294	-3.82%
Alcoa	36,838	345	37,183	0.94%
Altria Group	107,366	(3,096)	104,270	-2.88%
American Express	128,070	(217)	127,853	-0.17%
AIG	979,952	(538)	979,414	-0.05%
AT&T	275,662	(5,028)	270,634	-1.82%
Boeing	61,876	(10,082)	51,794	-16.29%
Caterpillar	51,412	(533)	50,879	-1.04%
Citigroup	1,883,818	500	1,884,318	0.03%
Coca-Cola	30,200	(237)	29,963	-0.78%
Dupont EI de Nemours	33,936	(2,159)	31,777	-6.36%
Exxon Mobil	216,810	2,205	219,015	1.02%
General Electric	699,936	(2,697)	697,239	-0.39%
General Motors	192,400	(6,208)	186,192	-3.23%
Honeywell International	32,251	(1,310)	30,941	-4.06%
Intel	48,313	55	48,368	0.11%
IBM	112,474	(9,240)	103,234	-8.22%
Johnson & Johnson	70,584	(28)	70,556	-0.04%
JP Morgan Chase	1,353,083	(1,563)	1,351,520	-0.12%
Merck & Co	45,766	(1,196)	44,570	-2.61%
Pfizer	116,600	(1,763)	114,837	-1.51%
Procter & Gamble	138,181	(167)	138,014	-0.12%
United Technologies	49,541	(2,400)	47,141	-4.84%
Verizon Communications	183,630	5,174	188,804	2.82%
Median Change				-0.91%

Adjustments to Total Liabilities

Table 3 presents the effect of adopting SFAS No. 158 on total liabilities. The median change in liabilities is an increase of 0.37%. Out of the 24 companies, 18 have an increase in liabilities and six have a decrease. The largest increase in liabilities is for 3M with a rise of 10.46%. 3M's prepaid pension asset with a balance of $2,126 million

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becomes an accrued pension liability of $1,073 million under SFAS No. 158. Boeing shows a decrease in liabilities of -3.76%. Boeing's increases in accrued pension liabilities are offset by a decrease in deferred taxes of -$4,151 million, resulting in an overall decrease in liabilities.

Table 3. Change in Total Liabilities due to Adoption of SFAS 158 (2006)
Amounts in millions

Company Name	Pre-Adjustment Total Liabilities	SFAS 148 Adjustment to Total Liabilities	Total Liabilities After Adjustment	% Change in Liabilities
3M	$ 10,262	$ 1,073	$ 11,335	10.46%
Alcoa	21,330	1,222	22,552	5.73%
Altria Group	64,361	290	64,651	0.45%
American Express	117,163	179	117,342	0.15%
AIG	877,743	(6)	877,737	0.00%
AT&T	155,331	(237)	155,094	-0.15%
Boeing	48,895	(1,840)	47,055	-3.76%
Caterpillar	41,882	2,138	44,020	5.10%
Citigroup	1,762,388	2,147	1,764,535	0.12%
Coca-Cola	12,992	51	13,043	0.39%
Dupont EI de Nemours	22,959	(604)	22,355	-2.63%
Exxon Mobil	97,980	7,191	105,171	7.34%
General Electric	583,803	1,122	584,925	0.19%
General Motors	180,895	10,738	191,633	5.94%
Honeywell International	21,019	202	21,221	0.96%
Intel	11,351	265	11,616	2.33%
IBM	74,470	258	74,728	0.35%
Johnson & Johnson	29,556	1,682	31,238	5.69%
JP Morgan Chase	1,236,191	(461)	1,235,730	-0.04%
Merck & Co	26,990	20	27,010	0.07%
Pfizer	43,102	377	43,479	0.87%
Procter & Gamble	71,088	166	71,254	0.23%
United Technologies	30,444	(600)	29,844	-1.97%
Verizon Communications	128,212	12,057	140,269	9.40%
Median Change				0.37%

Adjustments to Total Shareholders' Equity

The effect of SFAS No. 158 on total shareholders' equity is shown in the Table 4. All 24 companies experience a decrease in shareholders' equity, with a median decrease of -4.93%. General Motors shows the largest percentage decrease with a drop of -147.29%. The adoption of SFAS No. 158 caused General Motors to recognize additional pension and other postretirement benefit liability of $27.4 billion.

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Table 4. Change in Total Shareholders' Equity on Adoption of SFAS 158 (2006)
Amounts in millions

Company Name	Pre-Adjustment Total Sh. Equity	SFAS 148 Adjustment to Total Sh. Equity	Total Sh. Equity After Adjustment	% Change in Sh. Equity
3M	$ 11,877	$ (1,918)	$ 9,959	-16.15%
Alcoa	15,508	(877)	14,631	-5.66%
Altria Group	43,005	(3,386)	39,619	-7.87%
American Express	10,907	(396)	10,511	-3.63%
AIG	102,209	(532)	101,677	-0.52%
AT&T	120,331	(4,791)	115,540	-3.98%
Boeing	12,981	(8,242)	4,739	-63.49%
Caterpillar	9,530	(2,671)	6,859	-28.03%
Citigroup	121,430	(1,647)	119,783	-1.36%
Coca-Cola	17,208	(288)	16,920	-1.67%
Dupont EI de Nemours	10,977	(1,555)	9,422	-14.17%
Exxon Mobil	118,830	(4,986)	113,844	-4.20%
General Electric	116,133	(3,819)	112,314	-3.29%
General Motors	11,505	(16,946)	(5,441)	-147.29%
Honeywell International	11,232	(1,512)	9,720	-13.46%
Intel	36,962	(210)	36,752	-0.57%
IBM	38,004	(9,498)	28,506	-24.99%
Johnson & Johnson	41,028	(1,710)	39,318	-4.17%
JP Morgan Chase	116,892	(1,102)	115,790	-0.94%
Merck & Co	18,775	(1,216)	17,560	-6.47%
Pfizer	73,498	(2,140)	71,358	-2.91%
Procter & Gamble	67,093	(333)	66,760	-0.50%
United Technologies	19,097	(1,800)	17,297	-9.43%
Verizon Communications	55,418	(6,883)	48,535	-12.42%
Median Change				-4.93%

Leverage and Profitability Measures

The next set of tables focus on the effects of SFAS No. 158 on measures of leverage and profitability. We consider the ratio of total liabilities to total shareholders' equity as well as return on assets (ROA) and return on equity (ROE). General Motors experienced a net loss in 2006, and its total shareholders' equity after the adjustment is negative, therefore, General Motors is excluded from this analysis.

As seen in Table 5, the ratio of total liabilities to total shareholders' equity increases in all companies surveyed, primarily due to the decrease noted in shareholders' equity. The median increase in total liabilities to total shareholders' equity is an increase of 8.23%. Boeing experiences the largest increase in leverage, due to a decrease in shareholders' equity of -63.49%. The leverage ratio for Boeing increases from 3.77 to 9.93, an increase of 163.61%. The smallest increase in leverage is 0.52% for American International Group (AIG). AIG experiences a decrease in assets of only -0.05% due to a decrease in

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prepaid pension asset. AIG's liabilities increase by a negligible amount, with an increase in pension liability almost entirely offset by a decrease in net deferred tax liability. AIG's shareholders' equity decreases by -0.52%, and the leverage ratio increases from 8.59 to 8.63.

Table 5. Change in Total Liabilities to Total Shareholders' Equity on Adoption of SFAS No. 158 (2006)

Company Name	Liabilities to Equity Before Adjustment	Liabilities to Equity After Adjustment	% Change in Liabilities to Equity
3M	0.86	1.14	31.73%
Alcoa	1.38	1.54	12.07%
Altria Group	1.50	1.63	9.04%
American Express	10.74	11.16	3.93%
AIG	8.59	8.63	0.52%
AT&T	1.29	1.34	3.99%
Boeing	3.77	9.93	163.61%
Caterpillar	4.39	6.42	46.03%
Citigroup	14.51	14.73	1.50%
Coca-Cola	0.75	0.77	2.10%
Dupont EI de Nemours	2.09	2.37	13.44%
Exxon Mobil	0.82	0.92	12.04%
General Electric	5.03	5.21	3.60%
General Motors	15.72	-35.22	N/M*
Honeywell International	1.87	2.18	16.67%
Intel	0.31	0.32	2.92%
IBM	1.96	2.62	33.78%
Johnson & Johnson	0.72	0.79	10.29%
JP Morgan Chase	10.58	10.67	0.91%
Merck & Co	1.44	1.54	7.00%
Pfizer	0.59	0.61	3.90%
Procter & Gamble	1.06	1.07	0.73%
United Technologies	1.59	1.73	8.23%
Verizon Communications	2.31	2.89	24.92%
Median Change			8.23%

* N/M = not meaningful. General Motors' total shareholders' equity was negative after adjustment.

The next two tables examine the change in two profitability measures before and after the adjustments arising from adopting SFAS No. 158. The first profitability measure examined is return on assets (ROA), presented in Table 6. The median change in ROA is an increase of 0.79%. Five companies experience a decrease in ROA, and 18 experience an increase. Boeing shows the largest increase in ROA of 19.47%, again due to the large decrease of -16.29% in total assets. Boeing's ROA improves from 3.58% to 4.28%. The company with the second highest improvement in ROA is IBM, with an increase of 8.95% (from ROA of 8.44% to 9.19%). IBM's total assets decrease by -8.22%, due to a large reduction in prepaid pension assets, partially offset by an increase in deferred taxes.

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Table 6. Change in Return on Assets on Adoption of SFAS No. 158 (2006)

Company Name	ROA Before Adjustment	ROA After Adjustment	% Change in ROA
3M	17.39%	18.08%	3.97%
Alcoa	6.10%	6.05%	-0.93%
Altria Group	11.20%	11.53%	2.97%
American Express	2.89%	2.90%	0.17%
AIG	1.43%	1.43%	0.05%
AT&T	2.67%	2.72%	1.86%
Boeing	3.58%	4.28%	19.47%
Caterpillar	6.88%	6.95%	1.05%
Citigroup	1.14%	1.14%	-0.03%
Coca-Cola	16.82%	16.95%	0.79%
Dupont EI de Nemours	9.28%	9.91%	6.79%
Exxon Mobil	18.22%	18.04%	-1.01%
General Electric	2.98%	2.99%	0.39%
General Motors	-1.03%	-1.06%	N/M*
Honeywell International	6.46%	6.73%	4.23%
Intel	10.44%	10.43%	-0.11%
IBM	8.44%	9.19%	8.95%
Johnson & Johnson	15.66%	15.67%	0.04%
JP Morgan Chase	1.07%	1.07%	0.12%
Merck & Co	9.69%	9.95%	2.68%
Pfizer	16.58%	16.84%	1.54%
Procter & Gamble	7.48%	7.49%	0.12%
United Technologies	7.53%	7.92%	5.09%
Verizon Communications	3.37%	3.28%	-2.74%
Median Change			0.79%

* N/M = not meaningful. General Motors' net income was negative for 2006.

The second profitability measure examined is return on equity (ROE), presented in Table 7. The median change in ROE is an increase of 4.38%. All companies show an improved ROE due to the noted decline in total shareholders' equity. The largest improvement in ROE is again for Boeing, with an increase of 173.92% from a pre-adjusted ROE of 17.06% to a post-adjusted ROE of 46.74%. Caterpillar has the next largest increase in ROE with a rise of 38.94%. Caterpillar's ROE changes from 37.11% to 51.57% after the SFAS No. 158 adjustment. Caterpillar experiences a decrease in shareholders' equity of -28.03%. The combination of a decrease in total assets of $533 million and an increase in total liabilities of $2,138 million leads to a decrease in total shareholders' equity of $2,671 million for Caterpillar.

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Table 7. Change in Return on Equity on Adoption of SFAS No. 158 (2006)

Company Name	ROE Before Adjustment	ROE After Adjustment	% Change in ROE
3M	32.42%	38.67%	19.26%
Alcoa	14.50%	15.36%	5.99%
Altria Group	27.95%	30.34%	8.55%
American Express	33.99%	35.27%	3.77%
AIG	13.74%	13.82%	0.52%
AT&T	6.11%	6.37%	4.15%
Boeing	17.06%	46.74%	173.92%
Caterpillar	37.11%	51.57%	38.94%
Citigroup	17.74%	17.98%	1.37%
Coca-Cola	29.52%	30.02%	1.70%
Dupont EI de Nemours	28.68%	33.41%	16.50%
Exxon Mobil	33.24%	34.70%	4.38%
General Electric	17.94%	18.55%	3.40%
General Motors	-17.19%	36.35%	N/M*
Honeywell International	18.55%	21.43%	15.56%
Intel	13.65%	13.72%	0.57%
IBM	24.98%	33.30%	33.32%
Johnson & Johnson	26.94%	28.11%	4.35%
JP Morgan Chase	12.36%	12.47%	0.95%
Merck & Co	23.62%	25.25%	6.92%
Pfizer	26.31%	27.10%	3.00%
Procter & Gamble	15.41%	15.49%	0.50%
United Technologies	19.54%	21.58%	10.41%
Verizon Communications	11.18%	12.77%	14.18%
Median Change			4.38%

* N/M = not meaningful. General Motors' net income was negative for 2006.

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Part II. Adjusted Pension Expense and Adjusted Income

It is likely that the changes in pension accounting caused by the implementation of SFAS No. 158 are only the beginning of pension accounting reform. Although SFAS No. 158 corrects the balance sheet inconsistencies previously allowed by the delayed recognition of pension and OPEB components, the full changes in fair value of pension assets and liabilities in any one year are still subject to being "metered" into income through what is termed the corridor approach. A move to fair value accounting would call for such changes to flow through income in the year realized.

We performed an analysis for the 24 companies in the study over a five year period to determine the effect on pension expense and on income from continuing operations if the full pension costs were recognized in the year realized. In this analysis, net periodic benefit cost for pensions and OPEB as reported by the company is replaced with a revised measure. Reported net periodic benefit cost includes service cost, interest cost, expected return on plan assets, and the amortization of certain costs for the year, including prior service cost, transition obligation, and actuarial gains or losses. A revised net periodic benefit cost results from actual changes in pension plan and other benefit plan assets and obligations. This cost includes service cost and interest cost as before, but now includes actual return on plan assets and the full actuarial gain or loss incurred during the year. The revised cost is an estimate of what the costs would be if actual returns were used to calculate pension expense, and if all expenses were recognized in net income in the year incurred instead of flowing through other comprehensive income to be amortized over future periods. Acquisitions and divestitures are excluded from the revised cost.

The analysis is performed over a five year period, from 2002 to 2006. This period of time captures years of good and bad economic performance where actual returns on pension plan assets had years of both outperforming and underperforming expected returns. We examine the percent change in pension expense between the reported and revised net periodic benefit cost, as well as the percent change in income from continuing operations assuming the revised pension expense replaced the reported amount. In calculating revised income from continuing operations, the adjustment for pension expense is tax effected at a combined federal and state marginal income tax rate of 38%. While the effective tax rate for some companies may be different than the 38% employed, we assumed that the pension adjustment took place at the margin, necessitating use of this marginal rate.

Adjusted Pension Expense

Table 8 presents the effect on pension expense assuming the full pension costs are included in a given year, including the actual return on plan assets rather than the expected return. The greatest changes for the median firm are seen in 2006, which shows the greatest percent decrease in expense, and in 2002, which shows the greatest percent increase in expense. In 2006, market returns were strong, leading to a higher actual return on plan assets than expected return. In 2002, market returns were weak, leading to

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an actual loss on plan assets for all 24 companies in the study, when the expected returns were positive for all 24 companies.

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Table 8. Percentage Change in Pension Expense (2002 – 2006)

	% Change in Pension Expense				
Company Name	**2006**	**2005**	**2004**	**2003**	**2002**
3M	-150.5%	32.0%	-72.0%	232.0%	1182.3%
Alcoa	-64.5%	4.8%	53.2%	61.2%	1000.4%
Altria Group	-91.5%	45.6%	168.5%	93.8%	716.0%
American Express	-34.7%	-91.2%	10.2%	-4.8%	338.4%
AIG	-71.5%	10.2%	-23.2%	117.7%	551.9%
AT&T	-503.2%	91.5%	-237.9%	-18.1%	N/M
Boeing	-145.1%	-121.7%	-35.0%	195.9%	5314.9%
Caterpillar	-93.6%	199.6%	0.9%	271.6%	1318.0%
Citigroup	-184.9%	-81.9%	247.3%	98.2%	1338.9%
Coca-Cola	-109.0%	-33.0%	28.7%	-16.9%	373.8%
Dupont EI de Nemours	-474.8%	-56.2%	68.4%	-65.8%	2077.0%
Exxon Mobil	42.0%	-64.4%	72.9%	117.5%	452.3%
General Electric	-329.7%	21.3%	-39.1%	746.3%	N/M
General Motors	-376.1%	-28.3%	88.5%	108.2%	347.2%
Honeywell International	-84.0%	-20.8%	-69.3%	55.2%	N/M
Intel	141.5%	447.5%	-85.1%	47.5%	126.4%
IBM	-269.3%	-454.4%	1325.1%	N/M	N/M
Johnson & Johnson	-18.4%	27.8%	85.9%	138.7%	993.9%
JP Morgan Chase	64.1%	71.0%	136.6%	22.2%	1068.5%
Merck & Co	-134.2%	-12.4%	-26.7%	26.1%	779.6%
Pfizer	-81.9%	-11.7%	118.8%	62.3%	442.2%
Procter & Gamble	N/M	-472.3%	3331.5%	-699.0%	N/M
United Technologies	-215.0%	-2.5%	33.5%	107.7%	2471.3%
Verizon Communications	-258.8%	-49.7%	-200.4%	98.6%	N/M
Median	**-109.0%**	**-12.0%**	**31.1%**	**93.8%**	**887.4%**

N/M = not meaningful. If the expense changed from a negative number (a benefit) to a positive number (a cost), the % change is not calculated.

To take a specific example, Merck shows a decrease in pension expense for three years out of five (2004-2006), and an increase in the other years (2002 and 2003) if the alternative full cost measure were used. In 2006, Merck's reported pension expense is $564 million, while the revised expense is actually a benefit of $193 million. Merck reported an expected return on plan assets of $549 million, and experienced an actual return of $1,166 million. The change in return on plan assets provides the largest contribution to the change in pension expense. In contrast, in 2002, Merck reported pension expense of $191 million. The revised expense is $1,680 million. The largest change in 2002 is due to an actuarial loss of $860 million included in the revised expense, compared to net amortization of $41 million included in the actual expense. In addition, in 2002 Merck reported an expected return on plan assets of $399 million, when the actual return was a loss of $358 million.

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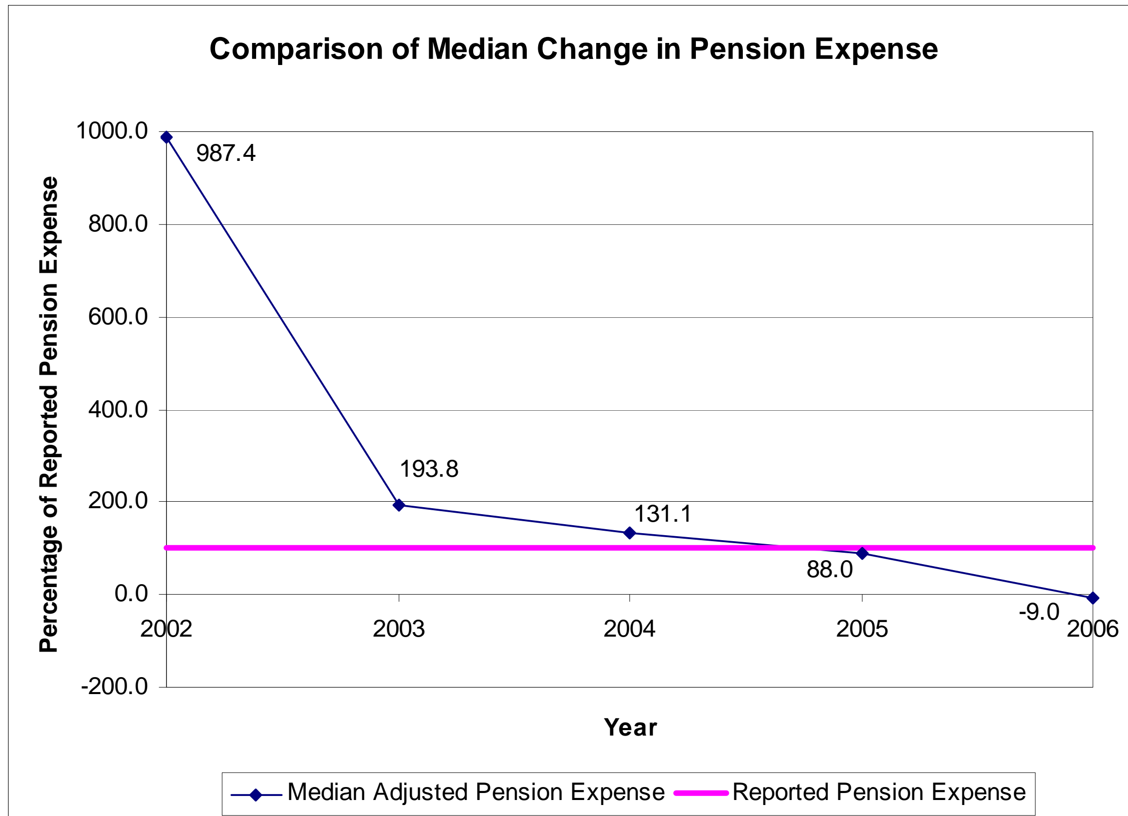
Figure 1 shows the contrast in pension expense changes over this five year period, with the median adjusted pension expense in each year expressed as a percentage of the reported expense. The reported expense is expressed as 100%.

Figure 1. Median Adjusted Pension Expense (2002 – 2006)



The median adjusted pension expense is 987.4% of the reported expense in 2002, 193.8% in 2003, 131.1% in 2004, 88% in 2005, and -9% in 2006. The negative percentage in 2006 indicates that the median change took pension expense from a cost to a benefit.

Dupont is an example of a company that had large variation in the adjustment to pension expense over the five year period studied. Figure 2 shows the comparison of Dupont's adjusted pension expense as a percentage of the reported pension expense. Dupont's adjusted pension expense varies from 2177.0% of reported expense in 2002 to -374.8% in 2006. In 2002, Dupont's expected return on plan assets was $1.729 million, and the actual return was a loss of $1,921 million. In 2006, Dupont's expected return was $1,648 million, while the actual return was $3,056 million.

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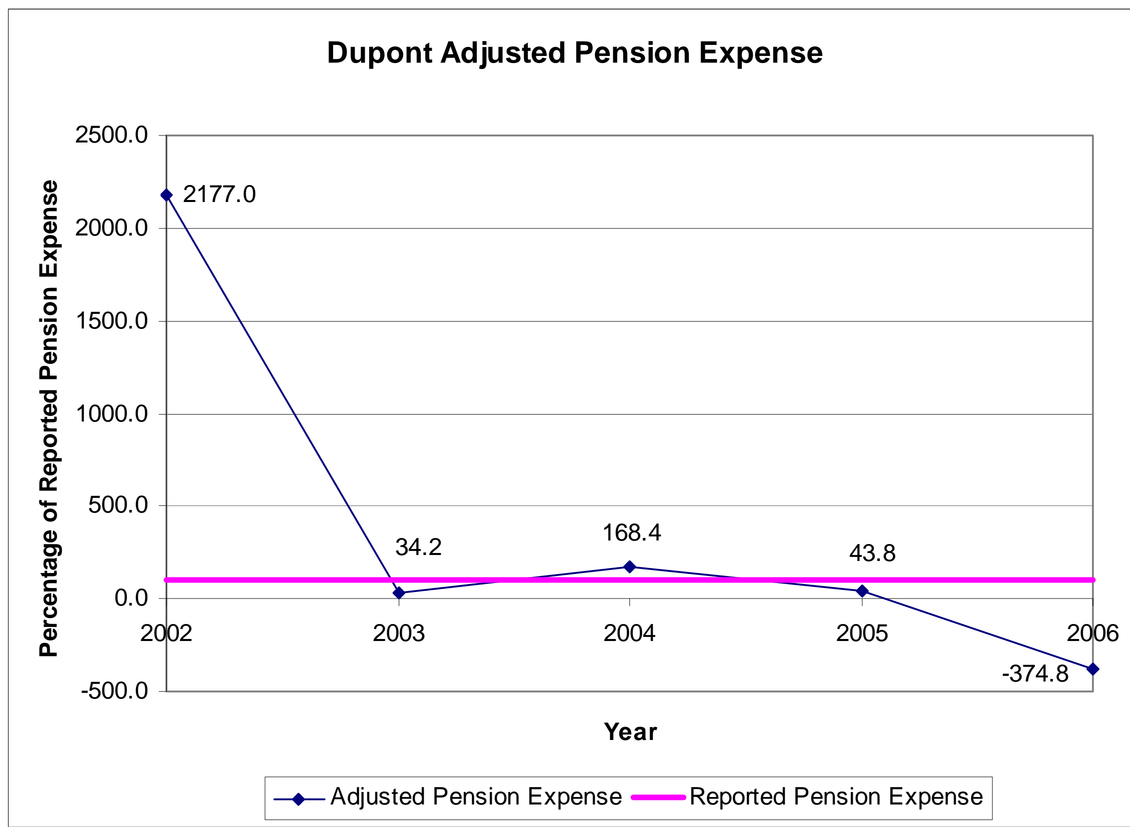
Figure 2. Dupont Adjusted Pension Expense (2002 – 2006)



Adjusted Income from Continuing Operations

Table 9 shows the effect of adjusting the pension expense on income from continuing operations over the five year period. Adjusted income from continuing operations is obtained by including the difference in pension expense after adjustment in income, with an assumed tax rate of 38%. The median company would have reported lower income from continuing operations by 51% in 2002 if the adjusted expense had been used. In 2006, income from continuing operations in the median company would have increased by 9.8%.

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Table 9. Percentage Change in Income from Continuing Operations

	% Change in Income from Continuing Operations				
Company Name	**2006**	**2005**	**2004**	**2003**	**2002**
3M	10.7%	-2.8%	6.5%	-15.3%	-77.6%
Alcoa	9.8%	-1.2%	-11.3%	-13.9%	-306.4%
Altria Group	7.4%	-3.5%	-10.9%	-4.0%	-24.0%
American Express	1.0%	2.6%	-0.2%	0.1%	-7.8%
AIG	0.9%	-0.2%	0.3%	-2.1%	-8.1%
AT&T	69.3%	-15.8%	38.1%	3.5%	-126.8%
Boeing	67.8%	54.5%	14.1%	-131.1%	-277.1%
Caterpillar	11.3%	-30.9%	-0.2%	-60.5%	-171.0%
Citigroup	1.7%	1.1%	-3.5%	-0.9%	-10.0%
Coca-Cola	2.8%	0.8%	-0.7%	0.5%	-7.6%
Dupont EI de Nemours	30.8%	11.0%	-18.0%	34.3%	-124.5%
Exxon Mobil	-1.5%	2.3%	-3.8%	-7.9%	-32.2%
General Electric	23.0%	-1.2%	1.7%	-6.7%	-51.0%
General Motors	N/M	N/M	-137.4%	-187.8%	-733.5%
Honeywell International	11.1%	4.4%	20.3%	-8.4%	N/M
Intel	-1.6%	-1.9%	0.5%	-0.4%	-1.3%
IBM	25.4%	50.8%	-41.0%	-40.5%	-184.9%
Johnson & Johnson	1.0%	-1.3%	-4.2%	-6.4%	-18.4%
JP Morgan Chase	-0.6%	-0.8%	-3.3%	-0.5%	-57.0%
Merck & Co	10.6%	0.9%	1.5%	-1.2%	-12.9%
Pfizer	5.5%	1.0%	-4.9%	-18.5%	-13.7%
Procter & Gamble	-2.1%	6.2%	-15.4%	6.6%	-19.4%
United Technologies	19.8%	0.2%	-2.8%	-7.4%	-74.0%
Verizon Communications	56.3%	9.1%	34.2%	-53.8%	-183.0%
Median	**9.8%**	**0.8%**	**-1.8%**	**-6.5%**	**-51.0%**

N/M = not meaningful. If the reported income from continuing operations was a negative number (a loss), the % change is not calculated.

Figure 3 shows the trend between reported and adjusted income from continuing operations over the five year period 2002-2006. Reported income from continuing operations is expressed as 100%.

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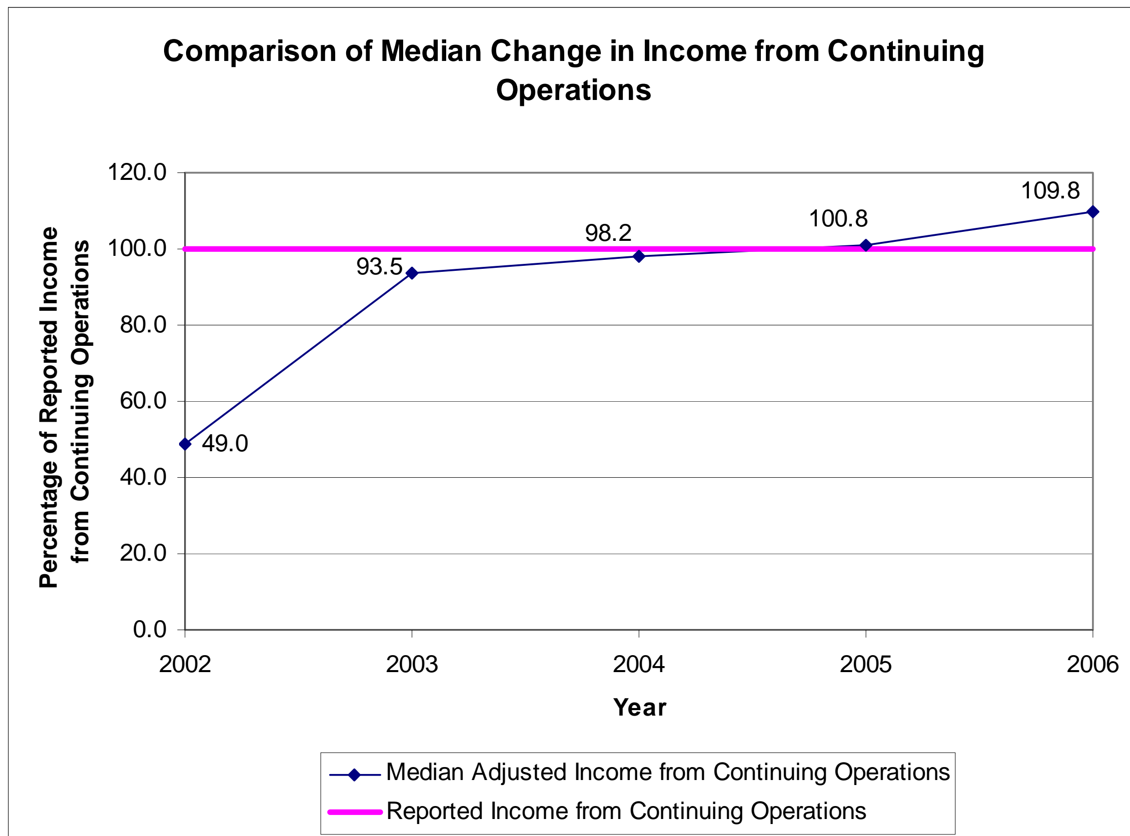
Figure 3. Median Change in Income from Continuing Operations (2002 – 2006)



In 2002, a year of poor market performance, income from continuing operations adjusted for the revised pension expense would have been 49% of reported income from continuing operations. In 2006, a year of strong market performance, adjusted income from continuing operations would have been 109.8% of the reported value.

Boeing is an example of a company that had a large variability in adjusted income over the five year period. Figure 4 shows Boeing's adjusted income from continuing operations as a percentage of the reported value.

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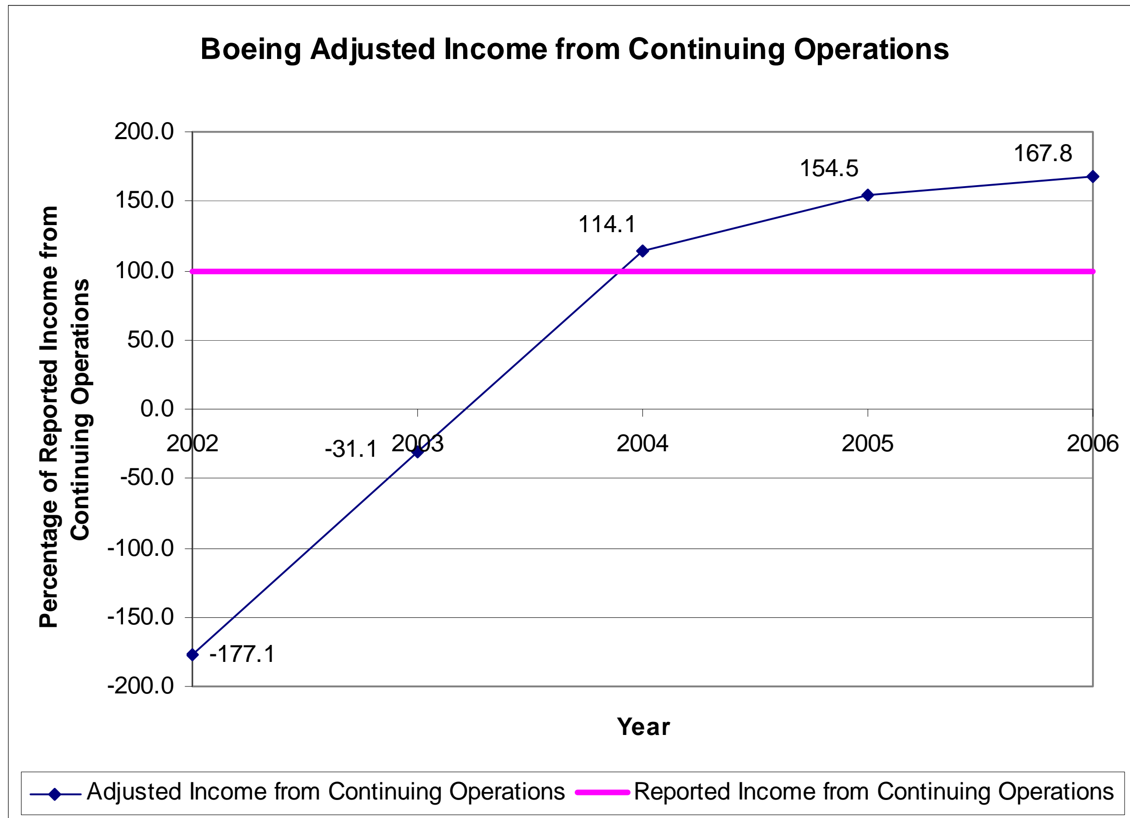
Figure 4. Boeing's Adjusted Income from Continuing Operations (2002 – 2006)



In 2002, Boeing's adjusted income would have been -177.1% of the reported value. The adjustment in 2006 would make income from continuing operations 167.8% of the reported value.

Volatility in Pension Expense and Income from Continuing Operations

One argument that is often given to explain the use of amortized cost and the corridor method of accounting for pension expense is that including full costs would increase the volatility of income from continuing operations because of the inclusion in pension expense of unrealized actuarial gains and losses. The increase in variability of pension expense using the adjusted method of measuring expense (full costs vs. amortized costs) can be examined by looking at the coefficient of variation (CV) before and after the adjustment. The CV measures the dispersion of values around the mean, and allows us to compare two data sets with different means. First, we calculate the standard deviation of pension expense as reported by each company over the five year period of 2002 to 2006 and then divide it by mean pension expense. Next, we calculate the standard deviation of adjusted pension expense and divide it by mean adjusted pension expense over the same period. The median CV before adjustment is 0.38, and the median CV after adjustment is 1.22, an increase of 221%. This calculation demonstrates that changes in accounting for pension expense that would include full costs would significantly increase the volatility

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of pension expense. In two companies, IBM and Johnson & Johnson, the CV decreases after the adjustment. In the other 22 companies in the study, the CV increases after the adjustment.

The next issue examined is whether the volatility of earnings, in particular, income from continuing operations, would increase as a result of the change in accounting for pension expense. Again we calculate the CV for income from continuing operations over the 2002 to 2006 period using the reported values and the adjusted values that include adjusted pension expense. In this calculation, the median CV for income from continuing operations changes from 0.26 before adjustment to 0.51 after adjustment, an increase of 96%. General Motors is excluded from the median calculation in both cases because the mean income from continuing operations is a loss. One company, Merck, shows a decrease in CV after the adjustment, from 0.21 to 0.14. The company with the largest increase in CV is Boeing, which is chosen for display in Figure 4 above because of its large volatility in adjusted income from continuing operations. Boeing's CV for income from continuing operations changes from 0.39 to 3.09, an increase of 700%.

Conclusions

The pension accounting changes initiated by SFAS No. 158 have already had a material effect on the balance sheets of most companies with pension and other post employment benefit plans. The true obligation of the pension plan is now reported on the face of the balance sheet. The changes brought about by SFAS No. 158 for the companies in the DJIA caused balance sheet adjustments, including a reduction in reported total shareholders' equity, and changes in leverage and profitability measures. For most companies, recognizing a larger pension liability caused artificial improvements in ROA and ROE, as well as an increase in leverage as measured by total liabilities to total shareholders' equity. The changes effected by SFAS No. 158 brought the true underfunded or overfunded status of pension plans onto the balance sheet to communicate a clearer picture of the financial position of the company to the users of financial statements.

If pension accounting reform continues, the next area likely to be affected is the recognition of full costs on the income statement. We demonstrated that the volatility of pension expense and income from continuing operations would increase significantly if full pension costs were recognized as they are realized.

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