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**The Potential Consequences of the Elimination of
LIFO as a Part of IFRS Convergence**

EXECUTIVE SUMMARY

The SEC has proposed the full adoption of IFRS by U.S. filers by 2014, with larger firms adopting the international standards as early as 2010. One important change to U.S. accounting standards that would accompany a move to IFRS is the elimination of the Last-in First-out (LIFO) accounting method for inventory. Moreover, because of the LIFO conformity rule, a move away from LIFO for financial reporting purposes also means that the advantages of LIFO for tax purposes could be lost to these firms.

The purpose of this study is to examine the income, balance sheet, cash flow and tax effects of a required move to FIFO from LIFO. Presently, approximately 36% of U.S. companies use LIFO for at least a portion of their inventories. We examine a sample of 30 such companies with the greatest LIFO exposure. We find that on average, had FIFO been used by these firms in 2007, pre-tax income and net income would be higher by 11.97% and 7.42%, respectively, the current ratio would be higher by 26.2% and shareholders' equity would be higher by 34.2%. Of particular note is the significant amount of income taxes that these firms would owe, ranging up to the hundreds of millions if not billions of dollars, if they were required to adopt FIFO accounting. Accordingly, investors, lenders and other users of financial statements will want to watch developments on this front carefully.

December, 2008

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Georgia Tech Financial Analysis Lab

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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 Potential Consequences of the Elimination of LIFO as a Part of IFRS Convergence

By Eugene E. Comiskey, Charles W. Mulford and Joshua A. Thomason

Introduction

Since its inception in 1973, the Financial Accounting Standards Board (FASB) has had a mandate from the United States Securities and Exchange Commission (SEC) to set financial accounting standards for public companies listed within the United States.¹ SEC Chairman Christopher Cox recently noted that firms listed on U.S. exchanges represented only 28 percent of global market capitalization. However, exchanges following the new International Financial Reporting Standards (IFRS) set by the International Accounting Standards Board (IASB) control 35 percent of global market capitalization. Chairman Cox believes that because of the expanding use of IFRS and the fact that nearly two-thirds of U.S. investors own securities in foreign companies, the United States must determine how to incorporate IFRS into its accounting system. A failure to do so could result in decreased comparability and transparency for U.S. investors and issuers. Thus, Chairman Cox has proposed the creation of a roadmap culminating in the United States' adoption of IFRS by 2014 in an effort to continue the SEC's mandate from Congress to protect investors and encourage capital formation.²

As the United States prepares for the impending move to IFRS, attention must be paid to financial-statement changes that will result from the differences between current U.S. GAAP and IFRS. One such change is the elimination of the Last-in First-out (LIFO) inventory method, which is not permitted under IFRS. In fact, some members of the United States House of Representatives do not want to wait for IFRS passage. For example, Charles Rangel, chairman of the House Ways and Means Committee, has proposed a repeal of the LIFO inventory method in an effort to "reform the corporate income tax." The financial statement and tax implications of the elimination of LIFO as an acceptable inventory method for U.S. firms are the focus of this report.

Some early GAAP guidance, provided in *Accounting Research Bulletin 43*, lays out several different inventory methods as being acceptable: ". . . cost for inventory purposes may be determined under any one of several assumptions as to the flow of cost factors (such as first-in first-out, average, and last-in first-out); the major objective in selecting a method should be to choose the one which, under the circumstances, most clearly reflects periodic income."³ However, the international inventory accounting standard, IAS 2, states: ". . . the cost of inventories...shall be assigned by using the first-in first-out or weighted average cost formula."⁴ A move from GAAP to IFRS would thus require U.S. companies using the LIFO method to instead elect to use either the FIFO or average-cost methods. Such a move away from LIFO has

¹ <http://www.fasb.org/facts/index.shtml#mission>

² http://sec.gov/news/speech/2008/spch082708cc_ifrs.htm

³ American Institute of Certified Public Accountants (AICPA). 1961. *Accounting Research and Terminology Bulletins*, Final Edition. New York, NY: AICPA, p. 29.

⁴ International Accounting Standards Board (IASB). 2003. *Inventories*. International Accounting Standard No. 2. London, UK: IASB.

special significance for U.S. firms because of the LIFO Conformity Rule under U.S. tax law.⁵ The conformity rule permits the use of LIFO for tax purposes only if LIFO is also used in reporting to shareholders and others who use financial statements. Thus, without a change in the U.S. tax code, a switch to either FIFO or the average-cost method would also result in the discontinued use of LIFO for income-tax purposes.

LIFO Background

The use of LIFO can provide a very different impression of a firm's financial position and performance than if, for example, the FIFO method were used. These differences arise because the LIFO method assumes that the costs of the most recently purchased goods are expensed as part of cost of goods sold for the period. As a result, older costs remain in inventory on the balance sheet. When inventory costs are rising, LIFO will result in higher cost of goods sold, lower earnings and lower measures of inventory. In contrast, the FIFO method assumes that the most recent purchases remain in inventory and older costs are expensed through cost of goods sold. With rising inventory costs, FIFO will result in lower cost of goods sold, higher earnings and higher measures of inventory. The income, cash-flow and balance-sheet effects of LIFO are summarized below.

Income-statement effects

In a rising-price environment LIFO will affect a variety of financial measures. For example, a LIFO firm will normally show a lower gross margin percentage. This lower gross margin results from including the cost of the most recent (and higher cost) inventory purchases into its cost of goods sold. Higher cost of goods sold results in a lower gross profit and with it a lower gross margin (or profit) percentage. Taken alone, the lower gross profit will result in lower pre-tax earnings and a lower income tax provision. The disclosures below illustrate these lower profit and gross margin conditions:

Commercial Metals, Inc.

“On a consolidated basis, the LIFO method of inventory valuation decreased our net earnings by \$209.1 million and \$33.3 million (\$1.78 and \$0.27 per diluted share) for 2008 and 2007, respectively.”⁶

Costco Wholesale Corp.

“Gross margin (net sales less merchandise costs) as a percentage of net sales increased one basis point over the prior year, which included a \$32.3 million LIFO charge, resulting from increases in the cost of certain food items and gasoline.”⁷

⁵ The LIFO Conformity Rule was introduced as part of the Revenue Act of 1938.

⁶ Commercial Metals, Inc., Form 10-K Annual Report to the Securities and Exchange Commission, August 31, 2008, p. 31.

⁷ Costco Wholesale Corp., Form 10-K Annual Report to the Securities and Exchange Commission, August 31, 2008, p. 17.

By matching the cost of more recent purchases to revenue, LIFO also exerts a smoothing effect on earnings relative to FIFO. An example of this potential LIFO smoothing feature is found in the following disclosure:

Commercial Metals, Inc.

“LIFO is an inventory costing method that assumes the most recent inventory purchases or goods manufactured are sold first. This results in current sales prices offset against current inventory costs. In periods of rising prices it has the effect of eliminating inflationary profits from net income. In periods of declining prices it has the effect of eliminating deflationary losses from net income.”⁸

Cash-flow-statement effects

A LIFO firm will typically have higher operating cash flow as earnings and the associated tax provision are lower. As a result, less cash is consumed by income taxes by the amount of the tax rate applied to the difference in cost of goods sold between the two methods.

While not common, some firms disclose the influence of LIFO versus FIFO on earnings in the operating activities section of the statement of cash flows. Exhibit 1 provides part of the operating activities section of the Kroger Company statement of cash flows.

Exhibit 1: LIFO in the Statement of Cash Flows

**THE KROGER CO.
CONSOLIDATED STATEMENTS OF CASH FLOWS**

Years Ended February 2, 2008, February 3, 2007 and January 28, 2006

(In millions)	2007 (52 weeks)	2006 (53 weeks)	2005 (52 weeks)
Cash Flows From Operating Activities:			
Net earnings	\$ 1,181	\$ 1,115	\$ 958
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Depreciation and amortization	1,356	1,272	1,265
LIFO charge	154	50	-
Stock-based employee compensation	87	72	7
Expense for Company-sponsored pension plans	67	161	138
Deferred income taxes	(86)	(60)	(63)
Other	37	20	39

Source: The Kroger Company, Form 10-K annual report to the Securities and Exchange Commission (February 2, 2008), p. 33.

⁸ Commercial Metals, Inc., Form 10-K Annual Report to the Securities and Exchange Commission, August 31, 2008, p. 27.

In reviewing Exhibit 1, note the \$154 “LIFO charge” add-back to net earnings. The charge added back to earnings is the amount required to adjust FIFO cost of goods sold to the typically higher LIFO cost of goods sold amount. The LIFO charge is non-cash and its addition to net earnings in arriving at operating cash flow is consistent with this non-cash character. To make the adjustment, the company would:

Increase cost of goods sold (reducing net earnings) for \$154

Reduce FIFO inventory for \$154⁹

Balance-sheet effects

With respect to the balance sheet, a LIFO firm will normally have a lower inventory balance because older and lower costs remain in the LIFO inventory account on the balance sheet. As a result, current assets, working capital and the current ratio will be lower. Higher cash balances, resulting from lower income tax payments, may offset somewhat the reduced current assets. In addition to lower working capital, the reduced net income under LIFO will also result in a reduction in shareholders’ equity in the form of lower retained earnings. As a result, various leverage ratios that employ the amount of shareholders’ equity (e.g., debt to equity) will increase. Below are some examples of such balance-sheet effects, where replacement cost refers to the current cost or FIFO cost of inventories:

Maui Land and Pineapple Co.

“At December 31, 2007, finished goods inventories are comprised of fresh fruit at a FIFO cost of \$1.0 million and processed juice products at a LIFO cost of \$112,000. The replacement cost of the LIFO inventories at year-end 2007 was approximately \$628,000. At December 31, 2006, the replacement cost of pineapple product inventories approximated \$8 million.”¹⁰

Tesoro Corp.

Inventories valued at LIFO cost were less than replacement cost by approximately \$1.4 billion and \$770 million at December 31, 2007 and 2006 respectively.¹¹

Walgreen Co.

At August 31, 2008, and 2007, inventories would have been greater by \$1,067 million and \$969 million, respectively, if they had been valued on a lower of first-in, first-out cost or market basis.¹²

From a materiality perspective, these valuation differences can be very substantial and more information on these differences is provided later in this report. However, from the examples

⁹ While the effect is the same, the credit to inventory is more likely to be to the LIFO-reserve account, which is discussed later. In either case, inventory is reduced from its FIFO to LIFO value.

¹⁰ Maui Land and Pineapple Co., Annual Report to the Securities and Exchange Commission, December 31, 2007, p. 47. While not disclosed in the 2007 10K filing, the 2006 filing disclosed the LIFO inventory cost at \$2.2 million.

¹¹ Tesoro Corp., Form 10-K Annual Report to the Securities and Exchange Commission, December 31, 2007, p. 60.

¹² Walgreen Co., Annual Report to the Securities and Exchange Commission, August 31, 2008, p. 12.

above, the additional inventory value of Tesoro Corp. is equal to 31 percent of its shareholders' equity in 2006 and 45 percent in 2007. That is, there is unrecognized inventory value that, if recognized, would substantially increase working capital and shareholders' equity, increasing the current ratio and reducing debt to equity.

The balance-sheet effects identified above are the differences between the value of the LIFO inventory and its value under alternative methods, typically either FIFO or average cost. A balance referred to as the LIFO Reserve captures these differences and is very important in quantifying the effects of LIFO versus other inventory methods on both earnings and financial position. As noted by Western Refining: "As of December 31, 2007 and 2006, current cost exceeded the carrying value of LIFO costs by \$256.1 million and \$82.5 million. We refer to this excess as our LIFO reserve."¹³ The LIFO Reserve is discussed and illustrated next.

The LIFO Reserve

Use of the LIFO method typically results in LIFO inventory balances that are less than those under either the FIFO or average-cost methods. Because LIFO firms include the cost of the most recently purchased items in cost of goods sold, the older and lower costs remain and are the basis for the valuation of the ending inventory. These differences between the inventory valuation on either FIFO or average-cost versus a LIFO basis are often referred to as the LIFO reserve. Some alternative labels include: Excess of current cost over LIFO stated value; Amount to reduce inventories to LIFO value; and Excess of replacement cost over LIFO cost.¹⁴ To highlight these inventory-valuation differences, the SEC requires LIFO firms to disclose the excess of inventory replacement or current costs over the stated LIFO inventory values. Three examples of such disclosures were presented above (Maui Land and Pineapple, Tesoro and Walgreen). The FIFO inventory valuation is typically used to represent replacement cost because FIFO is valued using the more recent inventory purchases. While usually disclosed in an inventory footnote to the financial statements, the LIFO reserve is sometimes displayed on the balance sheet.

In addition to including the change in the LIFO reserve, which is the difference in cost of goods sold between LIFO and FIFO, in its statement of cash flows, The Kroger Company also sets out separately the LIFO reserve on its balance sheet. The asset section of Kroger's balance sheet is provided in Exhibit 2. Note that inventory on a FIFO basis is listed first and then is followed by the LIFO reserve, which Kroger simply labels as the "LIFO credit." The LIFO credit is subtracted from the FIFO inventory amount to produce the LIFO inventory—though it is not set out and labeled as such in Kroger's balance sheet.

¹³ Western Refining, Inc., annual report to shareholders, December 31, 2007, p. 56.

¹⁴ For more discussion of the LIFO Reserve see: E. Comiskey and C. Mulford, *Guide to Financial Reporting and Analysis* (New York, John Wiley & Sons, 2000, pp. 136-154.

Exhibit 2: LIFO in the Balance Sheet

THE KROGER CO.
CONSOLIDATED BALANCE SHEETS

(In millions)

ASSETS	February 2, <u>2008</u>	February 3, <u>2007</u>
Current assets		
Cash and temporary cash investments	\$ 242	\$ 189
Deposits in-transit	676	614
Receivables	786	778
FIFO inventory	5,459	5,059
LIFO credit	(604)	(450)
Prefunded employee benefits	300	300
Prepaid and other current assets	<u>255</u>	<u>265</u>
Total current assets	7,114	6,755
Property, plant and equipment, net	12,498	11,779
Goodwill	2,144	2,192
Other assets	<u>543</u>	<u>489</u>
Total Assets	\$22,299	\$21,215

Source: The Kroger Company, Form 10-K annual report to the Securities and Exchange Commission (February 2, 2008), p. 31.

An understanding of the LIFO reserve is important in assessing the potential effects of the elimination of the LIFO method as part of the prospective move from U.S. GAAP to IFRS. In particular, the implications of changes in LIFO reserves as well as declines in inventory quantities, referred to as LIFO liquidations, are central.

Changes in the LIFO reserve

In times of rising prices, the LIFO reserve normally increases. This is because older and lower costs in the LIFO inventory are increasingly less than replacement cost. Conversely, in times of falling prices, the LIFO reserve typically decreases as falling costs of new purchases approach the level of the lower costs in the LIFO-inventory account. The LIFO reserve may also increase or decrease as a result of increases or decreases, respectively, in inventory quantities. A simple numerical example of the influence of changes in the LIFO reserve on cost of goods sold, and hence earnings, is provided in Exhibit 3.¹⁵

¹⁵ Source of this exhibit is: E. Comiskey and C. Mulford, *Guide to Financial Reporting and Analysis* (New York, John Wiley & Sons, 2000), p. 146.

Exhibit 3: Influence of Changes in LIFO Reserves on Earnings

	FIFO	LIFO Reserve	LIFO
Beginning inventory	\$ 100	\$ (50)	\$ 50
Purchases	<u>1,000</u>		<u>1,000</u>
Goods available for sale	1,100		1,050
Ending inventory	<u>200</u>	<u>(100)</u>	<u>100</u>
Change in LIFO reserve		50	
Cost of goods sold	<u>\$ 900</u>		<u>\$ 950</u>
Difference in cost of goods sold		\$50	
Cost of goods sold under FIFO			\$ 900
Add: LIFO charge (increase in LIFO reserve)			<u>50</u>
LIFO cost of goods sold			<u>\$ 950</u>

Source: E. Comiskey and C. Mulford, *Guide to Financial Reporting and Analysis* (New York: John Wiley, 2000), p. 146.

In Exhibit 3, the LIFO reserve increases by \$50 across the year.¹⁶ This increase explains the \$50 increase in the LIFO cost of goods sold over those under the FIFO method. Both methods share the same purchases amount (\$1,000). However, the increase of \$100 in the FIFO inventory keeps \$50 more of the purchases in inventory than is the case under LIFO, where the inventory increase is only \$50.

It is common for firms that use LIFO to also maintain information on FIFO.¹⁷ If for no other purpose, the SEC requires LIFO firms to also disclose the differences between the LIFO inventory and its current replacement cost. The FIFO inventory is typically used to represent replacement cost. The example in Exhibit 3 shows that cost of goods sold under LIFO is equal to the FIFO cost of goods sold amount plus the change in the LIFO reserve (FIFO cost of goods sold of \$900 + the increase of \$50 in the LIFO reserve). If the LIFO reserve instead had declined by \$50, then the LIFO cost of goods sold would be the FIFO cost of goods sold minus the change in the LIFO reserve or \$850.

The changes in the LIFO reserve may be a function of changes in inventory quantities, inventory costs or both. Reductions in inventory quantities are referred to as LIFO liquidations and the SEC also requires that the impact of the liquidations on earnings be disclosed.

¹⁶ The increase in the LIFO reserve is sometimes referred to as a LIFO charge, since it increases cost of goods sold. Alternatively, a decrease in the LIFO reserve is referred to as a LIFO credit since it reduces cost of goods sold.

¹⁷ Kroger is such an example as the following indicates: “We calculate First-In, First-Out (“FIFO”) Gross Margin as follows: Sales minus merchandise costs plus Last-In, First-Out (“LIFO”) charge (credit). . . FIFO gross margin is an important measure used by our management to evaluate merchandising and operational effectiveness.

LIFO Liquidations

A LIFO liquidation occurs when there is a reduction in the *quantity* of inventory. Since the LIFO inventory is normally carried at costs below current replacement costs, cost of goods sold is reduced by the inclusion of the lower costs associated with the liquidated inventory. Profits are in turn increased because of the lower costs. The importance of LIFO liquidations is supported by SEC Staff Accounting Bulletin No. 40, which requires the disclosure of the effect of LIFO liquidations on earnings.¹⁸ The SEC disclosure requirement is no doubt influenced by at least two considerations. First, in assessing the sustainability of a firm's earnings, it is important to be aware of the profit increases that are the result of LIFO liquidations—the same inventory cannot be liquidated twice. In addition, a calculated inventory reduction might be an earnings-management technique designed to achieve an earnings target.

To illustrate how LIFO liquidations affect earnings, a simple example is provided in Exhibit 4.

Exhibit 4 Earnings and LIFO Liquidations

Data: Opening inventory, 2 units at a cost of \$5.00 each			\$10.00
Purchases:			
NO LIFO Liquidation case: 10 units @ a cost of \$20.00 each			\$200.00
YES LIFO Liquidation case: 9 units @ a cost of \$20.00			\$180.00
Sales: 10 units @ \$35.00 each			\$350.00
		LIFO Liquidation	
	<u>NO</u>		<u>YES</u>
Sales	\$350.00		\$350.00
Cost of goods sold computation:			
Beginning inventory	\$ 10.00		\$ 10.00
Purchases	<u>200.00</u>		<u>180.00</u>
Cost of goods available for sale	210.00		190.00
Less ending inventories:			
No liquidation: 2 units @ \$5.00	<u>10.00</u>		
Liquidation: 1 unit @ \$5.00		<u>5.00</u>	
Cost of goods sold	<u>200.00</u>		<u>185.00</u>
Gross profit	<u>\$150.00</u>		<u>\$165.00</u>

Source: E. Comiskey and C. Mulford, *Guide to Financial Reporting and Analysis* (New York: John Wiley, 2000), p, 144.

The earnings difference in Exhibit 4 results from the reduction in inventory quantity. In the non-liquidation case, all of the goods sold are included in cost of goods solds at the current cost of \$20 each. However, in the liquidation case purchases fall short by one unit. This requires a reduction in the beginning inventory of one unit—a LIFO liquidation. This 10th unit is included in cost of goods sold at \$5.00, while all of the units are included at the current cost of \$20.00.

¹⁸ Securities and Exchange Commission (SEC). 1981. *Staff Accounting Bulletin 40*.

With the sharp downturn in business in the later part of 2008, there may be increased reductions in inventory quantities and more LIFO liquidations. It will be common to see inventory disclosures that explain the influence of LIFO liquidations on earnings. Some typical inventory disclosures containing both disclosures of LIFO liquidations and their influence on cost of goods sold or earnings are provided below:

Sunoco, Inc., p. 51, 12/31/07

The current replacement cost of all inventories valued at LIFO exceeded their carrying value by \$3,868 and \$2,273 million at December 31, 2007 and 2006, respectively. During 2007 and 2006, Sunoco reduced certain inventory quantities which were valued at lower LIFO costs prevailing in prior years. The effect of these reductions was to increase 2007 and 2006 results of operations by \$21 and \$20 million after tax, respectively.

Sturm, Ruger & Co., Inc., Co., p. 52, 12/31/07)

Inventories are stated at the lower of cost, principally determined by the last-in, first-out (LIFO) method, or market. If inventories had been valued using the first-in, first-out method, inventory values would have been higher by approximately \$46.9 million and \$57.6 million at December 31, 2007 and 2006, respectively. During 2007 and 2006, inventory quantities were reduced. This reduction resulted in a liquidation of LIFO inventory quantities carried at lower costs prevailing in prior years as compared with the current cost of purchases, the effect of which decreased costs of products sold by approximately \$12.1 million and \$7.1 million in 2007 and 2006, respectively.

Both Sunoco and Sturm, Ruger & Co. provide the required SEC disclosures, i.e., the LIFO reserve and the effect of LIFO liquidations. While the “LIFO reserve” nomenclature is not used by either firm, they both disclose the differences between the current cost of inventory and the cost of the LIFO inventory. Sunoco refers to current replacement cost exceeding LIFO carrying value, while Sturm, Ruger & Co. indicates how much higher the inventory would be if FIFO as opposed to LIFO were in use.

The above has provided some background on the nature of the LIFO inventory method and some of its implications for both financial position and financial performance. The balance of this report examines a sample of firms for which the elimination of the LIFO could have a very significant influence on their financial position and earnings.

Potential Financial-Statement and Income-Tax Consequences of LIFO Termination

Financial effects in the year of adoption

Shareholder reporting

The reporting for an accounting change is now conducted on a retrospective basis under SFAS No. 154. The associated IASB Standard is IAS No. 8. Both SFAS No. 154 and IAS No. 8 call for the retrospective treatment of accounting changes. This means that prior year statements are constructed as if the new method had been in effect all along. As stated in SFAS No. 154:

This Statement defines *retrospective application* as the application of a different accounting principle to prior accounting periods as if that principle had always been used or as the adjustment of previously issued financial statements to reflect a change in the reporting entity.¹⁹

The financial statement effect of a change from LIFO to FIFO should be comparable, whether the change to FIFO is made prior to the adoption of IFRS or at the time of the adoption of IFRS. Under the retrospective approach to treating the accounting change, the previous LIFO history is replaced by a revisionist FIFO record. A footnote of the effects of the change, including the effects on cost of goods sold, net income, inventory and retained earnings for the current and prior year, is also provided. The major financial statement effects of a change from LIFO to FIFO, assuming rising replacement costs of inventory will be:

1. Increased income before income taxes
2. Increased income tax provisions
3. Increased retained earnings
4. Increased current assets

Tax-return reporting

The income tax treatment of an accounting change is determined by the Internal Revenue Code and is not directly affected by IFRS. However, IFRS does play a role in this case since there is a clash of IFRS and the in the U.S. Conformity Rule described earlier. The need for U.S. firms to move from LIFO to FIFO as a result of the adoption of IFRS makes it impossible to satisfy the Conformity Rule. Without a change in the U.S. tax code, and at present, there does not appear to be an inclination to do so, LIFO cannot be used for income tax purposes if FIFO is adopted for shareholder reporting.

A change for income tax purposes from LIFO to FIFO requires approval from the Internal Revenue Service.²⁰ The change to FIFO will typically give rise to a retroactive increase in taxable income and the income tax is paid over four years. The tax-related effects in the year of change would be:

1. An increase in the income tax provision
2. An increase in the income tax liability
3. An increase in cash tax payments

Financial effects in subsequent years

Shareholder reporting

Shareholder earnings under FIFO should continue to exceed those under LIFO as long as prices continue to rise. The differences will be narrowed in the event of modest price increases and be reversed in the event that prices decline. Earnings may be somewhat more volatile under FIFO because of the absence of the dampening of earnings in rising price environment and the

¹⁹ SFAS No. 154, "Accounting for Accounting Changes and Errors" (Norwalk, CT: Financial Accounting Standards Board, May 2005), p. 2.

²⁰ Form 3115, Application for Change in Accounting Method, must be filed to the IRS.

moderating of the decline in earnings in a declining-price environment, which is a characteristic of LIFO. However, earnings volatility may be reduced somewhat under FIFO because of the absence of the effects of LIFO liquidations. Balance sheet ratios will continue to be stronger since the increased inventory under FIFO will increase the working capital ratio and the additional profits will also strengthen leverage ratios such as debt to equity.

Tax return

The higher earnings under FIFO in the rising-price environment carry with it the burden of higher income tax provisions. This will reduce operating cash flow on an ongoing basis. In addition, the retroactive income taxes that result from the accounting change, which are normally paid over a four-year period, continue to be a burden on operating cash flow.

Financial Statement Consequences of LIFO Termination: Analysis of Sample Firms

IFRS 1 states that in a company's first year of IFRS financial statements, the information should be "transparent for users and comparable over all periods presented."²¹ That is, inventory and associated data presented in previous years need to conform to the IFRS inventory standard. We focus on fiscal years 2007 and 2006 since they would be presented in a hypothetical 2008 annual report if IFRS had been adopted. Beyond the sample of 30 firms in Exhibit 5, the elimination of LIFO will of course affect a large number of firms. A recent annual survey of 600 firms, which is conducted by the American Institute of Certified Accountants, reports that 36 percent of its sample firms use the LIFO inventory method.²²

As the SEC and FASB contemplate a switch to IFRS, and the possible elimination of LIFO, it is important to know how the prospective elimination of LIFO will impact U.S. firms. The approach followed here is to focus on a subset of LIFO firms that are likely to be significantly affected by such a change because of the magnitude of their LIFO reserves. The 30-company sample was developed by searching the COMPUSTAT database to identify companies with the highest percentages of LIFO reserves to total assets.

A review of the sample firms indicates that petroleum, metals and chemical firms dominate. Food and drug stores are the most frequent users based upon the AICPA annual survey (86% using LIFO), but their LIFO reserves are not as material.²³ The largest LIFO reserves as a percentage of total assets are: 46%, Sturm and Ruger (firearms); 31%, Sunoco (petroleum refining); 25%, Carpenter Technology (metals); 24%, Hancock Fabrics (fabric retailer); 21%, Gorman-Rupp (pumps); and 21%, A.M. Castle (specialty metals). Refer to Exhibit 5 where we present LIFO reserves as a percentage of total assets for our 30-company sample.

²¹ IFRS 1, First-time Adoption of International Financial Reporting Standards.

²² American Institute of Certified Public Accountants, *Accounting Trends and Techniques*, 62nd ed. 2008, p. 159. It should be noted that it is common for firms that use LIFO to also use other inventory methods as well for other inventories.

²³ American Institute of Certified Public Accountants, *Accounting Trends and Techniques*, 62nd ed. 2008, p. 160.

Exhibit 5 LIFO Reserves as a Percentage of Total Assets
(Total Assets, LIFO Reserve and Cumulative Taxes Due in millions) ²⁴

Company	2007 LIFO Reserve % Total Assets	2007 Total Assets	2007 LIFO Reserve	Cumulative Taxes due on Switch to FIFO	Taxes due % Total Assets
A.K. Steel Holding Corp.	10%	\$5,197	\$539	\$189	4%
Allegheny Technologies Inc.	9%	4,096	375	\$131	3%
Applied Industrial Technologies Inc.	18%	777	141	49	6%
Carpenter Technology Corp.	25%	2,026	501	175	9%
Castle (A.M.) & Co.	21%	677	142	50	7%
Eastman Chemical Co.	8%	6,009	510	179	3%
Encore Wire Corp.	15%	514	75	26	5%
Exxon Mobil Corp.	10%	242,082	25,400	8,890	4%
Friedman Industries Inc.	10%	67	7	2	4%
Gorman-Rupp Co.	21%	212	45	16	7%
Grainger (W.W.) Inc.	9%	3,094	288	101	3%
Graybar Electric Co. Inc.	7%	1,532	113	40	2%
Hancock Fabrics Inc.	24%	151	36	13	8%
Holly Corp.	12%	1,664	199	70	4%
Longs Drug Stores Corp.	11%	1,847	205	72	4%
Marathon Oil Corp.	9%	42,746	4,034	1,412	3%
North Amer. Galvanizing & Coating Inc.	17%	48	8	3	6%
Sifco Industries	12%	61	7	2	4%
Solutia Inc.	9%	2,640	239	84	3%
Spartan Stores Inc.	7%	610	45	16	2%
Standard Register Co.	8%	420	34	12	3%
Starrett (L.S.) Co.	12%	234	28	10	4%
Sturm, Ruger & Co. Inc.	46%	102	47	16	16%
Sunoco Inc.	31%	12,426	3,868	1,354	11%
Tennant Co.	7%	382	28	10	2%
Tesoro Co.	17%	8,128	1,400	490	6%
Twin Disc Inc.	8%	267	22	8	3%
United Refining Co.	9%	732	63	22	3%
Valero Energy Corp.	15%	42,722	6,200	2,170	5%
Winnebago Industries Inc.	9%	367	33	12	3%

²⁴ COMPUSTAT North America; Georgia Tech Financial Analysis Lab calculations.

The companies in Exhibit 5 have large LIFO reserves, which represent considerable differences between LIFO inventory values and replacement cost. Some of the LIFO reserves in the sample are actually larger than the LIFO inventory account itself. For example, in 2007, Exxon Mobil's LIFO reserve exceeds its LIFO inventory balance by \$16.5 billion (\$25,400,000 - \$8,900,000) as shown in Exhibit 6.

Exhibit 6. Exxon Mobil's LIFO/FIFO Valuation Differences (in millions)²⁵

	2007	2006	2005	2004
LIFO inventory	\$8,900.00	\$9,000.00	\$7,800.00	\$8,100.00
Plus the LIFO reserve	<u>25,400.00</u>	<u>15,900.00</u>	<u>15,400.00</u>	<u>9,800.00</u>
FIFO inventory	34,300.00	24,900.00	23,200.00	17,900.00

An assessment of the impact of LIFO on the sample firms follows. This assessment includes (1) the magnitude of the change in earnings of the sample firms from a hypothetical change to FIFO; (2) the impact of the change on a subset of the sample (petroleum firms); (3) the change in the current ratio from the adoption of FIFO; the change in shareholders' equity from the adoption of FIFO; and the change in the debt to equity ratio from a FIFO adoption.

(1) Impact of a change to FIFO on income of the sample firms

The initial adoption of IFRS, and in particular of IAS 2 (the IFRS inventory standard that does not permit LIFO), will result in earnings increases. This is because each of the sample firms has replacement costs that exceed LIFO cost.²⁶ Without question, one of the primary advantages of the LIFO inventory method is the lower tax provision from the lower earnings typically associated with LIFO. Lower earnings result in turn in lower income taxes.²⁷ Exhibit 7 shows the degree to which pre-tax income of LIFO companies that switch to FIFO could be increased for the sample firms.

The restatement of pretax earnings from LIFO to FIFO is achieved by *adding the increase in the LIFO reserve* to reported pretax LIFO earnings and *subtracting a decrease in the LIFO reserve* from reported pretax LIFO earnings. Exhibit 7 reveals that a switch to FIFO, motivated by the adoption of IFRS, could increase pre-tax income by an average of 10.26% and 11.97% for 2006 and 2007, respectively. This increase in pre-tax earnings will result in an increase in income tax provisions as well, which will increase cash outflows for income tax payments.

²⁵ Exxon Mobil Corp., Form 10-K Annual Report to the Securities and Exchange Commission, December 31, 2007.

²⁶ It is possible for LIFO costs to exceed replacement costs. This outcome is typically found in cases where there is a period of secular decline in prices in an industry, e.g., the steel industry in the past.

²⁷ A paper by Granof and Short finds that not being in a position to pay income taxes, e.g., being in a tax-loss carryforward position, is the most common reason for a firm not to be using LIFO. A condition of falling prices is the next most common. See: Granof, M. and D. Short. "Why do Companies Reject LIFO." *Journal of Accounting Research* (Summer 1984), p. 327.

Exhibit 7. Percentage Change in Pre-tax Income from FIFO Adoption*

	2007	2006
Average % change in pre-tax income from the adoption of FIFO	11.97%	10.26%
Average % change in net income (tax effected at 38%)	7.42%	6.36%

*AK Steel Holding Corp. and SIFCO Industries were excluded from these statistics because they were considered to be outliers in the 2006 data.

Total taxes due – a big hit

It should be noted that the total tax bill for LIFO firms resulting from a switch to FIFO will be much more than the taxes due for 2006 and 2007 alone. In fact, if these firms were to switch to the FIFO method, they would owe taxes, to be paid over a four-year period, on the total LIFO reserve balance. That would be a substantial tax hit, ranging from 2% of total assets for Graybar Electric Co., Spartan Stores and Tennant Co. to 16% of total assets for Sturm, Ruger & Co. This increase in income tax payments appears to be one of the motivators for the interest in the U.S. Senate to repeal LIFO, which is discussed further below. Refer to Exhibit 5 for an estimate of the total U.S. Federal taxes that would be due if these firms were to switch to the FIFO method.

Referring again to Exhibit 7, after tax-effecting at 38% the average % change in pre-tax income from the adoption of FIFO, net income for the sample firms increases by 6.36% and 7.42%, respectively, in 2006 and 2007.

(2) Impact on earnings from a FIFO adoption for a petroleum subsample

The data in Figure 8 present income increases for a sub-sample of petroleum firms among the 30-firm sample. These data assume that the FIFO method was in use. Note that the income increases range from a low of 13% to a high of 113%. Of course, a year from now the results could change quite dramatically if petroleum prices stay at the lows that we are observing at the end of 2008.

Exhibit 8. Impact of a FIFO Adoption by Petroleum Refining Companies in the Sample (LIFO Pre-tax Income and FIFO Pre-tax Income in millions)

Company	LIFO Pre-tax Income	FIFO Pre-tax Income	% Change in Pretax Income
Exxon Mobil	\$70,474	\$79,974	13.5%
Holly Corp.	499	562	12.6
Marathon Oil Corp.	6,849	9,201	34.3
Sunoco Corp.	1,409	3,004	113.2
Tesoro Corp.	905	1,535	69.6
Valero Energy Corp.	6,726	10,026	49.1
Overall average			48.7

(3) Change in the current ratio from a FIFO adoption

Along with the income statement, the balance sheet of LIFO firms will be significantly affected in a move to FIFO from LIFO. Exhibit 9 shows the extent to which the current ratio (current assets / current liabilities) could be affected.

The current ratio is an important measure used to assess liquidity and the capacity to meet current obligations. It is common for credit agreements to include the current ratio as a positive financial covenant. However, our experience is that the implications of the LIFO reserve for the working-capital position are well understood by lenders. Therefore, an increase in the current ratio due to a switch to FIFO is unlikely to be interpreted as a strengthening in the firm's working-capital position. As seen in Exhibit 9, as a result of a switch to FIFO from LIFO, the sample firms examined would see an increase in their current ratio of 23.4% in 2006 and 26.2% in 2007, respectively.

Exhibit 9. Change in Current Ratio in a switch from LIFO to FIFO²⁸

	2007	2006
Average percentage increase in the current ratio from a change to FIFO from LIFO (tax effected at 38%)	26.2%	23.4%

(4) Change in shareholders' equity from a FIFO adoption

Upon a change to FIFO, assets are increased by adding the LIFO reserve to the inventory balance. At the same time, shareholders' equity is increased by the change in income upon adoption of FIFO. In addition, shareholders' equity will continue to increase in subsequent years since FIFO earnings will usually exceed what they would have been if LIFO were in use. Exhibit 10 provides the changes in shareholders' equity that result from the hypothetical switch to FIFO by the study's sample. As seen in the Exhibit, shareholders' equity would increase by 33.6% and 34.2%, in 2006 and 2007, respectively, for the sample firms.

Exhibit 10. Change in Shareholders' Equity from a Switch from LIFO to FIFO²⁹

	2007	2006
Average percentage change in shareholders' equity from a switch to FIFO from LIFO (tax effected at 38%)	34.2%	33.6%

²⁸ This information was gathered from each company in the sample's fiscal year 2007 10-K Annual Report to the Securities and Exchange Commission.

²⁹ This information was gathered from each company in the sample's fiscal year 2007 10-K Annual Report to the Securities and Exchange Commission.

(5) Change in debt to equity ratios from FIFO adoption

The average increase in shareholders' equity in Exhibit 10 is very substantial and it will have a significant affect on leverage ratios that employ shareholders' equity. As liabilities remain unchanged by a shift to FIFO, the debt to equity ratio will decrease, giving the appearance of less financial leverage. Exhibit 11 shows the influence on the increase in shareholders' equity on the debt to equity ratio. As seen in the Exhibit, debt to equity would decrease by 23.1% in 2006 and 2007, respectively, for the sample firms.

Exhibit 11. Decrease in Debt to Equity Ratio from a Switch from LIFO to FIFO³⁰

	2007	2006
Average percentage decrease in debt to equity ratio from a switch to FIFO from LIFO (tax-effected at 38%)	-23.1%	-23.1%

Exhibit 11 reveals a sharp decrease in the debt-to-equity ratio after a switch from LIFO to FIFO. These results are achieved by simply changing the allocation of inventory costs between inventory and cost of goods sold. The companies have neither increased sales nor have they improved the efficiency of their operations. They have simply shifted older, lower costs from the balance sheet to the income statement, and newer, higher costs from the income statement to the inventory account. The only "real" consequence is an increase in both book and tax-return income and an associated increase in the income tax provision and income tax payments.

The information presented above shows that a termination of LIFO, and the adoption of FIFO, has the potential to make significant changes in reported earnings, taxable income, operating cash flow and reported financial position. All of these effects have important implications for users of financial statements.

The Implications of Switches from LIFO to FIFO**Cash flow reductions**

A switch to FIFO by U.S. firms, as a result of the adoption of IFRS, will be imposed upon them and will not be a voluntary firm choice. It would follow that FIFO is not the optimal inventory method for firms that currently use LIFO. If it were, then they would already have adopted FIFO. Nevertheless, unless some accommodation is made on this matter by the FASB, IRS, Congress, IASB, or SEC, a forced change to FIFO is on the horizon. A clear negative from this change is the prospect of an increase in both reported earnings and taxable income. While an increase in taxable income will not necessarily change total taxes over the firm's lifetime, it will accelerate income recognition and with it the payment of income taxes. The present value of future cash tax payments increases. From the perspective of the firm, shareholders and lenders,

³⁰ This information was gathered from each company in the sample's fiscal year 2007 10-K Annual Report to the Securities and Exchange Commission.

this acceleration of tax payments cannot be seen as a good thing. However, some legislators do have a different perspective. They challenge the propriety of LIFO and see the elimination of LIFO as correcting the tax law as well as an attractive source of tax revenues.

Financial covenants and incentive compensation

Changes in earnings and shareholders' equity from switches by firms to FIFO from LIFO should be of importance to, among others, bankers, investors, and boards of directors. Bankers will observe improvements in ratios that they commonly incorporate into debt covenants that are part of credit agreements with their borrowers. A switch to FIFO could be a relief for a firm on the verge violating these covenants. Boards of directors should be aware that earnings increases on the horizon are simply a product of new accounting and not an improvement in operational performance. Some adjustments in compensation packages may be in order. In addition, compensation committees should review how GAAP is incorporated into compensation packages.

Firm valuations

Other things equal, a change to FIFO should reduce cash flows as a result of increases in taxable income. Absent any offsetting developments, this change would in turn be expected to reduce firm value. Unlike voluntary changes, a mandated change from LIFO, as a result of adopting IFRS, and the adoption of FIFO or average cost, should not carry implied signals that might affect firm value. For example, one could argue that a *voluntary* change to FIFO might signal a concerted effort on the part of management to seek to offset reduced earnings expectations, which could reduce firm value. However, a mandated change to FIFO should not send such a signal. The lack of a signaling effect, however, does not negate the clear implication of a decrease in firm value resulting from an increase in future cash tax payments.

The prospective demise of LIFO and its replacement by the adoption of FIFO, or average cost, presents a rather unique situation in the area of inventory-accounting changes. A large body of work is available that studies the reasons for the adoption of the LIFO or FIFO inventory-accounting methods.³¹ The results in these cases of discretionary inventory-method choices have been somewhat mixed in terms of the changes in the valuation of the changing companies. However, the prospective situation presents a non-discretionary change in inventory method. The change in firm valuation should be somewhat more predictable in this case. If income tax and discount rates remain constant and replacement costs of inventory are rising, then the movement away from LIFO should have a negative influence on firm value.

³¹ A few examples from this body of research: Sunder, S., "A Note on Estimating the Economic Impact of the LIFO Method of Inventory Valuation," *The Accounting Review* (April 1976), pp. 287-291; Brown, R., "Short-Range Market Reactions to Changes in LIFO Accounting Using Preliminary Earnings Announcement Dates," *The Journal of Accounting Research* (Spring 1980), pp. 38 to 63; Granof, M. and D. Short, "Why Do Companies Reject LIFO?" *Journal of Accounting, Auditing, and Finance* (Summer 1984), pp. 323 to 333; and Cushing, B. and M. LeClere, "Evidence on the Determinants of Inventory Accounting Policy Choice," *The Accounting Review* (April 1992), pp. 355 to 366.

Matching and earnings management

Matching

One of the more common reasons that companies cite for using LIFO is that it LIFO provides a better matching of current prices with current costs. Consider, for example, the comment made by Graybar Electric below.

Graybar Electric Company Inc.

“The Company values its inventories at the lower of cost (determined using the last-in, first-out (LIFO) cost method) or market. LIFO accounting is a method of accounting that, compared with other inventory accounting methods, generally provides better matching of current costs with current revenues.”³²

In theory, Graybar Electric’s statements are correct. The idea is that the most current cost attributed to goods sold will be the most closely tied to the current price of that good. However, it is also common for firms moving off of LIFO to invoke the same reason, stating that FIFO or average cost provides better matching.

Campbell Soup Company

“As of August 1, 2005, the company changed the method of accounting for certain U.S. inventories from the LIFO method to the average cost method. The company believes that the average cost method of accounting for U.S. inventories is preferable and will improve financial reporting by better matching revenues and expenses as average cost reflects the physical flow of inventory and current cost.”³³

What companies such as Campbell Soup fail to realize, or to reject, is that ARB 43 is not based on a physical-flow assumption. ARB 43 states, “Cost for inventory purposes may be determined under any one of several assumptions as to the flow of cost factors... The cost to be matched against revenue from a sale may not be the identified cost of the specific item which is sold, especially in cases in which similar goods are purchased at different times and at different prices.”³⁴ ARB 43 recognizes that the physical-flow assumption may not provide the most optimal use in financial statements, and explicitly requires the matching of cost, and not physical, flows. From a practical perspective, the adoption of IFRS will settle this matter since LIFO will not be an option.

³² Graybar Electric Company Inc., Form 10-K Annual Report to the Securities and Exchange Commission, December 31, 2007, p. 14.

³³ Campbell Soup Company, Form 10-K Annual Report to the Securities and Exchange Commission, July 29, 2007, p. 41.

³⁴ Accounting Research Bulletin 43, Statement 4.

Earnings management

LIFO liquidations can obviate the smoothing feature of LIFO and may also be induced by company managements in order to meet earnings expectations. A prospective decline in earnings, or a decline in the likelihood that an earnings target will be met, can be dealt with by a measured decline in inventories. Such a LIFO liquidation will bring lower costs from existing inventory that will increase earnings, making it possible to meet an earnings target. This tool will be taken away if and when LIFO is no longer an inventory-method choice under IFRS.

Conclusions

It is clear that financial reporting in the U.S. is on a path leading to convergence of financial reporting standards along with most of the major countries in the world. Efforts have been made in recent years to achieve some degree of convergence in advance as noted by cooperation between the FASB and the IASB on standard setting. However, with an inventory of over 160 FASB Standards, there will be many adjustments that will have to be made as United States' firms adopt and adapt to IFRS. In this report, we examine one key aspect of a single IFRS Standard, i.e., IAS 2, *Inventories*. The use of the LIFO method is widespread and frequent in the U.S. However, the LIFO method is not permitted under IAS 2. This will mean that U.S. companies will need to select one of the permitted methods, e.g., mainly FIFO and average cost. A change from LIFO has a special significance because of the LIFO conformity rule in the U.S., which requires that the use of LIFO for tax purposes must be matched by its use in reporting to shareholders. The tax advantages currently associated with LIFO will disappear along with LIFO.

We have explored the potential consequences for firms currently using LIFO. Our focus is on a sample of 30 firms that have the greatest differences between their inventories under LIFO versus FIFO, or current cost. These are the firms that will be most affected by the passing of LIFO and the embrace of FIFO, presumably for both their financial statements and tax returns. In 2007 we find differences in inventories that run as high as 46% of total assets; an average increase in pre-tax income and net income of 11.97% and 7.42%, respectively; an average increase in the current ratio of 26.2%; an average increase in shareholders' equity of 34.2%; and an average decrease in the debt to equity ratio of 23.1%. In terms of cash flows, without changes in the tax code, a forced move away from LIFO could cost some firms hundreds of millions, and in some cases, billions of dollars in increased income taxes to be paid over a four-year period. Future income taxes will also be higher as the tax advantages of LIFO are lost. Such higher taxes have negative implications for the valuations of the affected firms.

Users of financial statements will need to adapt to the changes. Lenders typically use various financial ratios in establishing financial covenants in credit agreements. A number of key ratios have been shown in this report (current ratio and debt to equity ratio) to be significantly affected by the anticipated switch to FIFO. Firm compensation committees should be alert to the influence that inventory-accounting changes can have on earnings. In the absence of advance adaptations, operations-related incentive compensation may experience sharp increases that are the product of inventory-accounting changes and not the operating performance of the compensated employees.

As a final note, LIFO appears to be a target for elimination without evidence from extensive studies or discussions about the merits and weaknesses of the accounting method. The driving force for the termination appears in large measure to be the fact that the method is not used in a large number of other countries. The move is not inconsistent with our sudden embrace of concepts or principles-based standards that are typical of IFRS, and our move away from a rules-based system that has evolved in the U.S. over decades. We may live to regret our surrender in these and other areas of accounting policy.