

## **Repeal of LIFO: Analysis Based on Industry Data**

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*We discuss the potential consequence of a repeal of the Last-in, First-out (LIFO) inventory method. In 2012, U.S. companies reported a total of 3,207 million LIFO reserves. Assuming a 35% tax rate, this reserve reflects approximately 1,122 million in tax savings. More importantly, there has been a significant increase in LIFO reserves during the past decade. If LIFO is repealed, the substantial tax burden might destroy some firms. Although it is crucial to converge toward International Financial Reporting Standards (IFRS), we suggest that regulators be cautious about the potential repeal of LIFO.*

### **INTRODUCTION**

The Last-in, First-out (LIFO) inventory method has been an acceptable and popular accounting method since its inception in 1939. Although LIFO has been adopted for years, the topic has recently taken on new importance because a repeal of LIFO, either directly or indirectly, as a consequence of adopting the International Financial Reporting Standards (IFRS), is being considered by U.S. policymakers. Consequently, the repeal of LIFO has been proposed in the past five U.S. budgets. Most recently, the FY2014 budget projected that a repeal of LIFO would reduce the U.S. deficit by \$80.8 billion over the next 10 years (U.S. Budget for FY 2014, p.261).

Not surprisingly, the potential repeal of LIFO has sparked a heated debate. On the one hand, opponents of LIFO characterize LIFO as a “massive tax holiday” (Kleinbard, Plesko, and Goodman 2006). On the other hand, proponents assert that LIFO is a sound accounting inventory method and is not only used exclusively by big oil and other large corporations but also by hundreds of thousands of smaller companies (LIFO Coalition, 2010). The press has also expressed a similar concern, asserting that “Small businesses, manufacturers, wholesalers, retailers and oil companies would be especially hard hit” (Pear 2011). The purpose of this study is to contribute to the recent debate about a repeal of LIFO.

The repeal of LIFO is an important topic for at least two reasons. First, the impact of a repeal of LIFO could be severe for companies with large LIFO reserves. Huge LIFO reserves result in large tax savings for some companies. A LIFO reserve is the difference between the Cost of Goods Sold deduction under LIFO and the deduction that would have been taken had the company been using the First-In-First-Out (FIFO) method. Table 1 summarizes firms with the ten largest LIFO reserves in 2012 (data obtained from Compustat North America Fundamental File). For example, EXXON MOBIL had a 21,300 million LIFO reserve in 2012. Assuming the effective tax rate is 35%, this suggests that 7,455 million in tax savings would have been taken had EXXON MOBILE been using FIFO in 2012. 7,455 million is approximately 16% of its reported

net income, suggesting the severe impact of a repeal of LIFO on net income. The other extreme example is VALERO ENERGY. The tax effect on its LIFO reserve is 2,345 million, which is even larger than its reported net income, suggesting that the tax benefit of the LIFO method is able to turn an unprofitable company into a profitable one.

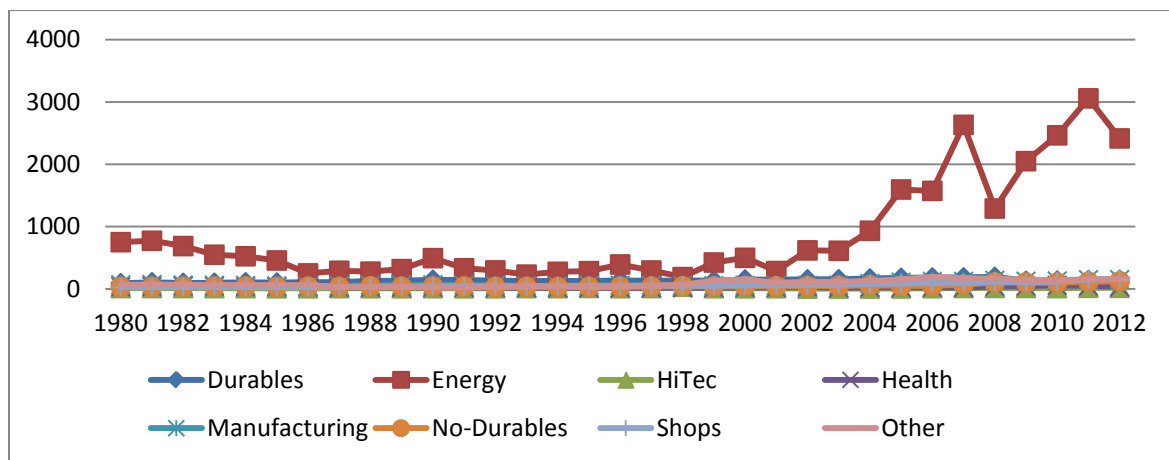
**TABLE 1  
TOP 10 LIFO RESERVES AND TAX EFFECT IN 2012**

Industry	Company	LIFO Reserve	Tax Effect	Net Income (Reported)	% on Income
Energy	EXXON MOBIL CORP	21,300	7,455	44,880	16%
Energy	CHEVRON CORP	9,292	3,252	26,179	12%
Energy	PHILLIPS 66	7,700	2,695	4,124	65%
Energy	VALERO ENERGY CORP	6,700	2,345	2,083	112%
Energy	MARATHON PETROLEUM	4,511	1,579	3,389	46%
Manufacturing	CATERPILLAR INC	2,750	963	5,681	16%
Shops	WALGREEN CO	1,897	664	2,127	31%
Energy	IMPERIAL OIL LTD	1,769	619	3,766	16%
Energy	TESORO CORP	1,600	560	743	75%
Manufacturing	DEERE & CO	1,421	497	3,065	16%

*unit: million U.S. dollars*

In addition, it is not only firms in the oil industry that have large LIFO reserves; some manufacturing firms also have significant amounts of LIFO reserve. For example, DEERE&CO had a 1,421 million LIFO reserve and 497 million corresponding tax savings in 2012, which is 16% of its income. WALGREEN also reported a 1,897 million LIFO reserve in 2012. Its corresponding tax savings is 663 million, which is 31% of its reported earnings.

**FIGURE 1  
LIFO RESERVES DURING 1980-2013: BY INDUSTRY**



**TABLE 2**  
**LIFO RESERVES DURING 1980-2012**

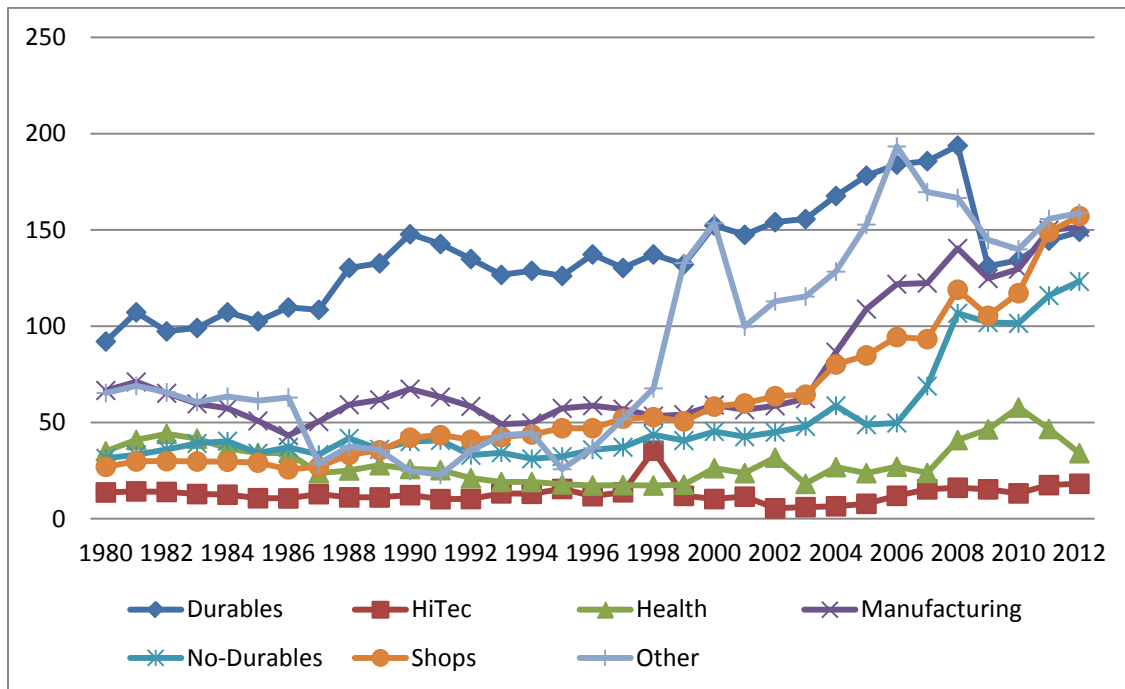
	<b>Durable</b>	<b>Energy</b>	<b>Hi-Tec</b>	<b>Health</b>	<b>Mfg</b>	<b>Non-Durable</b>	<b>Shops</b>	<b>Other</b>
1980	92.09	750.73	13.69	35.08	66.66	31.44	27.02	65.32
1981	107.23	773.32	14.24	40.96	71.09	33.21	29.79	69.02
1982	97.35	688.10	13.94	44.13	65.19	35.99	29.95	65.66
1983	99.13	548.64	12.87	41.63	59.73	39.12	29.76	60.60
1984	107.26	524.70	12.51	36.44	57.37	40.32	29.65	63.46
1985	102.59	456.59	10.69	34.15	50.86	34.03	29.19	61.31
1986	109.79	249.20	10.59	34.18	43.27	37.11	25.71	62.98
1987	108.54	291.46	12.81	23.69	50.50	33.35	26.98	28.69
1988	130.32	277.94	11.14	25.12	59.24	41.75	33.25	37.54
1989	132.72	318.37	11.11	27.84	61.77	36.05	35.56	35.72
1990	147.80	494.29	12.28	25.89	67.35	40.05	42.10	24.84
1991	142.72	331.64	10.20	25.28	63.23	40.67	43.41	22.89
1992	134.92	297.18	10.28	21.06	58.36	33.00	41.02	35.37
1993	126.69	229.64	13.22	19.13	49.12	34.34	42.48	43.27
1994	128.82	274.79	12.99	19.14	49.79	31.15	43.81	44.46
1995	126.15	285.54	15.49	17.92	57.37	32.35	47.05	25.74
1996	137.31	392.63	11.76	17.29	58.75	35.82	47.04	36.67
1997	130.29	295.95	13.79	17.44	56.95	37.18	52.01	51.88
1998	137.30	190.20	35.36	17.29	53.37	43.63	52.79	67.76
1999	132.11	423.77	11.92	17.72	54.09	40.63	50.62	132.84
2000	152.33	498.70	10.27	26.28	59.10	45.32	58.29	153.49
2001	147.50	287.60	11.50	23.72	56.60	42.61	59.89	99.84
2002	154.07	618.81	5.45	31.79	58.66	44.96	63.69	112.94
2003	155.68	612.40	6.04	18.15	62.38	47.96	64.45	115.45
2004	167.68	933.55	6.50	26.84	86.54	58.70	80.17	128.38
2005	178.20	1595.76	7.79	23.71	108.94	48.88	84.84	152.79
2006	183.97	1573.58	11.94	27.05	121.83	49.75	94.39	193.36
2007	185.76	2633.29	15.30	23.80	122.43	68.94	93.32	169.67
2008	193.80	1290.08	16.13	40.89	140.45	106.75	118.98	166.66
2009	131.14	2050.14	15.31	46.43	124.79	101.94	105.44	144.82
2010	134.28	2465.09	13.21	57.80	129.71	101.52	117.20	139.93
2011	144.48	3058.02	17.51	46.65	149.94	115.92	148.92	155.72
2012	149.08	2415.20	18.18	34.06	151.47	123.28	157.22	158.82
Avg	136.64	852.33	12.91	29.35	76.57	51.14	60.79	136.64

*unit: million U.S. dollars*

Second, there has been a clear trend of increasing LIFO reserves in some industries during the past several decades. Figure 1 plots the average LIFO reserve among 8 industries between 1980 and 2012. The industry classification follows the Fama and French 10 industry portfolio. We eliminate the utility and financial services industries because the LIFO reserves are not available for these two industries on Compustata. Figure 1 shows an upward trend of LIFO reserves in the energy industry since 2001, which might be influenced by the general upward movement of oil prices. Table 2 summarizes the average LIFO reserves overtime. For the energy industry, the average LIFO reserve was only 287 million in 2001, and it grew to 2,415 million in 2012.

In addition to the energy industry, an increasing trend in LIFO reserves also exists in other industries. Figure 2 plots the average LIFO reserve among 7 industries (excluding the energy industry) between 1980 and 2012. Figure 2 still shows an upward trend in LIFO reserves for some industries, such as shops, non-durables and the manufacturing industry. For example, Table 2 shows that, in manufacturing industry, the average LIFO reserve was only 56 million in 2001, while it increased to 151 million in 2011, almost tripling in size. A similar pattern can be observed in the shop industry. During the past ten years, the average LIFO reserve increased from 44 million in 2002 to 123 million in 2012.

**FIGURE 2**  
**LIFO RESERVES DURING 1980-2013: EXCLUDING THE ENERGY INDUSTRY**



Due to the significant amount of LIFO reserves, in this paper, we attempt to provide insight for regulators regarding the pros and cons of a repeal of LIFO. The remainder of the paper is organized as follows. We first discuss the historical background of LIFO to gain a better understanding about this specific inventory system. Then, we provide a detailed discussion about the advantages and disadvantages of a repeal of LIFO. Finally, we conclude our study based on our discussion.

## **HISTORICAL BACKGROUND OF LIFO**

Although LIFO was created in the U.S., the theoretical basis for LIFO, the base stock method, has been in use in the United Kingdom since the late 1800s (Davis 1982). The theoretical motivation of the base stock method is that a company must maintain a certain minimum quantity (base stock) of inventory just to meet minimal operational needs. Consequently, this base stock will never be liquidated so long as the business is not liquidated. Under this premise, the inventory base stock is similar in nature to a fixed asset and should be valued at the acquisition cost of the initial stock of inventory. Implementation of the base stock method requires management to designate how much of its inventory is base stock and what historical cost amount should be used to value the base stock.

In 1930, the U.S. Supreme Court ruled that the primary reason for a company to use the base stock method was not to fairly reflect performance but to reduce taxes. Consequently, the base stock method was deemed unacceptable for tax purposes. As a result of this decision, LIFO became a popular alternative to the base stock method. Unlike the base stock method, which relies heavily on arbitrary management designations of base stock quantities and prices, LIFO is relatively free from subjective management assumptions (simply last in, first out), and during episodes of inflation it serves the same purpose of lowering taxes to the same extent as does the base stock method.

In general, the use of LIFO will yield positive tax benefits under the following three conditions: first, where there are increasing prices for the inventory item; second, where there are non-decreasing inventory levels; and finally, where firms have positive effective tax rates (this implies the firm is currently paying taxes or expects to pay taxes in the near future). The tax advantages of LIFO during the inflationary high-tax decades of the 1960s and 1970s are undoubtedly responsible for the widespread use of LIFO in corporate financial reports (Johnson and Dhaliwal 1988).

When using LIFO for tax purposes, a firm must adhere to the LIFO Conformity Requirement. In the Revenue Act of 1939, Congress sanctioned the use of LIFO for tax purposes, but it added a curious clause known as the LIFO conformity rule: firms that use LIFO for income tax purposes are also required to use LIFO for financial reporting purposes. The LIFO conformity rule represents the only legally mandated equivalency between tax accounting and financial accounting (Internal Revenue Code § 472(c) and § 474(e)). Davis (1982) believes that the LIFO conformity rule represents Congress's intent to coerce auditors into being watchdogs for the IRS. The independent auditor would approve the use of LIFO only if it fairly reflected the performance of the company. Presumably, if a company wanted to adopt LIFO strictly for the purpose of reducing income tax payments, the auditor would not approve of its use.

Recently, LIFO has faced a strong and real possibility of elimination. On September 18, 2002, the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) affirmed their mutual commitment to "make their existing financial reporting standards fully compatible as soon as is practicable" (FASB), which potentially results in the repeal of LIFO because the IFRS do not allow the use of the LIFO inventory method. In addition, both U.S. and global economic woes have challenged most countries to cut spending and find new sources of revenue. Consequently, the repeal of the LIFO tax method has been proposed in the past five U.S. budgets. Most recently, the FY 2014 budget projected that a repeal of LIFO would reduce the U.S. deficit by \$80.8 billion over the next 10 years.

## **PROponents OF LIFO**

### **LIFO is a Well-Established Accounting Method**

LIFO, as described by the American Petroleum Institute (API), is not a tax loophole, but a well-established methodology to determine taxable earnings (American Petroleum Institute, February 2012). It makes sense for companies in industries that have large inventories with rising costs over time and/or inventories that are held for a long time. Under the LIFO accounting procedures, firms assume that the last unit of a good that the company acquires in its inventory will be the first unit of the good that is sold. In periods of price inflation, or periods when the expected cost of acquiring inventories is rising, LIFO is beneficial in reducing taxes by increasing the Cost of Goods Sold. For example, the general upward

movement of oil prices since 2004 has resulted in a favorable period for the oil industry to use LIFO. Keeping LIFO in place would be a tax advantage for the oil industry. API states that, if LIFO were repealed, companies might have to redirect cash or sell assets to cover the tax payment, destroying some businesses.

Although the oil and gas industry is believed to be a major LIFO beneficiary, other industries can benefit from LIFO, such as winemakers, car and truck dealers, sellers of sporting goods and gardening tools, and many others. For example, makers of whiskey express a unique perspective on the reasons to use LIFO. Because of a high-profile clash on the provision, Distillers of Bourbon Whiskey are legally required to age their product for at least two years (AFP “Obama's Budget Has Some Singing Booze Blues” March 2009). Therefore, their inventories are large and sit on the books for a long time, which makes the use of LIFO advantageous.

### **Repeal is a Major Concern for Companies with Large LIFO Reserves**

The LIFO Coalition expresses serious concern about losing the tax benefits of LIFO. Having LIFO firms take back their LIFO reserves into income would cause substantial tax expenditures. A LIFO reserve is the gap between FIFO and LIFO costs when a company is using LIFO. The purpose of a LIFO reserve is to retroactively take the tax benefit of using LIFO back into income so that the company may be taxed as if it had never used LIFO.

For companies in the industry that have large inventories with rising costs over time, LIFO reserves can be large. As discussed before, Table 1 shows the significance of LIFO reserves and corresponding tax effects during 2012. Figure 1 and Table 2 further show an increasing trend in LIFO reserves over time. As a result, if LIFO is repealed, the increased tax burden associated with paying back a LIFO reserve would be heavy burden for some companies. This prospect highlights the possible unintended consequences of LIFO reform. The added tax burden resulting from a LIFO repeal, coupled with the struggling economy, would cause severe damage to many companies currently using LIFO. Senator Jim Bunning, from Kentucky, states that LIFO repeal will be damaging because it will “harm US companies and favor their foreign competitors at a time of economic distress when we are trying to encourage more US manufacturing” (AFP “Obama's Budget Has Some Singing Booze Blues” March 2009).

### **LIFO Helps Eliminate Phantom Profits**

Proponents of LIFO also believe that LIFO helps to eliminate phantom profits. Under LIFO, ending inventory is deemed to consist generally of goods purchased in the order of acquisition. As a result, LIFO serves to match current sales revenue with current inventory costs, effectively expensing inflation. Unlike LIFO, FIFO does not take into account the increasing costs of replacing inventory. Therefore, FIFO often reports phantom profits. For example, if a company were using FIFO, they would be reporting the cost of goods sold at past prices and presenting an unfair portrayal of profits—thus, phantom profits. On the other hand, a company using LIFO would report the cost of goods sold at the most recent prices, which are more likely to present a fair portrayal of profits.

## **OPPONENTS OF LIFO**

### **Repeal of LIFO Helps Enhance Comparability**

The opponents of LIFO believe that its elimination could enhance financial reporting comparability by reducing the number of alternative accounting treatments available to firms. Because the earnings number can be very different for LIFO firms and FIFO firms, the comparability of accounting earnings is a concern. Thus, to increase the comparability across companies, the opponents believe that the repeal of LIFO will result in more comparable accounting numbers.

However, in our analysis, we find that the adoption of LIFO is clustered by industry. Table 3 provides information about the percentage of firms adopting LIFO in each industry between 1980 and 2012. We find that firms in the energy, durables, and manufacturing industries are more likely to adopt LIFO, while firms in high-tech and health industries are less likely to adopt LIFO. On average, during our sample period, 18.61%

**TABLE 3**  
**PERCENTAGE OF FIRMS ADOPTING LIFO DURING 1980-2012: BY INDUSTRY**

	Durable	Energy	Hi-Tec	Health	Mfg	Non-Durable	Shops	Other
1980	26.11	7.27	5.78	8.79	31.50	19.51	21.25	5.20
1981	26.36	6.00	5.46	9.04	31.53	21.40	21.04	4.92
1982	26.12	5.59	4.78	7.42	30.22	20.86	19.97	4.33
1983	26.45	5.57	4.33	6.85	29.19	19.90	19.12	4.05
1984	26.19	4.99	4.03	6.48	27.98	19.51	17.94	3.47
1985	24.58	5.20	3.87	5.15	27.13	19.42	17.43	2.80
1986	22.60	5.00	3.66	3.97	26.26	18.73	15.58	2.32
1987	22.19	5.18	3.25	3.38	26.00	20.37	15.63	1.98
1988	20.00	4.72	3.08	3.00	24.70	18.36	14.11	1.67
1989	19.94	5.84	2.85	2.72	24.69	17.21	14.37	1.52
1990	19.03	6.00	2.29	2.85	23.17	16.65	13.83	1.43
1991	19.57	5.82	2.13	2.49	21.57	16.39	13.04	1.47
1992	19.41	5.88	1.77	2.29	20.64	15.71	13.10	1.58
1993	19.10	4.65	1.41	2.23	20.63	13.68	11.19	1.61
1994	18.50	5.67	1.18	2.00	20.99	13.06	10.31	1.55
1995	18.62	5.44	1.11	1.73	19.89	11.86	10.00	1.29
1996	15.88	5.49	0.79	1.41	17.43	11.40	8.53	1.00
1997	15.18	4.86	0.70	1.34	15.88	10.79	7.58	0.97
1998	15.02	3.05	0.50	1.18	15.16	9.34	6.97	0.77
1999	15.02	3.56	0.48	1.10	13.93	8.78	6.52	0.80
2000	13.67	3.83	0.50	0.89	13.07	7.91	6.11	0.79
2001	13.29	3.45	0.49	0.81	12.39	6.56	6.00	0.86
2002	12.47	2.83	0.38	0.85	12.39	5.54	5.73	0.71
2003	11.16	2.48	0.45	0.76	11.72	5.99	5.27	0.75
2004	10.89	2.33	0.39	0.75	11.78	6.07	5.24	0.72
2005	10.76	2.16	0.38	0.60	11.50	6.03	5.04	0.69
2006	10.48	2.16	0.27	0.61	11.07	6.23	4.88	0.59
2007	10.06	2.06	0.22	0.52	10.59	6.06	4.85	0.50
2008	9.20	1.87	0.27	0.44	10.36	4.96	4.50	0.55
2009	7.12	2.08	0.29	0.52	10.58	4.97	4.70	0.60
2010	7.06	2.28	0.30	0.52	9.91	4.67	4.66	0.53
2011	7.10	2.05	0.24	0.48	9.85	4.80	4.92	0.49
2012	7.87	2.16	0.27	0.40	10.39	5.00	4.99	0.55
<b>AVGe</b>	<b>16.58</b>	<b>4.17</b>	<b>1.76</b>	<b>2.53</b>	<b>18.61</b>	<b>12.05</b>	<b>10.44</b>	<b>1.61</b>

of firms in the manufacturing industry and 16.58% of firms in the durable goods industry adopt LIFO. On the other hand, only 1.76% and 2.53% of firms in the high-tech and health industries, respectively, use LIFO (see last row of Table 3). More specifically, in 2012, 10.39% of firms in the manufacturing industry use LIFO, and 7.87% of firms in the durable goods industry use LIFO. In contrast, only 0.27% of firms in the high-tech industry and 0.4% of firms in health industry use LIFO.

As a result, although the earnings number can be very different between LIFO firms and FIFO firms, the adoption of LIFO is clustered by industry. In some industries, almost no firms adopt LIFO. Hence, we believe that comparability might not be a huge issue by having both LIFO and FIFO as acceptable accounting method.

### **Repeal of LIFO Levels the Field**

Arguments for LIFO's abolishment include the idea that certain industries with little or no Cost of Goods Sold are unable to avail themselves of the potentially favorable tax effects of LIFO, and thus might have lower firm value. There has been speculation that the reason firms use LIFO is to benefit from a "tax holiday" that results from the use of the method.

However, whether LIFO method really "creates" firm value for LIFO firms and whether repeal of LIFO will negatively affect the firm value of a LIFO firm is unclear. Guenther and Sansing (2012) develop a theoretical model regarding a LIFO repeal. They find that a LIFO repeal could increase the future after-tax cash flows of firms that had used LIFO. Their model suggests that the higher tax costs associated with FIFO result in lower equilibrium quantities and higher equilibrium output prices, which would more than offset the higher tax cost associated with the FIFO inventory method and would result in increased pretax cash flows.

In addition, there is an argument that deferral tax gain on a LIFO reserve is merely a timing difference between FIFO and LIFO. Once the company engages in LIFO liquidation, these deferral tax gains will be recognized. As a result, because there is no "real" difference in firm value between LIFO firms and FIFO firms, whether firms that cannot adopt LIFO forgo the chance to improve firm value is in doubt.

### **Repeal of LIFO Helps Convergence Toward IFRS**

The move toward adoption of the IFRS in the U.S. also presents a clear threat to the continued use of LIFO for U.S. companies. As business is increasingly conducted on an international scale, many industrial companies, financial services firms, and financial regulators are finding the task of keeping up with the accounting standards of multiple nations to be an arduous task. International companies need to work to report their accounting records in convergence toward IFRS, which expends a great deal of time and innumerable financial resources. Therefore, opponents of LIFO argue that a repeal of LIFO can help the U.S. GAAP to converge toward the IFRS.

Technically, LIFO can still to be used for tax purposes even if the IFRS prohibited it for financial reporting. Although LIFO conformity requires firms that use LIFO for tax purposes to also use LIFO for financial reporting purposes, the LIFO Coalition proposed that the Treasury Department could use its authority to excuse violations of the LIFO Conformity Requirement in certain instances. The LIFO Coalition cites the belief that the Treasury Department could legally offer a "carve-out" for LIFO inventory accounting. Most countries that have adopted the IFRS still maintain a national standards-setting body. Because of this, most countries that have adopted the IFRS have implemented a local version rather than a pure version of the IFRS as created by the IASB. According to Jack Ciesielski, publisher of the Analyst's Accounting Observer, less than sixteen percent of the world's markets are using a pure version of the IFRS.

## **CONCLUSION**

Based on our discussion, we believe that a repeal of LIFO will unavoidably cause some firms to forgo the significant tax advantage associated with this method. These firms might have to redirect cash or sell assets to cover the tax payment, which might result in losing competitiveness. Although a repeal of LIFO might have some advantages, such as improving comparability among firms and helping the U.S. GAAP converge toward the IFRS, we still conclude that a repeal of LIFO harms U.S. companies.



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