Tax accounting for inventories and the pharmaceutical distribution industry

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Tax accounting for inventories and the pharmaceutical distribution industry

Executive summary

Background

In the pharmaceutical distribution industry, inventories play a critical role in ensuring the timely delivery of vital medications to hospitals, pharmacies and other healthcare providers throughout the United States. To assure timely delivery, Healthcare Distribution Alliance ("HDA") member companies maintain approximately 130 strategically located distribution centers throughout the United States.

Healthcare distributors maintain large inventories for a variety of reasons, including: (1) to reduce lags between the time an order is placed and the time it is fulfilled, (2) to create a buffer against uncertainties in supply and demand, and (3) to obtain better prices from suppliers by purchasing in bulk.

Accounting for inventories

For both financial and tax accounting purposes, businesses must distinguish the cost of goods sold during the year from the value of merchandise remaining at the end of the year. When companies purchase and sell high volumes of similar merchandise, it often is impractical to identify specifically the items that have been sold from those remaining in inventory. In such cases, the last-in first-out ("LIFO") and first-in first-out ("FIFO") inventory accounting methods are common cost flow assumptions used for both financial and tax accounting.

Under the LIFO method, it is assumed that the last items produced or acquired are the first items sold, so that the cost of goods sold reflects current prices and ending inventory is valued at earlier purchase prices. By comparison, FIFO accounting assumes that the earliest items produced or acquired are the first items sold, so that the cost of goods sold reflects earlier purchase prices and ending inventory is valued at current prices.

Based on 2023 Form 10-K filings with the Securities and Exchange Commission ("SEC") compiled by Compustat®, companies with a LIFO reserve accounted for 10 percent of total inventories and 17 percent of total net sales of all public U.S. companies. The LIFO method of inventory accounting is particularly prevalent in the pharmaceutical distribution industry, with companies using the LIFO method of accounting representing 99 percent of inventories and 100 percent of net sales in 2023.

Federal tax law

Where specific identification is impractical, federal tax law generally mandates the use of the FIFO method of inventory accounting unless the taxpayer elects to use the LIFO method. Taxpayers making the LIFO election: (1) must use it consistently, (2) must value inventories at cost (rather than at the lower of cost or market), and (3) must not use a method other than the LIFO method for external reporting (i.e., the "book-tax conformity rule").

Accurate measurement of income

During periods of pharmaceutical price inflation, FIFO accounting can result in a mismatch of costs and revenues because prices used to measure costs of goods sold are less than replacement cost. By determining revenues at current prices and costs at prior prices, FIFO accounting overstates real income and in effect imposes tax on inflationary gains. By contrast, under LIFO accounting, taxpayers defer recognition of inflationary gains until inventory is drawn down.

Proposals affecting LIFO accounting

Some have viewed repeal of the LIFO method of accounting as a potential source of revenue for reducing the deficit or funding other priorities (including other tax changes). There are two main ways that bills have called for LIFO repeal -

> **Recapture tax:** One-time increase in taxable income (spread over 10 years) due to recapture of historical LIFO reserves; and
>
> **Ongoing tax:** Annual increase in taxable income due to lower cost of goods sold deduction under the FIFO method as compared to the LIFO method (during periods of cost inflation).

Effect of LIFO method repeal on the pharmaceutical distribution industry

If the LIFO election were repealed legislatively, the tax effect would vary by company and industry based on the rate of inflation, the age of the company, the importance of inventories as a share of assets, and other characteristics. Other sectors that would face especially high tax burdens due to LIFO method repeal include the transportation and trade sectors, as well as the manufacturing sector, to which 73 percent of LIFO reserves in public US companies belong.

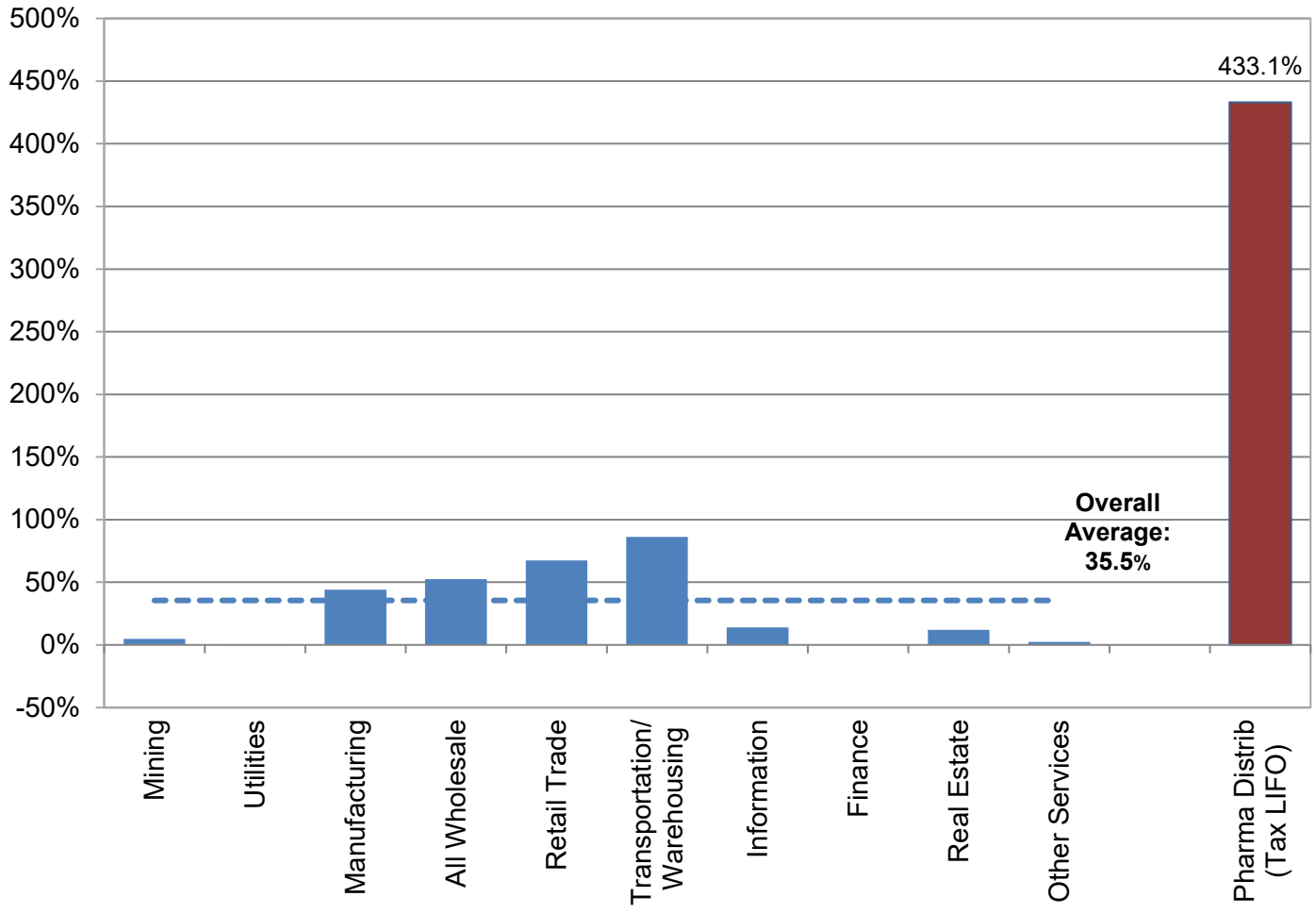
> **Recapture tax:** The tax LIFO reserve is estimated as the book LIFO reserve plus the deferred tax liability attributable to inventories grossed up at the company's effective tax rate as indicated in the tax footnote to the financial statement. The estimated recapture tax effect is the estimated LIFO reserve times the current corporate tax rate of 21 percent.

For public companies with a LIFO reserve, the one-time recapture tax triggered by conversion from the LIFO method to the FIFO method of accounting is estimated to be 36 percent of reported current federal income tax liability for 2023.

Pharmaceutical distributors would face a recapture tax estimated to be 433 percent of reported current federal income tax liability for 2023 (see **Figure E-1**). Thus, the recapture tax imposed by LIFO repeal would amount to nearly five years of current corporate tax payments within the pharmaceutical distribution industry.

> **Ongoing tax:** For public companies with a LIFO reserve, the ongoing annual tax increase resulting from use of FIFO accounting rather than LIFO accounting is estimated to be 2.6 percent of reported current federal income tax liability for 2023. Within the pharmaceutical distribution industry, the annual increase in tax liability is estimated to be 2.3 percent. If this annual effect were to be applied to the pharmaceutical industry, their aggregate effective tax rate would rise from 26.2 percent to 28.5 percent.

Figure E-1. Recapture tax attributable to LIFO method repeal as a share of current federal income tax of public companies with a LIFO reserve, 2023



Note: Based on estimated tax LIFO reserves for pharmaceutical distribution industry and book LIFO reserves for other industries.

Sources: PwC calculations, Compustat®, and pharmaceutical distribution company financial reports.

Conclusion

Repeal of the LIFO election would have a disproportionate burden on the pharmaceutical distribution industry, imposing a recapture tax estimated to equal nearly five years' worth of tax liability at current levels as well as an ongoing 2.3 percent annual tax increase. Such a large tax increase could adversely affect the industry's ability to finance its inventory and to attract capital necessary to serve growing market needs. The effect of LIFO repeal would be exacerbated by the prevalence of multi-year fixed price supply contracts in the pharmaceutical distribution industry that generally do not permit adjustment for tax increases.

I. Introduction

Based on SEC Form 10-K data, companies in the pharmaceutical distribution industry that use the last-in first-out ("LIFO") method of accounting represent 99 percent of industry inventories and nearly 100 percent of net sales. The industry's heavy reliance on the LIFO method of accounting makes it particularly vulnerable to proposals that threaten the continued use of this longstanding inventory accounting method.

LIFO method repeal has been viewed a potential source of revenue for reducing the deficit or funding other priorities (including other tax changes), and, to the extent policymakers seek ways to raise revenue to fund other policy objectives, it is under regular consideration. For example, the Obama Administration proposed to repeal the LIFO election in its budgets for fiscal years 2010 through 2017. While LIFO method repeal was not included in the bill commonly known as the Tax Cuts and Jobs Act of 2017, it was part of the Tax Reform Act of 2014, which included many of the revenue-raising options that were ultimately enacted as part of the Tax Cuts and Jobs Act of 2017. In December 2024, the Congressional Budget Office ("CBO") included LIFO method repeal in its list of options for reducing the federal deficit.[1]

In view of the ongoing discussion of potential restrictions on the use of LIFO accounting, the Healthcare Distribution Alliance engaged PwC US Tax LLP ("PwC") to renew its prior study on tax accounting for inventories and its importance to the pharmaceutical distribution industry.

Section II of this report summarizes the tax and financial rules that apply to accounting for inventories. Section III contains financial and operational information about the pharmaceutical distribution industry. Section IV analyzes policy issues raised by repeal of the LIFO election generally as well as the specific effects of repeal on pharmaceutical distributors.

II. Inventory accounting rules

A. Background

1. Inventory accounting

For financial statement purposes, the measurement of gross profit on sales earned during the year is determined by subtracting the cost of goods sold during the year from the total sales for the year. The merchandise that is available for sale during the year, but not sold during that year, is an asset (i.e., ending inventory), which remains on the balance sheet. Likewise, for tax purposes, gross income for a taxpayer that engages in manufacturing, merchandising, or a mining business is equal to total sales less the cost of goods sold.[2] Thus, for both financial statement and tax purposes, businesses must distinguish the cost of goods that are sold during the year from those that remain on hand at the end of the year.

The process of measuring the cost and value of a company's beginning and ending inventory and the cost of goods that have been sold during the year is broadly referred to as inventory accounting. The relationship between beginning inventory, purchases, cost of goods sold, and ending inventory is given by the following formula.

Beginning Inventory + Purchases - Ending Inventory = Cost of Goods Sold

A company's beginning inventory is a known quantity because it is equal to the prior period's ending inventory. Similarly, the cost of purchases made during the year is generally known. Thus, the key step in measuring the cost of goods sold is determining ending inventory.

Where companies purchase and sell high volumes of similar merchandise, it often is not practical to identify specifically the items that have been sold from those that remain in ending inventory. This is particularly true in the pharmaceutical distribution industry given the large volumes and the lack of individually serialized units in inventory. In such cases, to establish the dollar amount of the cost of merchandise remaining in ending inventory and the cost of goods that have been sold, inventory accounting generally uses cost flow assumptions that do not reflect the actual physical flow of goods and costs. The LIFO and FIFO inventory methods are common cost flow assumptions used by businesses for both financial statement and tax purposes.

2. LIFO accounting

Under the LIFO method, it is assumed that the last items produced or acquired are the first items sold. Thus, the cost of the goods sold during the year is determined by reference to the items produced or purchased most recently and the

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[1] Congressional Budget Office, *Options for Reducing the Deficit: 2025-2034*, December 2024.

[2] See Treasury Regulation section 1.61-3.

ending inventory is valued at the earliest purchase prices. For that reason, the LIFO method allows a taxpayer to match its current revenues against its current costs (i.e., the cost of its most recently purchased or produced goods).

3. FIFO accounting

In comparison to LIFO accounting, FIFO accounting assumes that each item removed from inventory is the earliest item placed into inventory and that the value of that item is the cost incurred at the earlier time. Accordingly, the ending inventory under the FIFO method is valued at the most recent purchase prices. With rising prices, FIFO accounting has the effect of realizing inflationary inventory profits that must be reported as taxable income. As a result, the FIFO method does not match current revenues with current costs. Instead, the historical cost of the inventory item is matched to current revenues.

4. LIFO vs. FIFO accounting

When a taxpayer using the LIFO inventory method experiences rising prices to produce or acquire its inventory, the higher priced inventory is included in cost of goods sold and the inflationary gain associated with the goods contained in the beginning inventory is not reflected in taxable income. Instead, the inflationary gain is deferred in ending inventory until a future period when those goods are deemed to be sold. The deferral of the inventory profit due to inflation better enables a taxpayer to reinvest in replacement inventory.

Because the LIFO method, as compared to the FIFO method, better matches a firm's current costs against current receipts, it has been recognized that it may be the "most accurate measure of income during periods of inflation."[3] In fact, Congress recognized this in 1984 when it enacted Internal Revenue Code section 474. At that time, Congress considered the LIFO method the method of accounting for inventory that most effectively mitigates the effect of inflation on business and concluded that the LIFO method should be simplified and made more available to all taxpayers.[4]

Likewise, because the LIFO method has the effect of matching current costs against current receipts; it also tends to reduce losses during periods of declining prices. As a result, the LIFO inventory method levels out the hills and valleys in earnings due to changes in prices of inventory so that the results from current operations reflect as nearly as possible current market conditions.[5]

5. Example

The following example illustrates how a business' cost flow assumption (i.e., LIFO or FIFO accounting) will affect the determination of ending inventory and hence the cost of goods sold.

Assume that a taxpayer has 200 units of merchandise in beginning inventory at a cost of $1.00 per unit (i.e., beginning inventory is $200). During the year, the taxpayer purchases 150 units with a per unit price of $1.07 (the 7 percent increase in price is attributable to inflation) and sells 100 units for $1.10 each.

Under FIFO accounting, the taxpayer's cost of goods sold will be $1.00 per unit or $100 in total, based on the acquisition price of units in beginning inventory. By contrast, under LIFO accounting, the taxpayer's cost of goods sold will be $1.07 per unit or $107 in total, based on the acquisition price of units purchased during the current year (see **Table II**.1, below). As a result, the taxpayer would have $10 of profit under FIFO accounting ($110 of receipts less $100 of cost of goods sold) and $3 of profit under LIFO accounting ($110 less $107). In effect, use of FIFO accounting for tax purposes results in the current imposition of tax on the 7-percent inflation in the cost of units purchased for resale, while use of LIFO accounting defers taxation of this gain due to inflation.

[3] Staff of Joint Committee on Taxation, 100th Cong., *Description of Possible Options to Increase Revenues*, Prepared for the Committee on Ways and Means, JCS-17-87 (1987).

[4] Staff of Joint Committee on Taxation, 100th Cong., *General Explanation of the Tax Reform Act of 1986 JCS-10-87* (1987).

[5] Giving Life to LIFO, supra; Arundel Cotter, "Inventories, Oil Industry Considers 'Last in, First Out' System to Level Out Earnings," *Wall Street Journal* Mar. 19, 1935, at 6.

Table II.1. Example of FIFO and LIFO inventory accounting

Item	Units	Unit price	Value
Beginning-of-year inventory	200	$1.00	$200.00
Transactions during year:			
Purchases	150	$1.07	$160.50
Sales	100	$1.10	$110.00
End-of-year inventory:			
LIFO method	250		$253.50
Layer 1	200	$1.00	$200.00
Layer 2	50	$1.07	$53.50
FIFO method	250		$260.50
Layer 1	100	$1.00	$100.00
Layer 2	150	$1.07	$160.50
Cost of goods sold[a]			
LIFO method	100	$1.07	$107.00
FIFO method	100	$1.00	$100.00
Profits[b]			
LIFO method			$3.00
FIFO method			$10.00
Memorandum:			
LIFO Reserve[c]			$7.00

[a] Beginning-of-year inventory plus purchases less end-of-year inventory.

[b] Sales less cost of goods sold.

[c] FIFO method less LIFO method ending inventory.

Under Generally Accepted Accounting Principles ("GAAP"), companies using LIFO inventory accounting are required to report the difference in the value of inventory using the LIFO and FIFO methods, or the "LIFO reserve." In the example above, the LIFO reserve equals $7.00 ($260.50 - $253.50).

B. Generally Accepted Accounting Principles ("GAAP")

The acceptability of the LIFO inventory method is well established in the authoritative accounting literature. According to Accounting Research Bulletin 43 ("ARB 43") "a major objective of accounting for inventories is the proper determination of income through the process of matching appropriate costs against revenue."[6] ARB 43 also states "[c]ost 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 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."[7]

ARB 43 recognizes that matching the precise cost of the item sold against the revenue from the sale (i.e., specific identification) may not produce the most useful financial information, particularly in those instances where the materials purchased in various lots are identical and interchangeable. As indicated above, in such cases, the specific identification of cost related to an item that is sold is impractical since the identity of the goods is most likely lost between the time of acquisition and the time of sale.

[6] See Accounting Research Bulletin (ARB) No. 43, Chapter 4, Statement 2.

[7] See ARB No. 43, Chapter 4, Statement 4.

C. International Financial Reporting Standards ("IFRS")

International Accounting Standard ("IAS") number 2 generally provides that "inventories shall be assigned by using FIFO or a weighted average cost formula."[8] The preface indicates that the standard "does not permit the use of LIFO to measure the cost of inventories."[9] The objective of the international standard is properly to state "the amount of cost to be recognized as an asset and carried forward until the related revenues are recognized." In other words, the objective is focused on presenting the balance sheet, rather than deriving a measure of current income.

The goal of tax accounting methods, as compared to financial accounting, is to compute taxable income for the taxable period, i.e., to match properly current revenues with current costs to determine current taxable income.[10] The LIFO inventory method does this by matching current revenues against current costs.

D. Federal income taxation principles

Generally, a taxpayer is required to account for inventories at the beginning and end of each taxable year in every case in which the production, purchase, or sale of merchandise is an income-producing factor.[11] Where specific identification is impractical, federal tax law mandates the use of FIFO inventory accounting unless the taxpayer elects to use the LIFO method. Taxpayers making the LIFO election must use it consistently, must value inventories at cost (rather than the lower of cost or market), and must not use a method other than the LIFO method for external reporting.

As a result of the book-tax LIFO conformity rule, adoption of IFRS would have the effect of repealing the LIFO election for tax purposes.

E. Utilization of inventory accounting methods: recent U.S. experience

While only 156 of the more than 9,500 public companies listed in the Compustat® database reported a LIFO reserve in 2023, these companies accounted for 10 percent of total inventories and 17 percent of net sales (see **Table II.2**). The number of public companies using the LIFO method as their primary inventory valuation method has fallen over the last several years, going from 220 public companies in 2013 to 121 in 2023.[12] However, companies using the LIFO method as their primary inventory valuation method represent a larger share of net sales in 2023 (18.2 percent) than was the case in 2013 (13.5 percent).[13] The inflationary environment of sectors where LIFO is prevalent likely contributed to this trend in the last several years.

Among public companies, the industries where the LIFO method is prevalent include manufacturing and trade. Within the manufacturing and trade sectors, companies with a LIFO reserve accounted for 22 percent of inventories and 28 percent of net sales in 2023. In the pharmaceutical distribution industry, companies using the LIFO method represent 99 percent of inventory and nearly 100 percent of net sales (see **Table II.3**).[14]

Within the aggregated manufacturing and retail trade sectors, many industries heavily reliant on the LIFO method have among the lowest profit margins. For example, supermarkets and grocery stores using the LIFO method represent 91 percent of inventory and 93 percent of sales in that sector. The sector has a pretax profit margin of 2 percent in 2023, akin to pharmaceutical distributors, which had an even lower margin of less than one percent in 2023. These industries typically have high levels of inventory and churn accompanying their low profit margins, which is why LIFO accounting is critical for tracking purposes. In the petroleum industry, another sector that relies heavily on LIFO accounting, companies with a LIFO reserve accounted for 76 percent of inventory and 78 percent of net sales in 2023. **Table II.3** below lists additional examples of industries in critical infrastructure sectors where companies with a LIFO reserve represent the vast majority of inventory and net sales in 2023, such as industries within the food and agriculture, critical manufacturing, and energy sectors.

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[8] See IAS 2.25. IAS 2 also provides that the cost of inventories of items that are not ordinarily interchangeable and goods or services produced and segregated for specific projects must be assigned by using specific identification of their individual costs.

[9] See IAS 2, IN 13.

[10] See INDOPCO, Inc. v. Commissioner, 503 U.S. 79 (1992); Knight-Ridder Newspapers, Inc. v. U.S., 743 F.2d 781 (11th Cir. 1984),

[11] See section 1.471-1.

[12] Some companies that report a LIFO reserve do not report using the LIFO method as the primary method of accounting.

[13] PwC tabulations of financial statement information compiled in Compustat®.

[14] The actual percentage is 99.84 percent, which rounds to 100 percent.

Table II.2. Utilization of LIFO accounting by public companies, 2023

NAICS Code	Description	Companies with LIFO reserve		
		Count	Share of inventories	Share of industry net sales
11	Agriculture, Forestry, Fishing and Hunting	0	0%	0%
21	Mining	3	12%	19%
22	Utilities	1	3%	3%
23	Construction	0	0%	0%
31-33	Manufacturing	111	20%	25%
42	Wholesale Trade	19	54%	59%
44-45	Retail Trade	15	15%	16%
48-49	Transportation and Warehousing	1	11%	8%
51	Information	2	0%	0%
52	Finance and Insurance	0	0%	0%
53	Real Estate and Rental and Leasing	2	3%	2%
54	Professional, Scientific, and Technical Services	0	0%	0%
55	Management of Companies and Enterprises	0	0%	0%
56	Administrative and Support and Waste Management and Remediation Services	0	0%	0%
61	Education Services	0	0%	0%
62	Health Care and Social Assistance	0	0%	0%
71	Arts, Entertainment, and Recreation	0	0%	0%
72	Accommodation and Food Services	0	0%	0%
81	Other Services (except Public Administration)	2	55%	79%
92	Public Administration	0	0%	0%
99	Other	0	0%	0%
	Total	**156**	**10%**	**17%**
	Manufacturing and trade	**145**	**22%**	**28%**

Source: PwC tabulations of financial statement information compiled in Compustat®. “Manufacturing and trade” includes the manufacturing, wholesale trade, and retail trade industries (NAICS codes 31 through 45).

Table II.3. Industries with high utilization of LIFO accounting by public companies in critical infrastructure Sectors, 2023

NAICS Code	Description	Companies with LIFO reserve		
		Count	Share of inventories	Share of industry net sales
333618	Other Engine Equipment Manufacturing	2	100%	100%
424210	Drugs and Druggists' Sundries Merchant Wholesalers	3	99%	100% [a]
333120	Construction Machinery Manufacturing	1	97%	97%
445110	Supermarkets and Other Grocery Retailers (except Convenience Retailers)	4	91%	93%
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	2	84%	90%
324110	Petroleum Refineries	6	76%	78%

[a] Rounded from 99.84%

III. Pharmaceutical distribution industry

U.S. healthcare distributors deliver prescription medicines and other products to medical providers. HDA members ensure that more than 10 million essential prescription medicines and healthcare products are delivered to pharmacies, hospitals, and other healthcare providers across the United States on a daily basis.[15]

In 2023, total U.S. pharmaceutical sales were over $790 billion, of which sales by pharmaceutical distributors were approximately $758 billion (95 percent).[16, 17] In 2024, HDA members included 40 local, regional, and national distributors with approximately 130 strategically located distribution centers.[18] Deloitte Consulting LLP estimates that pharmaceutical distributors save the nation's healthcare system $33 to 53 billion per year by providing daily delivery, high service levels, and business efficiencies in a sophisticated and highly valuable supply chain.[19]

Chain, independent drug stores, and specialty pharmacies account for 60.6 percent of the pharmaceutical distribution industry's sales; hospitals, health maintenance organizations ("HMOs") and clinics account for an additional 20.4 percent; and the remaining 19.0 percent is sold to mail order fulfillment centers and other customers (see **Table III.1**).

Table III.1. Pharmaceutical distribution industry, customers by category, 2022-23

	2022		2023		2023/2022
Customers	**$ bn**	**%**	**$ bn**	**%**	**(% Change)**
Chain sales (total)	$252.9	46.0%	$264.3	42.3%	48.5%
Chain drug stores	$222.7	40.5%	$227.3	36.4%	2.1%
Food stores & food/drug combos	$30.3	5.5%	$37.0	5.9%	22.2%
Hospitals, HMOs & clinics	$85.6	15.6%	$127.1	20.4%	18.4%
Independent drug stores	$68.7	12.5%	$81.4	13.1%	52.7%
Mail order	$50.9	9.3%	$77.8	12.5%	-35.5%
Specialty pharmacies	$50.40	9.2%	$32.5	5.2%	-19.3%
Long-term care	$26.8	4.9%	$21.6	3.5%	23.7%
Other distributors	$11.7	2.1%	$14.4	2.3%	55.9%
Other customers	$3.2	0.6%	$5.1	0.8%	18.8%
Physicians/physicians' offices	$0.2	0.0%	$0.2	0.0%	13.5%
Total sales	**$549.6**	**100%**	**$623.9**	**100%**	**13.5%**

Notes: May not sum to totals due to rounding; Total sales figure excludes sales from specialty distributors or specialty divisions.

Source: Center for Healthcare Supply Chain Research, 2024-2025 HDA Factbook: The Facts, Figures & Trends in Healthcare.

The pharmaceutical distribution industry provides various types of sales contracts to meet specific needs of different customers. These include annual contracts and long-term (three- to five-year) national contracts. In general, both the annual and long-term contracts provide that new taxes will not be passed through to the customer before the date of contract renewal. As a result, pharmaceutical distributors generally will be required to absorb any new taxes during the contract term. A customer may not renew a contract that seeks to impose pricing adjustments for new taxes, especially if the customer can find an alternate supplier that is not subject to the new tax.

[15] Healthcare Distribution Alliance; see https://www.hda.org/about/.

[16] Center for Healthcare Supply Chain Research, *2023-2024 HDA Factbook: The Facts, Figures & Trends in Healthcare*.

[17] The $758 billion figure does not match Table III.1 due to the fact that Table III.1 excludes sales from specialty distributors or specialty divisions.

[18] Center for Healthcare Supply Chain Research, *2023-2024 HDA Factbook: The Facts, Figures & Trends in Healthcare*.
Employment count provided separately by HDA.

[19] Deloitte Consulting LLP, *The Role of Distributors in the U.S. Healthcare Industry*, study prepared for HDA, 2019.

The pharmaceutical distribution industry is a high-volume, high-value industry with low profit margins. In 2023, the industry's sales were approximately $758 billion, and the weighted average after-tax profit margin in the industry for these sales was 0.3 percent.[20]

A. Competitive environment/industry consolidation

1. Internal competition

Intense competitive pressure and the need for increased economies of scale has led to the number of primary full-service pharmaceutical distributor industry members decreasing by more than 60 percent, from approximately 100 distributors in the early 1990s to 40 distributors in 2024. Most prescription medicine sales are to nationwide chains (as shown in **Table III.1**), meaning that distributors compete with each other in a national marketplace.

2. External competition

About 13 percent of prescription medicines are shipped directly by manufacturers to customers.[21] Pharmaceutical distributors provide expedited access to medicines by maintaining centralized storage facilities throughout the United States. These facilities help ensure that patients are able to obtain their prescriptions in a timely manner.

B. Government regulation

The pharmaceutical distribution industry is heavily regulated at both the federal and state levels. At the federal level, the industry is regulated by various agencies, including the Food and Drug Administration and the Drug Enforcement Administration. The industry also must comply with rules and licensing requirements promulgated in the states prior to conducting distribution activities. Although these federal and state agencies are focused on protecting consumers, any consumer benefits thereof often come with significant additional administrative requirements on pharmaceutical distributors.

IV. Policy issues

A. Accurate measurement of income

In the pharmaceutical distribution industry, inventories play a critical role in ensuring the timely delivery of medications to hospitals and pharmacies throughout the United States. To assure timely delivery, HDA member companies maintain 130 strategically located distribution centers throughout the United States.

Distributors maintain inventories for a variety of reasons, including: (1) to reduce lags between the time an order is placed and the time it is fulfilled, (2) to create a buffer against uncertainties in supply and demand, and (3) to obtain better prices from suppliers by purchasing in bulk.

Federal tax law does not permit distributors to deduct the cost of inventory when purchased from suppliers; instead, taxpayers must use an inventory method of accounting. The purpose of inventory accounting is to match the recognition of costs to revenues to obtain an appropriate periodic measure of income. Where specific identification is impractical, federal tax law mandates the use of the FIFO method of inventory accounting unless the taxpayer elects to use the LIFO method.

During periods of inflation, which in recent decades have been common in the pharmaceutical industry, FIFO accounting can result in a mismatching of costs and revenues because prices used to measure costs of goods sold are less than replacement cost. By determining revenues at current prices and costs at prior prices, FIFO accounting overstates real income and, in effect, imposes tax on inflationary gains.

Considering the example in Section II.A, the taxpayer sells 100 units for $110 and under FIFO accounting values those goods at $100. The taxpayer will pay tax on the $7 of gain attributable to inflation and the $3 in income attributable to value added. By contrast, LIFO accounting will result in $3 of income ($110 less $107) which corresponds to real, net of inflation income. Note that a taxpayer using the LIFO method of accounting ultimately will be taxed on inflationary gains when the units purchased for $1.00 each are deemed sold (due to a drawdown of inventory). Consequently, LIFO defers, but does not eliminate, taxation of inflationary gains.

Repeal of the LIFO method of accounting would eliminate the ability of taxpayers to defer taxation of inflationary gains attributable to their inventoried assets and would distort investment by widening existing disparities in the tax treatment of investments in different types of assets. The CBO estimates that the effective marginal tax rate on inventory investment is

[20] Center for Healthcare Supply Chain Research, *2023-2024 HDA Factbook: The Facts, Figures & Trends in Healthcare*.

[21] Center for Healthcare Supply Chain Research, *2023-2024 HDA Factbook: The Facts, Figures & Trends in Healthcare*.

29.5 percent in 2024, which is the highest rate among the various asset classes for which the CBO computed effective marginal tax rates.[22] In contrast, the effective marginal tax rate on investments in equipment, for which accelerated depreciation is allowed, is 10.2 percent. Economic efficiency is improved to the extent that a tax system is neutral with respect to investment in various assets (i.e., effective marginal tax rates are the same across assets), so that the choice between alternative investments is not distorted by taxes.[23] Repealing the LIFO method of accounting increases the effective marginal tax rate on inventory investment, widens existing disparities in the tax treatment of investment, leads to underinvestment in inventory, and reduces economic growth to the extent that it further distorts investment.[24]

B. Inter-industry comparison

Obama Administration's budgets for fiscal years 2010 through 2017 proposed LIFO method repeal. Under the proposals, the tax on the LIFO reserve (i.e., the excess of FIFO cost over LIFO cost) would be required to be included ratably in income (i.e., "recaptured") over a ten-year period starting with the first taxable year beginning after a certain effective date. Thus, the proposal would increase taxable income of companies with LIFO inventories in two ways:

> **Recapture Tax**. One-time increase in taxable income (spread over 10 years) due to recapture of historical LIFO reserves; and
>
> **Ongoing Tax**. Annual increase in taxable income due to lower cost of goods sold deduction under FIFO accounting as compared to LIFO accounting (during periods of cost inflation).

The tax imposed by LIFO method repeal would vary by company and industry based on industry-specific inflation, the importance of inventories as a share of assets, inventory holding patterns, and other characteristics.

1. Book LIFO reserves

Companies relying on LIFO accounting to value a portion of their inventories report the LIFO reserve in their financial statements. To assess the importance of LIFO accounting across industries, we have tabulated data from financial statements on companies with LIFO reserves (see **Table IV.B.1**). As described in the first section of the report, 156 public companies reported LIFO reserves on their balance sheets in 2023. In 2023, public companies reported LIFO reserves of over $48 billion in the manufacturing sector; $6.7 billion in the wholesale sector; and $8.4 billion in the retail sector. The figures in **Table IV.B.1** understate the use of the LIFO method because they do not include values for private companies including many distributors, such as car dealerships, that typically are not publicly traded. In recent years, private equity firms have acquired more operating companies, including those that use the LIFO method, exacerbating this effect. As of 2021 nearly 20 percent of corporate equity is managed by private equity firms, growing from 4 percent in 2000.

The importance of LIFO reserves to company balance sheets varied across industries in 2023. Overall, LIFO reserves represented 19.6 percent of total inventories of public companies that used the LIFO method for some portion of inventories. In other words, the elimination of the LIFO method would cause the inventory valuations of companies that use it to increase by 19.6 percent.

[22] Congressional Budget Office*, An Update to the Budget and Economic Outlook*: 2024-2034, June 2024. The data on effective marginal tax rates is available at https://www.cbo.gov/system/files/2024-06/60039-data.xlsx.

[23] See *Joint Committee on Taxation, Tax Incentives for Domestic Manufacturing* (JCX-15-21), March 12, 2021.

[24] For these reasons, the Treasury Department in the past has supported retention of the LIFO method of accounting: "Repeal of the LIFO method would include inflationary gains in the value of inventories in the tax base, which is inconsistent with proper income measurement and, more importantly, would disadvantage investment in inventories relative to other forms of investment." Source: US Department of the Treasury, Approaches to Improve the Competitiveness of the US Business Tax System for the 21st Century (December 20, 2007) p. 47 (footnote 63).

Table IV.B.1. LIFO reserves on financial statements of public companies, 2023

		LIFO Reserve	
NAICS code	Industry	Value ($millions)	Percent of total inventory
11	Agriculture, Forestry, Fishing and Hunting	$0	NA
21	Mining	$502	12.4%
22	Utilities	$4	0.2%
23	Construction	$0	NA
31-33	Manufacturing	$47,997	27.0%
324110	Petroleum Refineries	$28,629	59.2%
42	Wholesale Trade	$6,696	8.8%
424210	Drugs and Druggists' Sundries Merchant Wholesalers	$1,496	2.8%
44-45	Retail Trade	$8,362	18.5%
48-49	Transportation and Warehousing	$230	9.3%
51	Information	$5	12.8%
52	Finance and Insurance	$0	NA
53	Real Estate and Rental and Leasing	$66	28.6%
54	Professional, Scientific, and Technical Services	$0	NA
55	Management of Companies and Enterprises	$0	
56	Administrative and Support and Waste Management and Remediation Services	$0	NA
61	Education Services	$0	NA
62	Health Care and Social Assistance	$0	NA
71	Arts, Entertainment, and Recreation	$0	NA
72	Accommodation and Food Services	$0	NA
81	Other Services (except Public Administration)	$0	NA
92	Public Administration	$0	NA
99	Other	$2,300	7.8%
Totals			
	All industries	**$66,161**	**19.6%**
	Manufacturing and trade	**$63,055**	**21.0%**

Source: PwC tabulations of financial information compiled in Compustat ®. "Manufacturing and trade" includes the manufacturing, wholesale trade, and retail trade industries (NAICS codes 31 through 45).

The change in LIFO reserves for a year represents the excess of cost of goods sold determined under the LIFO method versus the FIFO method for the year and thus the difference in book incomes caused by the use of the LIFO method instead of the FIFO method.

Since 2019, LIFO reserves have grown at an average annual rate of 8 percent across all industries. **Table IV.B.2** shows the average change in LIFO reserves over the 2019-2023 period. Based on the historical growth rate of LIFO reserves, costs of goods sold in 2023 would have been $6.2 billion less for public companies if the FIFO method rather than LIFO method had been used in 2023, resulting in an increase in pretax income of 1.6 percent for companies with a LIFO reserve. Retail trade, wholesale trade, and manufacturing would have seen the largest percentage changes in pretax book income as a result of switching from the LIFO method to the FIFO method.

The average LIFO reserve growth rate from 2019 to 2023 reflects the inflationary environment in recent years. However, the average LIFO reserves have decreased on average across all industries since 2014. This is due to the historic drop in petroleum prices in 2014. **Table A.1** in the appendix shows the average change in LIFO reserves over the 2014-2023 period, highlighting the role of petroleum refineries in this effect.

Table IV.B.2. Average change in LIFO reserves of public companies, by industry, 2019-2023

			Average change in LIFO reserves 2019-2023	
NAICS Code	Industry	LIFO reserve, 2023 ($millions)	Amount [a] ($millions)	Share of pretax income
11	Agriculture, Forestry, Fishing and Hunting	$0	NA	NA
21	Mining	$502	$49	0.2%
22	Utilities	$4	($1)	0.0%[b]
23	Construction	$0	$0	NA
31-33	Manufacturing	$47,997	$4,283	2.1%
42	Wholesale Trade	$6,696	$508	2.7%
44-45	Retail Trade	$8,362	$1,002	9.6%
48-49	Transportation and Warehousing	$230	($32)	-0.6%
51	Information	$5	$0[b]	-1.1%
52	Finance and Insurance	$0	NA	NA
53	Real Estate and Rental and Leasing	$66	$11	0.9%
54	Professional, Scientific, and Technical Services	$0	NA	NA
56	Administrative and Support and Waste Management and Remediation Services	$0	NA	NA
61	Education Services	$0	NA	NA
62	Health Care and Social Assistance	$0	NA	NA
71	Arts, Entertainment, and Recreation	$0	NA	NA
72	Accommodation and Food Services	$0	NA	NA
81	Other Services (except Public Administration)	$0	NA	NA
99	Other	$2,300	$399	0.3%
Totals				
	All industries	**$66,161**	**$6,219**	**1.6%**
	Manufacturing and trade	**$63,055**	**$5,792**	**2.4%**

[a] Average percentage change in LIFO reserves over 2019-2023 period times 2023 LIFO reserve.

[b] Rounded to zero

Source: Compustat® and PwC calculations. “Manufacturing and trade” includes the manufacturing, wholesale trade, and retail trade industries (NAICS codes 31 through 45).

2. Effect of LIFO election repeal on tax liability, all industries

The tax effect of LIFO election repeal can be estimated for public companies using SEC Form 10-K information under the assumption that book and tax LIFO reserves are equal. Differences in tax and book LIFO reserves may occur for a variety of reasons, including recognition for book (but not tax) of inventory gain in corporate acquisitions, and use of the Inventory Price Index Computation ("IPIC") method for calculating LIFO reserves for tax (but not book) purposes. Typically, tax LIFO reserves will be greater than book LIFO reserves for these reasons. Consequently, use of SEC data to estimate the tax effect of LIFO election repeal understates the actual increase in tax liability.[25]

If the LIFO election had been repealed effective for fiscal year 2023, we estimate that the recapture tax on public companies would have amounted to $13.9 billion based on book LIFO reserves at a 21-percent corporate tax rate. The recapture tax amounts to 28 percent of total 2023 federal income tax liability reported by public companies. The ongoing tax increase associated with LIFO repeal is estimated to be $1.3 billion each year, increasing federal income tax liability by 2.6 percent (see **Table IV.B.3**).

Within the manufacturing and trade sector, repeal of the LIFO election in 2023 would have imposed a recapture tax of $13.2 billion, representing 47 percent of 2023 book tax liability, and an ongoing annual tax increase of $1.2 billion, representing a 4.3 percent increase in book tax liability.

If the ongoing annual tax effect were to be based on the average change in LIFO reserves since 2014, the supposed drop in pretax income (due to the aforementioned 2014 anomaly in petroleum prices) is contrasted with the increase in pretax income if petroleum refineries were excluded from the average in **Table A.2.**

Table IV.B.3. Effect of LIFO election repeal on tax liability of public companies by industry, 2023

[Based on book LIFO reserves and tax liability]

		Transition effect (recapture tax)			Ongoing effect	
NAICS Code	Industry	Amount ($millions)	Share of Pretax book Income	% of federal income tax[a]	Amount ($millions)	% of federal income tax[a]
21	Mining	$105	0.4%	5%	$10	0.5%
22	Utilities	$1	0.1%	0%	($0)[b]	0.0%[b]
31-33	Manufacturing	$10,079	4.8%	44%	$899	3.9%
42	Wholesale Trade	$1,406	7.6%	52%	$107	4.0%
44-45	Retail Trade	$1,756	16.8%	67%	$210	8.1%
48-49	Transportation and Warehousing	$48	0.9%	86%	($7)	-12.2%
51	Information	$1	3.4%	14%	($0)[b]	-0.9%
53	Real Estate and Rental and Leasing	$14	1.1%	12%	$2	2.1%
99	Other	$483	0.4%	2%	$84	0.4%
Totals						
	All industries	**$13,894**	**3.6%**	**28%**	**$1,306**	**2.6%**
	Manufacturing and trade	**$13,241**	**5.6%**	**47%**	**$1,216**	**4.3%**

[a] Based on current provision for federal income tax per financial statement.

[b] Rounded to zero

Note: Calculations assume a 21-percent tax rate and are based on book LIFO reserves. "Manufacturing and trade" includes the manufacturing, wholesale trade, and retail trade industries (NAICS codes 31 through 45).

Source: Compustat® and PwC calculations.

[25] In cases where there is a material difference in the value of inventories for book and tax purposes, the associated deferred tax liability is specifically identified in the company's deferred tax account and its public filings. If not material, this information is not identified in in a company's public filings, such as SEC Form 10-K.

3. Effect of LIFO election repeal on tax liability of the pharmaceutical distribution industry

As discussed above, differences between tax and financial accounting rules can cause book and tax LIFO reserves to differ, and, where material, such differences are identified in the deferred tax account. Within the pharmaceutical distribution industry, companies that use the LIFO method report the effect of book-tax differences on deferred tax liabilities. This deferred tax information can be used to estimate more accurately the tax effect of LIFO method repeal within the pharmaceutical distribution industry as compared with other industries.

For public healthcare distributors that report use of the LIFO method of accounting, the tax LIFO reserve is estimated as the book LIFO reserve plus the deferred tax liability attributable to inventories grossed up at the company's effective tax rate as indicated in the tax footnote to the financial statement.[26] The recapture tax attributable to LIFO method repeal is calculated by multiplying the estimated tax LIFO reserve by the effective tax rate for 2023.[27] For public pharmaceutical distributors that use LIFO accounting, the recapture tax attributable to LIFO repeal is estimated to be $4.9 billion for 2023, or over four times reported current federal income tax liability (433 percent). See **Table IV.B.4**. The recapture tax would represent 65.8 percent of pretax income, in effect, a one-time 66-percentage-point tax rate increase.

The ongoing annual tax increase attributable to LIFO election repeal is calculated by multiplying the average annual increase in the tax LIFO reserve times the effective tax rate. For public pharmaceutical distributors that use the LIFO method of accounting, the ongoing annual tax increase attributable to LIFO election repeal is estimated to be $26 million, or a 2.3 percent increase in reported current federal income tax liability. The tax increase would represent 0.3 percent of pretax income.

For the three public companies in the pharmaceutical distribution industry that use the LIFO method, LIFO reserves on average increased at a rate of one percent from 2019 to 2023. Since 2014, the average annual growth rate for these three companies was five percent. Using this average would suggest a higher ongoing tax increase. There are reasons to believe that the experience of pharmaceutical distributors since 2019 may deviate from longer-term historical trends. An increase in demand for pharmaceutical products following the Covid-19 pandemic resulted in lower than average levels of inventory. In 2019, the monthly weighted average number of days' worth of sales in inventory was 27 days, and in 2023 it was 23 days, a reduction of nearly 15 percent.[28] Lower inventory levels imply smaller effects as a result of any change to inventory valuation methods than would otherwise be the case.

[26] The LIFO reserve provides the difference in inventory values using the book LIFO method and the book FIFO method, and the deferred tax liability attributable to inventories (grossed up by the tax rate) provides the difference between the book LIFO method and the tax LIFO method. The sum of the two approximates the difference in inventories valued using the tax LIFO method and the tax FIFO method, assuming that differences between book FIFO accounting and tax FIFO accounting are not material.

[27] The effective tax rate used for this calculation is the weighted average effective tax rate for the three public pharmaceutical distributors that use LIFO accounting, after adjusting for certain extraordinary items.

[28] Center for Healthcare Supply Chain Research*, 2023-2024 HDA Factbook: The Facts, Figures & Trends in Healthcare*.

Table IV.B.4. Estimated effect of LIFO election repeal on tax liability of pharmaceutical distributors, 2023

Item	Amount ($millions)	% of federal income tax[a]	% of pretax income
Financial statement information:			
LIFO reserve, book	$1,496		
Deferred tax liability attributable to inventories	$4,783		
Deferred tax liability grossed up by effective tax rate[b]	$11,689		
Estimated LIFO reserve, tax[c]	$13,185		
Average annual % increase in tax LIFO reserve, 2019-23	1%		
Average annual increase in tax LIFO reserve	$114		
Transition effect (recapture tax)[d]	$4,903	433.1%	65.8%
Ongoing annual effect [d]	$26	2.3%	0.3%

[a] Current provision for federal income tax per annual report.

[b] Calculated using the weighted average effective tax rate for the three public pharmaceutical distributors that use LIFO accounting.

[c] LIFO reserve plus deferred tax liability attributable to inventories grossed up by effective tax rate.

[d] Based on reported effective tax rates in 2023 and 2024 annual reports. The recapture tax attributable to LIFO method repeal is calculated by multiplying the estimated tax LIFO reserve for 2023 by the effective tax rate. The ongoing annual tax increase attributable to LIFO method repeal is calculated by multiplying the average annual increase in the tax LIFO reserve times the effective tax rate.

Source: 2023 and 2024 Annual Reports of pharmaceutical wholesalers using LIFO inventories, and PwC calculations. Companies with fiscal years ending before April 1 were included in the prior year's results (e.g., the results for a company with a year-end of March 31, 2024 are included in the 2023 results).

The transitional recapture tax does not affect the marginal cost of production, so it is unlikely it would be passed through to customers. The ongoing effect, however, most likely would be passed through over time as contracts are renewed. As a result, over time, consumers would expect to pay approximately $26 million more every year for drugs.

The aggregate effective tax rate in 2023 for pharmaceutical distributors using the LIFO method was 26.2 percent. Holding all else constant, incorporating the ongoing effect of a repeal of the LIFO method repeal would result in an effective tax rate of 28.5 percent for these companies.

V. Conclusion

The LIFO method of valuing inventory is a longstanding accounting approach to aligning cost of goods sold and sales revenues. The use of the LIFO method assigns values to sold inventory using current prices, i.e., the prices at which current sales are made and current inventory is replaced, and defers recognition of inflationary gains until inventory is drawn down. During periods of pharmaceutical price inflation, the LIFO method results in a more accurate measurement of current income. In contrast, the FIFO method of accounting can result in a mismatching of costs and revenues, because prices used to measure the cost of goods sold are less than replacement cost. By determining revenues at current prices and costs at prior prices, FIFO accounting overstates real income and in effect accelerates tax on inflationary gains.

Pharmaceutical distributors would be especially affected by repeal of the LIFO accounting method as the price of pharmaceutical products has increased rapidly in recent years, and the industry carries large inventories. Other sectors that would face especially high tax burdens due to a LIFO method repeal include the transportation and trade sectors, as well as the manufacturing sector, to which the majority of LIFO reserves in public US companies belong.

Low profit margins and intense competition within the pharmaceutical distribution industry make it difficult for the industry to absorb increased tax burdens. Consequently, restricting use of the LIFO method likely would lead to increased prices to healthcare providers and ultimately to patients.

Appendix

Table A.1. Average change in LIFO reserves of public companies, by industry, 2014-2023

NAICS Code	Industry	LIFO reserve, 2023 ($millions)	Average change in LIFO reserves 2014-2023	
			Amount [a] ($millions)	Share of pretax income
11	Agriculture, Forestry, Fishing and Hunting	$0	NA	NA
21	Mining	$502	$9	0.0% [b]
22	Utilities	$4	($1)	0.0% [b]
23	Construction	$0	NA	NA
31-33	Manufacturing	$47,997	($2,370)	-1.1%
324110	Petroleum Refineries	$28,592	($2,869)	-2.7%
42	Wholesale Trade	$6,696	$590	3.2%
44-45	Retail Trade	$8,362	$712	6.8%
48-49	Transportation and Warehousing	$230	($34)	-0.6%
51	Information	$5	$0[b]	-0.7%
52	Finance and Insurance	$0	NA	NA
53	Real Estate and Rental and Leasing	$66	$8	0.6%
54	Professional, Scientific, and Technical Services	$0	NA	NA
56	Administrative and Support and Waste Management and Remediation Services	$0	NA	NA
61	Education Services	$0	NA	NA
62	Health Care and Social Assistance	$0	NA	NA
71	Arts, Entertainment, and Recreation	$0	NA	NA
72	Accommodation and Food Services	$0	NA	NA
81	Other Services (except Public Administration)	$0	NA	NA
99	Other	$2,300	$109	0.1%
Totals				
	All industries	**$66,161**	**($977)**	**-0.3%**
	Manufacturing and trade	**$63,055**	**($1,067)**	**-0.5%**

[a] Average percentage change in LIFO reserves over 2014-2023 period times 2023 LIFO reserve. “Manufacturing and trade” includes the manufacturing, wholesale trade, and retail trade industries (NAICS codes 31 through 45).

[b] Rounded to zero

Source: Compustat® and PwC calculations.

Table A.2. Effect of LIFO repeal on tax liability of public companies by industry

[Based on book LIFO reserves and tax liability 2014-2023]

NAICS Code	Industry	Transition effect (recapture tax) Amount ($ millions)	Share of pretax book income	% of federal income tax[a]	Ongoing effect Amount ($ millions)	% of federal income tax[a]
21	Mining	$105	0.4%	5%	$2	0.1%
22	Utilities	$1	0.1%	0%[b]	($0)[b]	0.0%[b]
31-33	Manufacturing	$10,079	4.8%	44%	($498)	-2.2%
324110	Petroleum Refineries	$6,012	5.6%	97%	($602)	-9.7%
42	Wholesale Trade	$1,406	7.6%	52%	$124	4.6%
44-45	Retail Trade	$1,756	16.8%	67%	$150	5.7%
48-49	Transportation and Warehousing	$48	0.9%	86%	($7)	-12.8%
51	Information	$1	3.4%	14%	($0)[b]	-0.6%
53	Real Estate and Rental and Leasing	$14	1.1%	12%	$2	1.5%
99	Other	$483	0.4%	2%	$23	0.1%
Totals						
	All Industries (no petroleum)	**$7,882**	**2.8%**	**18%**	**$397**	**0.9%**
	Manufacturing and trade (no petroleum)	**$7,229**	**5.5%**	**33%**	**$378**	**1.7%**
	All industries	**$13,894**	**3.6%**	**28%**	**($205)**	**-0.4%**
	Manufacturing and trade	**$13,241**	**5.6%**	**47%**	**($224)**	**-0.8%**

[a] Based on current provision for federal income tax per financial statement.

[b] Rounded to zero.

Note: Calculations assume a 21-percent tax rate and are based on book LIFO reserves. “Manufacturing and trade” includes the manufacturing, wholesale trade, and retail trade industries (NAICS codes 31 through 45).

Source: Compustat® and PwC calculations.

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