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Inventories, Inflation, and Supply Chain Disruption

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I think we're going to see a new era in how we manage this type of thing. My hope is people are going to give more thought to the importance of carrying inventory and safety stock so that we can survive some of these disruptions, especially around critical commodities.

— Professor Willy Shih, April 23 interview

Deeply ingrained in the ethos of U.S. tax policy is the idea that investment in plant and equipment increases productivity and promotes economic growth, so we provide favorable tax treatment. There is an even stronger case for investment in research because the knowledge creation provides benefits to far more entities than just the business bearing the cost, so we favor it as well. Investment in inventories, on the other hand, gets no respect.

Cost-conscious business managers see large inventories as evil. Economists are no better. Their models include the costs of inventories, but only in extremely rare cases do they incorporate benefits. Perhaps this partial blindness results from the fact that costs of inventory are so large and measurable (financing, warehouse space, obsolesce) while the benefits are so amorphous (customer satisfaction, economies of scale in purchasing).

At the macro level, violent swings in inventory levels are behind a lot of the volatility in GDP. And forecasters view increasing inventories with foreboding because they can indicate an upcoming recession. Nevertheless, increasing inventory levels is investment. And just like the case of investment in fixed capital, the level is set — taking into account costs and the uncertain future — to maximize expected future profits.

Supply Chain Run Amok

Baby formula. Semiconductors. Tampons. Construction materials. Shortages from snapped supply chains have elevated the formerly obscure art of supply chain management into a top priority of CEOs and lawmakers. Much can be done to reduce supply chain disruptions — for example, companies could increase production capacity, diversify suppliers, use local suppliers, and better coordinate with direct suppliers (and their suppliers).

Another approach is to stock more inventory. For two generations of managers enamored with just-in-time supply chains (pioneered by Toyota in the 1980s), increasing inventory is failure. But just-in-time inventory management creates fragile supply chains — especially when those chains are stretched around a globe with increasingly rough weather and tumultuous geopolitics.

At least one recent study has singled out inventory investment as a cost-effective method of preventing supply disruptions. "Holding inventories has been an effective buffer for the adverse supply shock, in the context of the early lockdown in China," wrote Raphaël Lafrogne-Joussier, Julien Martin, and Isabelle Mejean ("Supply Chain Disruptions and Mitigation Strategies," VoxEU.org, Feb. 5, 2022).

Recent supply chain disruptions do more than reduce profits and damage relationships with manufacturers that fail to meet customers' needs. Pernicious damage often spills over to the rest of the economy as supply and demand are thrown out of whack across many markets. Looking at the big picture, the U.S. economy has been stretched by stay-at-home consumers. Well funded with fiscal stimulus they steeply increased their demand for manufactured goods (while reducing their use of services).

Under conditions like those, a case can be made that the free market on its own hasn't done enough to prevent disruptions. If that is true, the government may want to consider subsidizing inventory investment — especially, as professor Willy Shih of Harvard Business School suggests, in the case of critical materials. (That's why we have a Strategic Petroleum Reserve.) But even if we reject this view, we want businesses to choose the most efficient methods of supply chain management. For tax policy, that means we want tax neutrality across those methods. Our tax system, unfortunately, isn't neutral. It discriminates against investment in inventories.

Constrictive Conformity

The cost of inventories gets onto the income statement at the time goods are sold. The cost of inputs is commonly determined under one of two valuation methods. Under the first-in, first-out method, the value of the oldest items in inventory is used first. The last-in, first-out method is the opposite. The value of the most recently purchased input is used first.

In times of rising prices, the differences between FIFO and LIFO are summarized: (1) FIFO results in larger profits than LIFO (because older, cheaper inventory is used to measure profits); (2) on the balance sheet, FIFO creates larger inventories (because they are composed of newer, more expensive inventory) than LIFO; (3) FIFO results in excess taxation because true economic income would value inventories entering into cost of goods sold at their true value (that is, their replacement value) rather than historical value; (4) LIFO largely corrects this excess taxation because recently purchased inventory will likely be close to replacement value; but (5) during inventory drawdowns, for example, when a supplier slows down shipments in a time of increasing demand, LIFO can cause a sharp increase in profits because the business must dig down into its lower-cost "LIFO layers" — in effect, reversing years of low profitability all at once.

With passage of the Revenue Act of 1938, Congress permitted tanners and producers and processors of nonferrous metals to use LIFO. When Congress enacted the Revenue Act of 1939, it extended the availability of the LIFO method to all industries (over the objection of the Treasury Department). But to qualify for use of the LIFO method, the taxpayer had to use LIFO for both tax and financial reporting purposes (the "LIFO conformity" requirement). LIFO conformity set the stage for constant tension between choosing LIFO or FIFO. To maximize profits and assets reported to investors and lenders, FIFO produced the more favorable result (with increasing prices). To minimize taxable profit, LIFO produced more favorable results (Morton Pincus, "Legislative History of the Allowance of LIFO for Tax Purposes," Acct. Historians J. 23 (June 1989)).

The Opposite of Help

Economists predisposed to believing that investors are omniscient are puzzled that all businesses don't adopt LIFO to lower their taxes. They expect investors to "see through" the lower reported earnings and appreciate the tax savings LIFO provides. But most folks in the real world know that attention is focused on reported financial profits — the only profit figure regularly reported in the press and the one that is most often used in calculating financial ratios. So most companies persist in using FIFO.

Solid numbers on LIFO usage are elusive. One 2018 study reported that although less than 1 percent of 2013 corporate and partnership tax returns with inventory used LIFO, LIFO inventories comprised about 14 percent of the dollar value of U.S. company inventories (Daniel P. Tinkelman and Christine E.L. Tan, "Estimating the Potential Revenue Impact of Taxing LIFO Reserves," J. Am. Tax'n Ass'n 45 (2018)). By far the biggest beneficiaries of the LIFO method are oil companies.

Other reasons, besides larger reported profits to investors, for retaining use of FIFO are that bonds and bank credit may depend on reported net income as well as the company's ratio of assets to liabilities, both of which will be lower under LIFO in an inflationary economy; and, especially for smaller firms, the FIFO method is relatively simple. Outside the United States, LIFO generally isn't an accepted inventory accounting method. Under international financial reporting standards, companies must use FIFO. At the Commerce Department's Bureau of Economic Analysis, however, statisticians use a method akin to LIFO to calculate inventory value that feeds into the measure of U.S. profits and total economic income.

Here is the central point to be made about the taxation of inventory investment in today's environment. The tax penalty imposed by FIFO on inventory increases in times of inflation. We now have inflation rates that we haven't experienced since the turbulent 1970s. For the 12-month period ending in May, the consumer price index rose 8.6 percent. Over the same period, the producer price index rose 10.8 percent. The problem of overtaxation of inventories using the FIFO method — almost forgotten because of recent low inflation rates — has returned. Ironically, it has returned during widespread supply disruptions, which is exactly when we should be encouraging inventory investment.

LIFO to the Rescue?

At first blush it may seem that more companies switching to LIFO would be a cure for the inflation tax on inventory investment. That would be greatly facilitated by repealing the awkward LIFO conformity rule. After all, there is no conformity rule for depreciation, which conceptually suffers from the same defects as inventory accounting.

Businesses routinely use accelerated depreciation and expensing for tax purposes while using straight-line depreciation for book purposes. But the cure can have serious side effects. Sometimes prices of inventory fall, and the opposite effects described above occur: With deflation, LIFO would cause profits to rise and taxes to go down. As noted above, LIFO can give rise to grossly overstated taxable income when inventory levels are cut back.

That is what is now taking place with auto dealers. Automakers, who expected a large drop in demand because of COVID-19, cut their orders from semiconductor suppliers. Those suppliers regeared their production for the surge in demand of consumer electronics. But the government-stimulated economy bounced back faster than expected. Auto demand recovered, but by the time automakers renewed their orders for chips, it was too late. And there were widespread slowdowns and shutdowns in auto production. Thus, auto dealers starving for supply had to deplete their inventories.

Relief for the plight of auto dealers has broad bipartisan support in Congress. On April 4 House Ways and Means Committee members Daniel T. Kildee, D-Mich., and Jodey C. Arrington, R-Texas, introduced the Supply Chain Disruptions Relief Act (H.R. 7382). The bill has 88 cosponsors. Companion legislation in the Senate (S. 4105) was introduced on April 28 by Finance Committee members Sherrod Brown, D-Ohio, and Tim Scott, R-S.C. That bill has 31 cosponsors. The legislation would eliminate the extra burden from digging into LIFO layers if dealers replaced their pandemic-depleted inventories after three years.

All this legislative rigmarole would be unnecessary if Treasury exercised its authority under section 473, which appears designed for exactly this purpose. Put into law as part of the Crude Oil Windfall Profit Tax Act of 1980, section 473 states that Treasury can provide relief when it determines there is a qualified LIFO inventory liquidation. Such a liquidation occurs when replacement of inventory has been made "difficult or impossible" as a result of (1) any Department of Energy regulation or request; or (2) "any embargo, international boycott, or other major foreign trade interruption."

Treasury says it doesn't have authority to issue the required notice in the Federal Register that would trigger relief. In a November 29 letter to members of Congress, it stated: "If the relief is provided, businesses with global supply chains would need to demonstrate to the Secretary of Treasury or her delegate (Secretary) that the decrease in the closing inventory of the liquidation year under LIFO is directly and primarily attributable to the foreign disruption in the supply chain."

If the shortage of chips (mostly manufactured in East Asia) needed to assemble automobiles isn't a "major foreign trade disruption," it is hard to understand what would qualify. Here's what a January 21 fact sheet from the White House said:

"Experts estimate that the global chip shortage knocked off a full percentage point from U.S. GDP last year. U.S. autoworkers faced furloughs and production shut downs due to pandemic-driven disruptions in Asian semiconductor factories."

Paul Metrey, senior vice president of regulatory affairs at the National Automobile Dealers Association, points out that for model year 2021, the vehicle with the most domestic content was the Ford Mustang, with 77 percent of its content being produced in the United States and Canada. Besides being politically tone-deaf, Treasury for some reason seems to be imagining something that isn't in the plain language of the statute.

Indexed FIFO

So, LIFO is a solution to the extra tax burden inflation imposes on inventory investment, but it has flaws. Fortunately, there is a proposed alternative method, and it is likely to receive renewed attention now that inflation has reemerged. It was called constant-dollar FIFO when first suggested by Jeremy I. Bulow and John B. Shoven. Treasury embraced the method in its proposed tax reform overhaul in 1984 and renamed it "indexed FIFO." Under this method, in addition to deductions calculated under the regular FIFO method, there would be another deduction equal to the value of the beginning inventory times the rate of inflation (Bulow and Shoven, "The Inflation Accounting and Nonfinancial Corporate Profits: Physical Assets," Brookings Papers on Economic Activity No. 3, at 557 (1975)).

The views expressed here may seem counterintuitive to many who observe LIFO inventory accounting in the tax expenditures budget and repeal of LIFO as routinely included among the usual-suspect revenue raisers in tax reform plans (proposed by both Democrats and Republicans). They also may seem unsettling to those who view repeal of LIFO as an effective means of raising taxes on the petroleum industry, which is generating enormous profits from the worldwide increase in oil and natural gas prices. The Congressional Budget Office in 2020 reported that repeal of the LIFO method would generate more than $50 billion over five years. A revised estimate would surely indicate a larger revenue yield given recent skyrocketing fossil fuel prices. Nevertheless, we will stick to our guns as long as tax neutrality across investments is our guiding principle.