

# Expensing and the Taxation of Capital Investment

BY ADAM N. MICHEL

**B**usinesses of all sizes make capital investments in tools, buildings, and research that allow workers to produce new goods and services and earn higher incomes. The income tax rules for how investments are deducted from revenues impact the effective tax rate on the return to new capital investments. Most of the 2017 Tax Cuts and Jobs Act expires at the end of 2025, but its rules for capital investments—called full expensing—began changing in 2022 and will continue to increase effective tax rates on investments through 2026.<sup>1</sup>

Expensing (also called 100 percent bonus depreciation) allows businesses to deduct the full cost of new investments in the year they are made. Without expensing, investment costs must be deducted over time. By not forcing taxpayers to carry investment deductions into future years, expensing protects businesses from inflation that erodes the value of the deductions and increases effective tax rates. Policymakers learned this lesson in the 1970s

when the tax code intensified the costs of high inflation by not allowing full expensing.<sup>2</sup> Facing sustained inflation and weak economic growth, now is the worst time to lose the benefit of the full investment deduction.

Starting in 2022, businesses were to start amortizing research expenses over five years. Beginning in 2023, equipment and other short-lived investments were to lose 20 percent of their expensing deduction each year through 2026. The loss of full expensing and five-year amortization of research expenses could deny businesses as much as 28 percent of the real value of their investment deductions, making new investments in American workers more costly.

This brief explains how expensing and tax depreciation operate and provides examples that show how delaying investment deductions increase effective tax rates, especially when inflation is high. The following sections describe how depreciation rules increased the cost of inflation in the 1970s and offers evidence from the 2000s showing that expensing increases investment, job creation,



ADAM N. MICHEL is the director of tax policy studies at the Cato Institute.

and wages. Expensing also creates an incentive for businesses to re-shore their operations without the economic costs of more heavy-handed industrial policies. The final section concludes with policy recommendations.

It would be economically damaging to allow current cost recovery rules to remain, especially as inflation stays elevated, economic recession risks persist, and firms look to bring investments back to the United States. Congress should act immediately to expand and make expensing permanent.

## WHAT IS EXPENSING?

Businesses pay income taxes on their profits: revenues minus costs. Expenses such as employee salaries, utilities, and rent are all deductible in the year they are incurred. From 1954 to 2022, research expenses were also fully deductible.<sup>3</sup> However, different rules have historically applied to expenditures on longer-lived capital investments, such as equipment and structures. Businesses often are not allowed to deduct the cost of these investments in the year they are incurred. Instead, businesses deduct the cost of physical investments from their revenues over several years, according to depreciation schedules usually ranging from 3 years to 39 years.

For reporting profitability to shareholders, it makes sense to spread the cost of large investments over their useful life to smooth what would otherwise show large swings in profitability. Years with big investment purchases immediately deducted could report negative profits, and years with no new investments could report higher profits.<sup>4</sup>

However, financial accounting rules are not necessarily best for designing an efficient tax system that minimizes economic distortions. When applied to the tax code, recovering the cost of an investment over multiple years increases its after-tax cost because the real value of the deduction decreases each year due to inflation and the opportunity cost of passed time. For example, if a farmer buys a new combine and can only use one-fifth of what he paid to offset revenues this year, he will have artificially high profits and thus pay higher taxes. The higher taxes will cut into his ability to make other investments in his farm. Long and variable depreciation rules not only increase the cost of investing but also create unequal tax rates across industries and add unnecessary complexity to the tax code.<sup>5</sup>

The tax code divides investment types into asset classes, each with different depreciation schedules. Most business equipment falls under the 3-year, 5-year, 7-year, 10-year, 15-year, or 20-year depreciation schedule, while residential property has a 27.5-year schedule and commercial real property has a 39-year schedule. Originally, asset classes were intended to match the average useful life of the investment. After decades of congressional manipulation, most asset assignments bear little relation to actual use schedules, although the historical designations were also not particularly scientific.<sup>6</sup>

The Tax Cuts and Jobs Act of 2017 made temporary changes to depreciation rules so that all businesses are allowed to fully expense asset classes with lives of 20 years or less that were put in service after September 27, 2017, and before January 1, 2023.<sup>7</sup> Research expenses, including related wages for the researchers and their supervisors, as well as other attributable costs such as rent, utilities, and overhead must be amortized over five years, beginning in 2022.<sup>8</sup>

Beginning in 2023, the 100 percent expensing deduction is reduced by 20 percent each year through 2026, when the bonus deduction is entirely phased out. The portion of the deduction that is not eligible for first-year expensing must be recovered over time according to its normal asset class rules. Section 179 of the Internal Revenue Code allows some small businesses—those with less than \$2.7 million in annual investments—to expense up to \$1,080,000 in qualified short-lived investments.<sup>9</sup>

For tax purposes, income should be defined as revenue less the expenses necessary to earn that revenue. This principle is clear for employee wages; it should be equally clear for other necessary business expenses, such as research, office equipment, machinery, and buildings. A delayed deduction is a partially denied deduction that artificially increases taxable profits and decreases investment returns.

## EXPENSING, PROFITS, AND INFLATION

The loss of full expensing is most economically costly during times of high inflation because inflation erodes the deduction's value more quickly. At 2 percent inflation, a new building's present value tax deduction is worth 45 cents of each dollar invested. If inflation is 5 percent, the write-off value falls to 32 cents on the dollar.

Following persistent high inflation in the 1970s, inflation was relatively low and stable for almost 40 years. In the decade before the 2020 pandemic, the average annual inflation rate was 2.2 percent as measured by the Consumer Price Index for All Urban Consumers. Since the beginning of 2021, the inflation rate has remained at a stubbornly high average rate of 6.3 percent.<sup>10</sup> In March 2023, inflation was 5 percent over the previous 12 months.<sup>11</sup> Even if inflation continues to retreat from its post-pandemic highs, there is substantial risk that it will remain above the historical average for some time.

Businesses and their investors make decisions about future investments based on the project’s projected after-tax rate of return compared to its alternatives. The normal depreciation system lowers after-tax returns because the value of the investment deduction declines over time as inflation and time erode its real present value. By effectively recognizing only a portion of the investment’s true cost, the tax system raises effective tax rates by artificially increasing business profits (by reducing the real value of allowable expenses).

Table 1 shows how the present value of investment deductions can vary significantly according to the length of the asset life and the rate of inflation. Congress and the IRS assign investments to asset classes, between 3 years (for example, certain livestock) and 39 years (office buildings and other structures). There are multiple ways an asset can be depreciated, but most investments are depreciated under the Modified Accelerated Cost Recovery System’s general depreciation system (GDS).<sup>12</sup> Table 1 shows estimates for different asset classes under GDS with no expensing and research and development expenditures amortized over five

years. The calculations assume a 3 percent real discount rate and inflation rates of between 0 and 8 percent.<sup>13</sup>

At 2 percent inflation, Table 1 shows that a \$1 investment depreciated over seven years under the GDS (without expensing) is worth only 90 cents to the business in present value. At 5 percent inflation, it is worth only 85 cents in present value. Under full expensing, the business can write off the full investment immediately, recovering the entire cost.

A \$1 investment in a nonresidential structure, depreciated over 39 years, has a present value of 45 cents at 2 percent inflation and 32 cents at 5 percent inflation. While it is unlikely that inflation will stay above 5 percent for the next three decades, even low inflation levels over long periods erode the real value of investment tax deductions.

Because economy-wide investment is not evenly distributed across the IRS asset classes, it is helpful to estimate how much of a firm’s annual investment is ultimately denied as a tax deduction. To get such an estimate, we can roughly assign investment data by type from the Bureau of Economic Analysis’s private fixed assets accounts tables to IRS asset class lives. The present value deduction estimates from Table 1 can then be weighted by the estimates of 2021 private investment in each asset class.<sup>14</sup> This exercise shows that at 2 percent inflation, U.S. businesses would only be able to deduct about 78 percent of the value of their investments in the absence of full expensing. If inflation is sustained at 5 percent, U.S. businesses would only be able to deduct 72 percent of the value of their annual investment spending.

Denial of a full tax deduction can have a significant effect on an investment’s after-tax rate of return. Table 2 shows a \$100 investment in a farm structure (with asset class life

Table 1  
**Inflation erodes the value of investment deductions**

Asset lives, years →	3	5	7	10	15	20	27.5	39	Amortized R&D
<b>Present value of \$1 write-off when inflation is:</b>									
0%	0.98	0.96	0.94	0.91	0.83	0.78	0.69	0.60	0.93
2%	0.97	0.93	0.90	0.85	0.74	0.68	0.56	0.45	0.89
5%	0.96	0.90	0.85	0.78	0.64	0.56	0.43	0.32	0.83
8%	0.94	0.87	0.81	0.72	0.56	0.47	0.34	0.25	0.78

Source: Author’s calculations.

Notes: R&D = research and development; present value assumes a 3 percent real discount rate; 3-year to 20-year assets are placed in service in the first quarter of the year using 200 percent (3–10 years) or 150 percent (15 years and 20 years) declining balance general depreciation system (GDS); 27.5-year to 39-year assets are placed in service in January using GDS straight line method; and R&D is amortized over 5 years using the midyear convention.

of 20 years) that generates \$115 in revenue. Under immediate expensing, the investment returns \$15 in profit, which is taxed at 20 percent for a 12 percent after-tax rate of return. Under a system of tax depreciation and 5 percent inflation, the same \$100 write-off's present value is reduced to \$56 (from Table 1). This smaller write-off increases the taxable profit from \$15 to \$59 and increases taxes paid to \$12. Table 2 shows that the rate of return on the same investment falls from 12 percent to 3 percent due entirely to how the investment is treated in the tax code. Under higher tax rates and higher inflation, the effect of expensing is even more pronounced. At a tax rate of 28 percent, the Table 2 investment would have a negative after-tax return under depreciation.

## 1970s Inflation Stunted Investment

A largely forgotten cost of high inflation in the 1970s was the resulting decrease in business investment due, in part, to the tax code's treatment of depreciation. The high costs of inflation helped motivate cost recovery reforms that shortened asset lives in the 1981 Economic Recovery Tax Act.<sup>15</sup>

In 1979, Martin Feldstein and Lawrence Summers estimated that inflation increased the total effective tax rate on capital income by 23 percentage points, from 43 percent to 66 percent. They concluded that the principal reason inflation raises effective tax rates is because "depreciation causes a major overstatement of taxable profits."<sup>16</sup> Feldstein concludes in a separate econometric analysis in 1980 that "the rising rate of inflation has, because of the structure of existing U.S. tax rules, substantially discouraged investment in the past 15 years."<sup>17</sup> In the years after the high inflation, a series of similar

papers confirm that inflation—even at relatively low levels—significantly increases the after-tax cost of capital, which decreases business investment.<sup>18</sup> International Monetary Fund research similarly shows that under certain assumptions (22 percent tax rate and 25 percent depreciation rate), "the optimal investment level would decrease by 0.42 percent in response to a one-percentage point increase in inflation."<sup>19</sup>

Facing high inflation again, the U.S. tax code is set to begin denying businesses the full investment deduction. By requiring long and variable depreciation deductions, the tax code will accelerate the negative effects of inflation on investment and economic growth.

## Expensing Boosts Wages, Investment, and Growth

By removing the costs of government-imposed depreciation tables and the unpredictability of inflation, expensing increases the after-tax return on new investments, which has consistently been shown to boost job creation and wages.

Physical capital (e.g., equipment and buildings) complements workers who can be more efficient and innovative when using the latest tools. One important driver of economic growth is business investment in capital that allows producers and service providers to better meet consumers' needs at lower prices.<sup>20</sup> There is a robust economic literature showing that 1) businesses invest more when after-tax investment returns are higher and 2) the resulting larger capital stock (the accumulation of investments) increases labor demand and leads to higher wages.<sup>21</sup> There is also

Table 2

### Depreciation overstates taxable income, reduces investment returns

Full expensing		Depreciation at 5% inflation, 20-year asset	
Revenue (present value)	\$115	Revenue (present value)	\$115
Investment cost	\$100	Investment cost	\$100
Value of tax deduction allowable in first year	\$100	Present value of tax deduction	\$56
Profit (revenue - cost)	\$15	Taxable profit (revenue - allowable deduction)	\$59
Tax	\$3	Tax	\$12
After-tax income	\$12	After-tax income	\$3
After-tax rate of return	12%	After-tax rate of return	3%

Sources: Author's calculations; Stephen J. Entin, "The Tax Treatment of Capital Assets and Its Effect on Growth: Expensing, Depreciation, and the Concept of Cost Recovery in the Tax System," Tax Foundation Background Paper no. 67, April 2013.

Notes: Assumes 3 percent discount rate; numbers may not add up due to rounding.

research showing that expensing specifically boosts capital investments and increases employment.<sup>22</sup>

Using variation in expensing rules between 2002 and 2011, two separate papers in the *American Economic Review* show that expensing led to increased business investments. Eric Zawick and James Mahon found that expensing “raised investment in eligible capital relative to ineligible capital by 10.4 percent between 2001 and 2004 and 16.9 percent between 2008 and 2010.”<sup>23</sup> They also found that smaller firms and those with tight cash flow show the biggest investment response. Using variation in how states adopt federal tax changes, Daniel G. Garrett, Eric Ohm, and Juan Carlos Suarez Serrato found that increasing a location’s exposure to expensing “increased employment by 2.1 percent on average over our sample period.”<sup>24</sup> Likely because the tax changes during the period studied were temporary, the effects on employment were not permanent. A similar study of accelerated depreciation allowances in the United Kingdom also found that qualifying businesses increased investment.<sup>25</sup> Because inflation was relatively low and stable in the early 2000s, policymakers should expect similar permanent expensing rules in today’s environment of high inflation to have a larger effect on investment and employment.

Expensing also helps American workers by making U.S. investments more attractive relative to countries with depreciation systems. Ranking countries by the present value of capital allowances in 2022, Cristina Enache estimates that the United States ranks 21st out of 38 Organisation for Economic Co-operation and Development countries. The United States is weighed down by five-year amortization of research expenses and ineligibility of expensing for structures.<sup>26</sup> Philip Bazel and Jack Mintz show that compared to Canada, the U.S. marginal effective tax rate on capital investment is about 7 percentage points higher and scheduled to increase 23 percent as expensing phases out.<sup>27</sup> Because full expensing lowers the cost of capital only for new investments that are made in the United States, it removes barriers to re-shoring supply chains and boosting domestic investment.

Tax Foundation estimates from 2020 show that making the 2017 expensing reforms permanent would increase gross domestic product (GDP) by 0.9 percent. Expanding expensing to all investments (including structures, which are not eligible under the Tax Cut and Jobs Act) would boost investment, wages, and growth even further. The combined effect of this

reform is projected to increase GDP by 4 percent, the capital stock by 10 percent, and wages by more than 3 percent and add more than 800,000 new full-time-equivalent jobs.<sup>28</sup>

By removing policy distortions that make domestic investments less attractive, Congress could make the United States a more attractive investment location by simply extending and expanding the expensing policies passed in 2017.

## POLICY RECOMMENDATIONS

The ability to fully write off new investments has already begun to phase out. Beginning in 2022, research expenses are required to be written off over five years. Beginning in 2023, the first-year deduction for many other investments phases out. Allowing first-year full expensing to phase out will depress new investment and exacerbate the already heightened risk of recession.

Congress should permanently restore full expensing as it was for tax years 2018–2021. The Tax Foundation estimates that 100 percent bonus depreciation and research and development expensing would reduce static revenue by about \$582 billion over a decade or \$456 billion after accounting for the resulting economic growth and larger economy.<sup>29</sup> By moving investment deductions into the budget window, the 10-year revenue loss of expensing is overstated compared to a longer time horizon.<sup>30</sup> Congress should also expand expensing to longer-lived structures, either by allowing the same immediate deduction or implementing a “neutral cost-recovery system,” which provides a similar economic benefit as expensing by allowing businesses to index their write-offs for inflation.<sup>31</sup>

There is bipartisan support in Congress for reversing the changes that deny businesses their full research investment deduction. The American Innovation and Jobs Act has close to equal Republican and Democrat cosponsors to reinstate full expensing for research and experimental expenditures, among other less desirable changes, such as an expanded research tax credit.<sup>32</sup>

The most complete set of proposed expensing reforms is the Cost Recovery and Expensing Acceleration to Transform the Economy and Jumpstart Opportunities for Businesses and Start-ups Act, or the CREATE JOBS Act, which makes full expensing permanent for research costs and shorter-lived investments and allows longer-lived structures the ability



to use a neutral cost recovery system. The Accelerate Long-Term Investment Growth Now Act, or the ALIGN Act, makes expensing rules for short-lived assets, as included in the 2017 reforms, permanent.

Congress has many important deadlines looming as major components of the 2017 tax cuts begin to expire; none is

more immediately important than making full expensing permanent. At a time of high inflation, the tax code is set to make the economic recovery even harder. Congress can avoid one of the many mistakes of the 1970s by extending and expanding full business expensing before inflation further erodes wages and economic growth.

## NOTES

1. 26 U.S. Code § 174; and 26 U.S. Code § 168.

2. Martin Feldstein and Lawrence Summers, “Inflation and the Taxation of Capital Income in the Corporate Sector,” *National Tax Journal* 32 no. 4 (December 1979).

3. Section 174 research expensing was available beginning in 1954. Gary Guenther, “Federal Research Tax Credit: Current Law and Policy Issues,” Congressional Research Service, RL31181, July 27, 2022.

4. Depreciation schedules are also a feature of the Haig–Simons definition of income, which is the sum of consumption and changes in net worth. In such a system, “a firm that invests in a new factory cannot deduct that expenditure from its taxable income because its net worth (theoretically) has not changed. It only registers the expense for tax purposes as the factory’s value falls each year due to the wear and tear of the production process.” Adam Michel and Parker Sheppard, “Simple Changes Could Double the Increase in GDP from Tax Reform,” Heritage Foundation Issue Brief no. 4852, May 14, 2018.

5. Paul Burnham and Larry Ozanne, “Taxing Capital Income: Effective Rates and Approaches to Reform,” Congressional Budget Office, October 2005; Adam Michel and Salim Furth, “For Pro-Growth Tax Reform, Expensing Should Be the Focus,” Heritage Foundation Issue Brief no. 4747, August 2, 2017.

6. David W. Brazell, Lowell Dworin, and Michael Walsh, “A History of Federal Tax Depreciation Policy,” Office of Tax Analysis Paper no. 64, Department of the Treasury, May 1989.

7. Act to Provide for Reconciliation Pursuant to Titles II and V of the Concurrent Resolution on the Budget for Fiscal Year 2018, Pub. L. No. 115–97, 131 Stat. 2054 (2017).

8. Research expenses must be amortized over 15 years for expenditures attributed to foreign research. 26 U.S. Code § 174;

and Louis Guay and Lindsay Kaiser, “Research & Experimentation Expenses Must Now Be Amortized,” Kaufman Rossin Group, January 19, 2023.

9. Figures are for tax year 2022. The Tax Cuts and Jobs Act permanently increased Section 179 of the U.S. tax code investment limit and phase-out threshold. Tax Cuts and Jobs Act of 2017, Pub. L. No. 115–97, 131 Stat. 2054 (2017); and 26 U.S. Code § 179.

10. The averages are the percentage change from a year ago, monthly, and seasonally adjusted for January 2010–December 2019 and January 2021–February 2023. Bureau of Labor Statistics, “Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (CPIAUCSL),” Federal Reserve Bank of St. Louis, updated May 10, 2023.

11. “Consumer Price Index—April 2023,” news release, Bureau of Labor Statistics, April 12, 2023.

12. Table 1 and Table 2 are updated and based on similar presentations in Stephen J. Entin, “The Tax Treatment of Capital Assets and Its Effect on Growth: Expensing, Depreciation, and the Concept of Cost Recovery in the Tax System,” Tax Foundation Background Paper no. 67, April 2013.

13. Similar exercises generally assume a real discount rate between 3 percent and 5 percent. This paper uses 3 percent, following the discount rate used in the Cost Recovery and Expensing Acceleration to Transform the Economy and Jumpstart Opportunities for Businesses and Startups Act, or CREATE JOBS Act. Many similar calculations use a 5 percent discount rate. Stephen J. Entin, “The Tax Treatment of Capital Assets and Its Effect on Growth: Expensing, Depreciation, and the Concept of Cost Recovery in the Tax System,” Tax Foundation Background Paper no. 67, April 2013; and James M. Poterba, “The Rate of Return to Corporate Capital and Factor Share: New Estimates Using Revised National Income Accounts and Capital Stock Data,” National Bureau of Economic Research Working Paper no. 6263, November 1997.

14. Bureau of Economic Analysis (BEA) Fixed Assets Accounts Table 2.7 investment categories are assigned to the best-fit general depreciation system class life. The category overlap is not 100 percent, so these estimates are not precise. Residential structures and non-business intellectual property are excluded from the analysis. With appropriate adjustments, BEA investment in each class life is similar in magnitude to Internal Revenue Service corporation depreciation data as presented in Scott Greenberg, “Cost Recovery for New Corporate Investments in 2012,” Tax Foundation Fiscal Fact no. 495, January 2016.
15. David W. Brazell, Lowell Dworin, and Michael Walsh, “A History of Federal Tax Depreciation Policy,” Office of Tax Analysis Paper no. 64, Department of the Treasury, May 1989; and Scott Greenberg, John Olson, and Stephen J. Entin, “Modeling the Economic Effects of Past Tax Bills,” Tax Foundation Fiscal Fact no. 527, September 2016.
16. Martin Feldstein and Lawrence Summers, “Inflation and the Taxation of Capital Income in the Corporate Sector,” *National Tax Journal* 32 no. 4 (December 1979).
17. Martin Feldstein, “Inflation, Tax Rules, and Investment: Some Econometric Evidence,” National Bureau of Economic Research Working Paper no. 0577, November 1980.
18. Darrel Cohen, Kevin A. Hassett, and R. Glenn Hubbard, “Inflation and the User Cost of Capital: Does Inflation Still Matter?,” in *The Costs and Benefits of Price Stability*, ed. Martin Feldstein (Chicago: University of Chicago Press, 1999), pp. 199–234; Kevin A. Hassett and R. Glenn Hubbard, “Tax Policy and Investment,” National Bureau of Economic Research Working Paper no. 5683, July 1996.
19. Sebastian Beer, Mark Griffiths, and Alexander Klemm, “Tax Distortions from Inflation: What Are They? How to Deal with Them?,” International Monetary Fund Working Paper no. 23/18, January 2023, p. 20.
20. Salim Furth, “Why American Workers Should Care about Business Investment,” Heritage Foundation Issue Brief no. 4757, August 24, 2017.
21. “The Growth Effects of Corporate Tax Reform and Implications for Wages,” Council of Economic Advisers, October 2017.
22. Scott Hodge, “Empirical Evidence Shows Expensing Leads to More Investment and Higher Employment,” Tax Foundation, May 19, 2020.
23. Eric Zawick and James Mahon, “Tax Policy and Heterogeneous Investment Behavior,” *American Economic Review* 107, no. 1 (2017): 217–48.
24. Daniel G. Garrett, Eric Ohrn, and Juan Carlos Suárez Serrato, “Tax Policy and Local Labor Market Behavior,” *American Economic Review: Insights* 2, no. 1 (March 2020): 83–100.
25. Giorgia Maffini, Jing Xing, and Michael P. Devereux, “The Impact of Investment Incentives: Evidence from UK Corporation Tax Returns,” *American Economic Journal: Economic Policy* 11, no. 3 (August 2019): 361–89.
26. Cristina Enache, “Capital Cost Recovery across the OECD, 2022,” Tax Foundation Fiscal Fact no. 809, April 2023.
27. Philip Bazel and Jack Mintz, “The 2019 Tax Competitiveness Report: Canada’s Investment and Growth Challenge,” School of Public Policy Research Paper vol. 13:1, March 2020.
28. Erica York, “Details and Analysis of the CREATE JOBS Act,” Tax Foundation, July 30, 2020.
29. Garrett Watson et al., “Details and Analysis of Canceling the Scheduled Business Tax Increases in Tax Cuts and Jobs Act,” Tax Foundation, November 1, 2022.
30. Expensing transfers inflation risk and other costs of waiting from the private sector to the government. Over enough time, expensing only reduces revenues by the premium for waiting, which is lower for governments than the private sector.
31. Erica York and Huaqun Li, “Reviewing the Economic and Revenue Implications of Cost Recovery Options,” Tax Foundation, April 28, 2020.
32. Jason J. Fichtner and Adam N. Michel, “Can a Research and Development Tax Credit Be Properly Designed for Economic Efficiency?,” Mercatus Research, Mercatus Center at George Mason University, July 2015.