

*The Hidden Cost of*  
Federal Tax Policy

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# How Does the Corporate Tax Code Distort Capital Investments?

**T**he current US tax code is complex, carved up by special interests, and full of distortionary tax rates that treat similar activities unequally. Unequal taxation inefficiently distorts consumer and investor decisions, which can be damaging to the economy. These problems are particularly egregious in the tax system that applies to corporate capital investments. This chapter looks at the way the US tax code currently deals with capital investments, some inefficiencies, and possible alternative solutions. The tax code requires that most new purchases of capital, such as machines and buildings, be deducted from total revenue over the course of many years—this is called *depreciation* or *capital cost recovery*. Unequal tax rates develop across industries because of disparities in when the tax is paid. A one-dollar investment today can be reduced to as little as 37 cents of real write-off value, diminishing the profitability of investments.<sup>1</sup>

Using IRS data for 11 different industries from 1998 to 2010, this chapter provides individual effective

This chapter was written by Jason J. Fichtner and Adam N. Michel.

tax rates for each industry (see appendix). Driven primarily by current depreciation policies, capital investments of C corporations are taxed unequally, at effective rates as high as 36.9 percent and as low as 9.2 percent.<sup>2</sup>

As a solution to the current inequity and inefficiency in depreciation policies, this chapter advocates full expensing. Expensing offers an even ground for capital investments by allowing businesses to write off all expenditures in the year they are purchased, resulting in a zero effective rate on equity-financed capital investment. A zero effective rate refers to the expected tax rate paid on an investment that breaks even (does not turn a profit). This proposal does not alter the corporate income tax rate or the tax rates for capital gains and dividends. Expensing simplifies the tax code, reduces the ability to gain targeted tax favors, and increases investment. Some short-run costs that are associated with expensing may need to be paid in order to get to a better overall tax policy, but expensing in the long run is likely to be revenue neutral or to even enhance growth and revenue.<sup>3</sup>

#### WHY DEPRECIATE ASSETS?

Investments with any capital intensity require purchasing machinery, software, property, or structures. The accounting practice of depreciation was first instituted when businesses were reporting earnings to shareholders: without depreciation, years with large investment purchases would show negative profits, and years with no investments would show

high profits, all else being equal. To reduce these swings in reported earnings and convey a business's true position, accountants distribute the cost of each investment over the number of years it will be in service. This practice is called *depreciation* or *cost recovery*. Accountants depreciate a given asset by deducting a set percentage of an investment each year until the carried balance is zero.<sup>4</sup> This method of depreciation, commonly used in book accounting, communicates profitability to shareholders but distorts the profitability of capital investments when applied to the US tax code.<sup>5</sup>

This chapter will refer to depreciation when applied to the tax code as *tax depreciation*. Tax depreciation is important because the timing of cost recovery can mean significant differences in how much tax revenue is collected in a given year and over time, owing to inflation and the time value of money.<sup>6</sup> Investment decisions are made on the basis of after-tax profitability, which is directly affected by how an asset is depreciated. The timing of depreciation and its effect on profitability are explored later in this chapter. Historically, the tax code has allowed several different tax methods for calculating cost-recovery schedules.

Straight-line depreciation divides the total cost of an asset by its useful life (where useful life is either estimated or set arbitrarily) and deducts the same yearly amount over the asset's life. For example, a \$1,000 piece of equipment that will be used for five years would be written off 20 percent, or \$200 each year for five years. The complicated part of all

depreciation methods is determining the useful life of the piece of equipment or structure.<sup>7</sup> In the US tax code, these depreciation time lines are defined by asset classes, in which similar goods are grouped together.<sup>8</sup>

Declining-balance depreciation, known more generally as *accelerated depreciation*, uses similar asset classes as those used by straight-line depreciation but allows more of the original cost to be deducted up front. In a stylized version of accelerated depreciation, 40 percent of a \$1,000 piece of equipment would be deducted in the first year, 40 percent of the remaining balance in the second year, and so on. In the fifth year, the remaining cost would be written off.<sup>9</sup> Depreciation can also be accelerated by arbitrarily shortening the depreciation time line. The term *accelerated depreciation* does not offer great specificity; it refers generally to faster cost recovery than allowed by straight-line depreciation with accurate time lines.<sup>10</sup>

#### DEPRECIATION ALLOWANCES: A BRIEF HISTORY

The debate over how best to define the useful life of an asset began in the mid-1900s. From the time of the corporate income tax's implementation in 1909 through 1942, businesses were allowed to depreciate assets as they saw fit.<sup>11</sup> In 1954, the US government officially recognized the use of accelerated depreciation and continued its use until 1962, when a new and more rigid set of guidelines was enacted.<sup>12</sup> Depreciation time lines and asset classes were further crystalized through industry-wide surveys in 1971.<sup>13</sup> The

Economic Recovery Tax Act of 1981 first strayed from previous depreciation schemes by shortening asset lives with little consideration of the facts and circumstances of estimated useful lives.<sup>14</sup>

The most recent major modification to the US depreciation guidelines was included in the Tax Reform Act of 1986, which set up two different systems of depreciation: the modified accelerated cost-recovery system (MACRS) and the alternative depreciation system (ADS).<sup>15</sup> A majority of assets are depreciated using MACRS, which generally stipulates shorter asset lives and uses accelerated depreciation.<sup>16</sup> ADS is used for assets that are not eligible for MACRS. It uses straight-line depreciation with asset lives that are generally longer than those under MACRS.<sup>17</sup>

Accelerated depreciation for tax purposes was originally justified because it more closely mimics declining productivity as equipment ages.<sup>18</sup> Depending on use, maintenance, and environment, two similar pieces of machinery can depreciate at very different rates. Compounded by inflation, developing a proper depreciation schedule for every investment is a difficult task. In modern policy debates, accelerated depreciation has most often been put forth as an investment incentive. Policy advocates often use this justification to argue for bonus depreciation.

First used in 2002, additional first-year depreciation deductions have been enacted to stimulate both investment and the economy.<sup>19</sup> Bonus depreciation allows a one-time deduction of 30 to 100 percent of the initial cost of an investment in the year of purchase. These special tax incentives are available for a limited



time and often target specific types of investment. Provisions were enacted in 2002, 2003, 2004, 2008, 2009, 2010, and 2012.<sup>20</sup>

Accelerated depreciation, including bonus depreciation, has received attention because it is the largest corporate tax expenditure.<sup>21</sup> The Government Accountability Office estimates that accelerated depreciation of machinery and equipment reduced taxes by \$76.1 billion in 2011, an estimated 42 percent of total corporate income tax revenue.<sup>22</sup> The perceived size of the expenditure has made depreciation a much-discussed candidate for tax reform, with various advocates arguing for manipulating it in order to lower the statutory corporate tax rate, increase federal revenue, or further stimulate investment.<sup>23</sup>

#### DEPRECIATION TODAY

Two types of reforms to the depreciation system have been proposed in the tax literature: (a) change the timing of depreciation schedules, and (b) allow full expensing. Changing depreciation timing by lengthening schedules, moving to a straight-line method, or using some other means of slowing accelerated depreciation would, all else being equal, increase tax revenue. Expensing allows all companies to write off the full cost of their investments in the year purchased, thereby lowering the effective corporate tax rate and benefiting investment. It is worth noting that some proposals to change the timing of depreciation attempt to remain revenue neutral by simultaneously calling for lower statutory corporate tax rates. The projected

revenue increases from depreciating assets over a longer period of time are used to offset projected revenue losses from lower statutory corporate tax rates.

On its face, eliminating accelerated depreciation for a straight-line method seems simple. Complications arise when determining on what schedule assets should be depreciated. One example from economist Jane Gravelle analyzes a switch of all assets from the MACRS to the longer, straight-line depreciation schedules of the ADS.<sup>24</sup> In exchange for the revenue increases from slower depreciation, Gravelle finds that revenue-neutral tax reform could be achieved by cutting the statutory corporate tax rate by, at most, 4.7 percentage points—which would mean a new corporate tax rate of 30.3 percent. However, the amount of the cut shrinks to 1.6 percentage points when the forecasting horizon is expanded beyond the typical 10 years.<sup>25</sup> The time horizon matters because depreciation policy only shifts the timing of taxes paid. When depreciation schedules are lengthened (moving tax payments forward in time), inflation and time discounts on money result in larger tax collections.

A more modest proposal to slow depreciation was put forward by the Congressional Budget Office (CBO).<sup>26</sup> CBO explains that most depreciation rates were calculated in 1986, assuming 5 percent inflation. However, for the next decade, CBO predicts 2.3 percent inflation, which skews the current depreciation time lines, making the deduction more valuable and lowering real federal revenue. The proposal extends each asset class's life but leaves the methods of declining-balance depreciation the same.<sup>27</sup>

By extending the period for depreciation, CBO's proposal attempts to bring the effective tax rates for equipment and structures into parity by more accurately matching tax time lines and useful lives.<sup>28</sup>

The second major tax reform proposal is immediate cost recovery, or full expensing. Expensing allows a business to deduct the full cost of a new investment from its taxable income in the year it was purchased. One might think of full expensing as enacting a permanent 100 percent bonus depreciation. Expensing capital costs is similar to the current tax treatment of an investment in labor. Just as training costs are deductible from taxable corporate income, full expensing would deduct outlays for equipment from taxable income. Expensing lowers taxes on new capital investments to zero, simplifies the tax code, and treats all types of investment similarly.

#### EXPANDING THE CASE FOR EXPENSING

Although expensing does not lower the statutory corporate tax rate, it does lower the effective rate. Expensing eliminates corporate taxes specific to capital investments, but it does not change taxes on capital gains, dividends, interest, or general corporate income. Economist Stephen Entin illustrates the implicit tax on investments under the current system of depreciation by showing how the present value of the tax write-off is reduced. If a one-dollar investment is expensed immediately, the business receives one full dollar as a tax write-off. In the case of a one-dollar investment being depreciated over 39 years (as some structures

are), assuming 3 percent inflation that dollar would receive a write-off worth only 37 cents in present value. This example shows that the tax requirement to depreciate investments over time also diminishes the value of the write-off. The decrease in value is felt disproportionately on investments that have long useful lives and is compounded by uncertainty stemming from unknown long-run expectations about inflation.<sup>29</sup>

If a business were forced to move from expensing to depreciation, there would be a similar effect to the previously described decrease in the present-value write-off. Relative to expensing, depreciation requires accelerated tax payments. A business has not made a profit until revenue exceeds costs. When businesses are required to pay taxes before they turn a profit, the government essentially secures an interest-free loan by receiving tax payments on profit not yet earned. By eliminating complex depreciation systems, expensing decreases the effective rate of taxation on capital investment to zero because there is no time over which the deduction can lose value.<sup>30</sup>

Expensing is an investment incentive for new capital investment. Unlike an across-the-board tax rate reduction, expensing lowers the taxes paid on future investments rather than on all profits earned from new and old capital. A zero effective rate on capital investments increases the after-tax rate of return on new investments, making them more attractive under expensing.<sup>31</sup>

To fully realize the goal of a flat zero rate on all capital investments, one must acknowledge the disproportionate tax rates of debt- and equity-financed

investment. Although this chapter does not tackle the issue of interest deductions, the issue merits a brief discussion given the broader theme of a less distortionary tax code. Effective tax rates for debt- and equity-financed capital are  $-6.4$  and  $36.1$  percent, respectively, as calculated in a 2005 CBO paper.<sup>32</sup> CBO estimates that full expensing would result in an effective rate of  $-87.5$  percent for debt-financed investments and a zero percent rate for equity-financed capital investments.<sup>33</sup> This case illustrates the strong incentives for debt-financed investments that currently exist under the US tax code.

Depending on how the tax base is defined, a properly neutral tax treatment of interest should allow all interest to be deducted if such interest is taxable or no interest to be deducted if the interest is not considered taxable.<sup>34</sup> Any future comprehensive tax reform must address the role that taxation of interest and interest deductions should play in the tax code.

It should also be recognized that under current depreciation policies, even within a single industry, there is a gap in effective tax rates between tangible and intangible investments and between different types of equipment and structures.<sup>35</sup> The US tax code treats intangible assets in many different and seemingly unequal ways. Intangible assets consist of a variety of nonphysical goods: patents, copyrights, brand names, databases, and labor. In many cases, some intangible assets are immediately expensed.<sup>36</sup> For example, imagine a business pays an employee to compile a valuable data bank of searchable information. The employee's wages are expensed, as are most

other operating costs. However, the purchase of a new server for the data bank must be depreciated over several years. The current US tax code favors certain types of investment over others. Expensing treats all investments similarly.

There are large discrepancies in effective tax rates within tangible asset classes. In 2005, CBO estimated the average effective corporate tax rate on investments as 26.3 percent, ranging from 36.9 percent on computers and peripheries to 9.2 percent on petroleum and natural gas structures.<sup>37</sup> The variations in tax rates generally result from depreciation rules that differ from the actual useful life:

The top quartile [of effective rates] consists entirely of computers and peripheral equipment, inventories, manufacturing buildings, and land. The bottom quartile contains 19 different asset types. The major asset types with the lowest rates are mining structures, petroleum and natural-gas structures, railroad equipment, aircraft, specialized industrial machinery, fabricated metal products, ships and boats, and construction machinery.<sup>38</sup>

A shift to full expensing would decrease differences in effective tax rates across industries by treating equipment and buildings—tangible assets—in a manner more similar to the way intangible assets are treated.

A reform to full expensing would increase the quantity of investments by increasing the after-tax profit

of investments. Investments, which carry inherent risk, must be expected to earn back their costs, plus the rate of inflation and a premium for the risk of the investment, or the investor will choose a different option.<sup>39</sup> Depreciation for tax purposes overstates simple pretax profit calculations because the present value of the write-off is less than the full cost of the investment.<sup>40</sup> The overstated profits increase taxable income, thereby resulting in higher effective tax rates and lower rates of return on investments. However, expensing does not shelter any profit from taxation—all revenue, after an investment is paid off, is taxed at the statutory rate. Expensing allows the full cost of investments to be recovered, thus inducing more investment and expanding the economy.<sup>41</sup>

## RENT-SEEKING

Beyond the direct economic effects of expensing, it would simplify the tax code. As discussed previously, the effective tax rate on standard corporate investments ranges from 9.2 to 36.9 percent—a 27.7 percentage point spread in the taxation of different asset types, primarily driven by uneven depreciation policy. Requiring assets to be depreciated instead of expensed results in winners and losers, thereby allowing the tax code to hurt some industries and help others. The ability to manipulate depreciation for special tax breaks also opens the door to rent-seeking. Congress has the ability to alter the standard MACRS depreciation periods through statutory changes that apply to specific types of assets. A 2012 report by the

Joint Committee on Taxation lists 55 separate statutory changes to MACRS depreciation periods.<sup>42</sup> The list details changes to the class lives of racehorses, a natural gas pipeline in Alaska, green energy property and equipment, magazine circulation expenditures, research and development, and intangible drilling costs.<sup>43</sup> Many of these special provisions give a specific industry or production method a tax-favored status for its investments.

Rent-seeking opportunities encourage corporations to spend money to lobby Congress for special tax breaks.<sup>44</sup> Money spent on lobbying does not create anything new or move the economy forward—such rent-seeking holds the economy back.<sup>45</sup> Any form of tax depreciation will always be subject to political manipulation. Switching to full expensing eliminates the ability to alter tax depreciation time lines to the advantage of politically favored industries.

Because expensing would simplify the US tax code, it would also lessen administrative costs. A Laffer Center study on the economic burden of tax code complexities found that US businesses spend 2.94 billion hours complying with the federal tax code, at a cost of \$216.2 billion annually. Taxpayers in aggregate spend the equivalent of 30 percent of total income taxes collected trying to comply with the tax code.<sup>46</sup> According to the Laffer Center, the low-end estimate of a 50 percent reduction in tax code complexity would increase the country's annual economic growth rate by 0.45 percentage points over 10 years.<sup>47</sup> Expensing could help reduce complexity and facilitate some portion of the noted efficiency gains. As Nobel



laureate and economics professor Vernon Smith notes, “Perhaps the most valuable advantage of fully expensing capital outlays is that of introducing administrative and clerical simplicity where there has tended to exist great complication.”<sup>48</sup>

Alan Auerbach and Dale Jorgenson comment on the efficiency gains from removing the administrative burden of depreciation by noting that businesses could eliminate entire sections of their tax accounting staff if they were no longer required to factor tax depreciation into yearly tax liability reporting and long-run investment decisions.<sup>49</sup> Chief financial officers also prefer a less complicated tax code. A 2011 Duke University–CFO Magazine survey found that 70 percent of chief financial officers would give up all tax exemptions for tax code simplicity, even though their companies might not come out ahead.<sup>50</sup>

## REVENUE EFFECTS OF EXPENSING

Federal tax policy that allows expensing is more efficient and equitable across different industries. Revenue projections are less certain. Entin lays out a simplified illustration of switching from straight-line depreciation for a \$100 piece of equipment over five years to expensing, assuming that a business purchases one new \$100 piece of equipment each year. Old assets will be allowed to depreciate under the old law, and new purchases will be expensed. In year 1, the business gets an additional \$80 write-off; in year 2, \$60; in year 3, \$40; in year 4, \$20; and in year 5, the business would be back to its initial \$100 yearly write-off.

In the short run, expensing would decrease federal revenue. Over time, revenue would stabilize back to its old levels.<sup>51</sup> Auerbach corroborates Entin's assessment, writing that, "to allow expensing net of corporate borrowing . . . is likely to have a small net impact on revenue, at least in the long run."<sup>52</sup>

Entin and Auerbach's discussions of revenue do not completely account for the growth effects of full expensing. There would be economic growth from efficiency gains owing to simplicity, better returns on investments, and reduced rent-seeking as a result of signaling that the US tax code is less open to exemption tampering. Expensing would make each new asset "more attractive and have a higher rate of return. The capital stock as well as private sector incomes and wages will rise, and revenues will improve."<sup>53</sup> Furthermore, the federal government has already absorbed much of the transition cost as a result of past bonus depreciation tax incentives.<sup>54</sup> If an expensing policy were to be enacted today, small revenue losses would likely occur in the short run, and modest revenue increases in the long run.<sup>55</sup>

On a static basis, where growth effects are not taken into account, tax expensing will not be revenue neutral. However, because expensing makes investment relatively more attractive, it can reasonably be assumed that some growth effects will result from the tax change. An estimate of the growth effects from full expensing by the Tax Foundation finds that "full expensing would increase GDP by 5.13 percent, lift the capital stock by 15.4 percent, raise wages by 4.36 percent, create 885,300 jobs, and boost federal revenue by

\$121.3 billion” in the long run.<sup>56</sup> Although the tax revenue picture is not easily projected, the static projections of lost revenue are almost certainly incorrect. By lowering the effective tax rate on capital investments, expensing will remove the current tax disadvantage on investments. In relative terms, under a system with full expensing, investors would find investments (future consumption) more attractive than current consumption. Increased investment has the potential to raise the economic growth rate in both the long run and the short run. In other words, the long-run revenue effects depend on how much extra investment is actually induced by moving to a system of full tax expensing and how much tax revenue is then gained at the margin from increased GDP.

#### DIFFERENCES IN INDUSTRY’S SENSITIVITY TO CHANGES IN DEPRECIATION ALLOWANCES

By using the IRS’s Statistics of Income data for active corporations for 1998–2010, we are able to estimate which industries would be most sensitive to changes in depreciation (see table 5.1).<sup>57</sup> The calculations presented in table 5.1 show how the removal of existing depreciation policies would affect the tax rates of 11 industries. The calculation is made by removing the current depreciation deduction from total deductions, adding it to total income subject to tax, and applying the effective tax rate. Historical effective tax rates, by industry, are provided in the appendix.

Although the method of analysis used here is imprecise because of data limitations, removing

Table 5.1. Effect of Depreciation on Effective Tax Rates

INDUSTRY	EFFECTIVE RATE WITHOUT DEPRECIATION (%)	HISTORIC EFFECTIVE RATE (%)	DIFFERENCE (PERCENTAGE POINTS)
Mining	28.47	21.28	7.19
Manufacturing	25.29	19.48	5.81
Information	32.18	27.96	4.22
Utilities	33.73	30.34	3.39
Transportation and warehousing	33.50	31.09	2.41
Wholesale trade	31.81	30.16	1.65
Agriculture, forestry, fishing, and hunting	28.40	27.31	1.09
Finance and insurance	31.28	30.33	0.96
Retail trade	32.78	32.06	0.72
Construction	31.52	30.95	0.56
Health care and social assistance	33.44	32.94	0.50

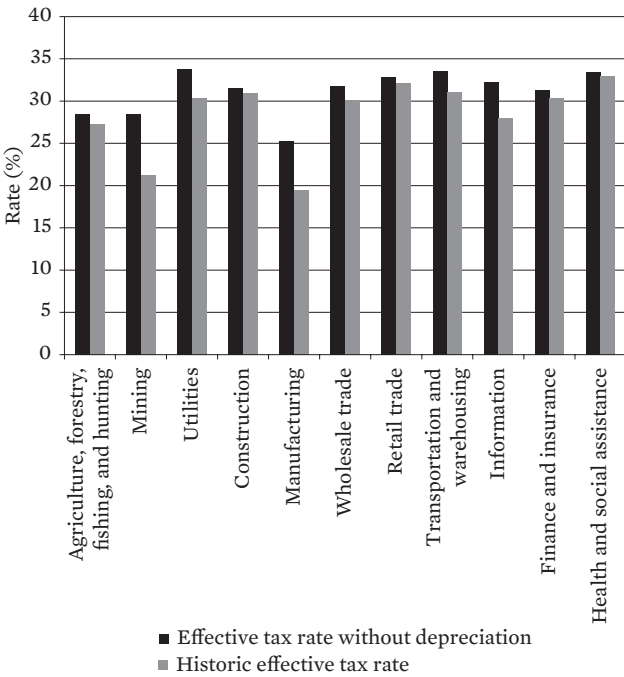
Source: Data from Internal Revenue Service, "Table 12—Returns of Active Corporations, Other than Forms 1120-REIT, 1120-RIC, and 1120S" (1998–2012), June 27, 2014. Detail may not add owing to rounding.

depreciation from deductions helps illustrate how each industry's tax status is distorted by the current US tax code. A move to expensing would lower the effective rate; table 5.1 shows the percentage point change between the current or historic effective rate and the new, higher effective tax rate without depreciation and existing bonus depreciation for 11 industries. The higher effective rates reflect a tax situation that is more similar to paying taxes on all income without deducting investment costs. A larger change represents a more sensitive industry.<sup>58</sup>

The calculation illustrates each industry's sensitivity to the elimination of depreciation and bonus depreciation. Table 5.1 also shows how depreciation and bonus depreciation lower the effective rate disproportionately across different industries. Because depreciation might be viewed as the consumption of depreciable investments, industries toward the top of the table would likely stand to gain much from expensing policies that would reduce the effective tax rate without depreciation. Figure 5.1 illustrates the difference between the current effective tax rate and the new effective rate without depreciation.

The pressures that the highly sensitive industries face under current cost-recovery rules are mirrored by CBO's list of assets occupying the bottom quartile of effective rates: mining structures, petroleum and natural gas structures, railroad equipment, aircraft, specialized industrial machinery, fabricated metal products, ships and boats, and construction machinery.<sup>59</sup> These assets are heavily used in table 5.1's five most sensitive industries. The low rates on these assets

Figure 5.1. Effect of Depreciation on Effective Tax Rates



Source: Data from Internal Revenue Service, "Table 12—Returns of Active Corporations, Other than Forms 1120-REIT, 1120-RIC, and 1120S" (1998–2012), June 27, 2014.

may signal that associated industries are highly motivated to lobby for faster accelerated depreciation.

Table 5.2 shows how capital intensive each industry is in terms of depreciation as a percentage of corporate income subject to tax. For some industries, the annual use of depreciation exceeds total income on a yearly basis. Interestingly, the industries that are highly capital intensive (table 5.2) are not necessarily

Table 5.2. Industry Reliance on Depreciable Capital

INDUSTRY	CAPITAL INTENSITY
	RATIO (%)
Utilities	237
Transportation and warehousing	220
Agriculture, forestry, fishing, and hunting	168
Information	138
Mining	104
Health care and social assistance	101
Wholesale trade	71
Construction	67
Manufacturing	62
Retail trade	57
Finance and insurance	23

*Source:* Data from Internal Revenue Service, “Table 12—Returns of Active Corporations, Other than Forms 1120-REIT, 1120-RIC, and 1120S” (1998–2012), June 27, 2014.

the industries that are most sensitive to shifts in cost recovery (table 5.1). The sensitivity ranking is most likely picking up the size of the depreciation deduction relative to all other frequently used deductions and credits across a given industry.

This chapter suggests that industries that are more sensitive to changes in capital cost recovery will likely benefit the most from full expensing. The intersection of CBO’s lowest asset rates and the industries ranked here as highly sensitive indicates which industries have the greatest incentive to lobby for special tax treatment. The industries at the bottom of table 5.1 should not be dismissed, though, as potential benefi-

ciaries of immediate cost recovery because all industries will benefit from full expensing in absolute terms.

## CRITIQUES OF FULL COST RECOVERY

The US corporate tax system is riddled with inefficiencies. Full expensing is just one of many changes that would make the US tax code more efficient and equitable. Any proposed change to the tax code will have detractors with well-formed critiques. This section addresses common objections to expensing. Full expensing on its own is not a magic tax code remedy; it should be part of a larger reform.

The first objection to expensing is that businesses should be arguing for statutory rate reduction instead. Tom Neubig, national director of quantitative economics and statistics at Ernst & Young, gives seven reasons corporate finance and tax officers prefer lower corporate tax rates to expensing.<sup>60</sup> His critique assumes a binary choice: either expensing or lower tax rates, but not both. Additionally, as J. D. Foster argues, “Even capital-intensive firms often appear to prefer lower tax rates to more accelerated depreciation.”<sup>61</sup> It is important to note that the case presented in this chapter for expensing is not an argument against lower statutory tax rates, although Gravelle’s paper on long-run revenue collections may temper enthusiasm for statutory rate reform.<sup>62</sup> However, in contrast with rate reduction and a focus on the tax treatment of capital, expensing brings rates of taxation on all capital goods into parity and increases the return on capital investments.<sup>63</sup> The fact that the effective rate reduction does



not appear in book accounting presents a perception problem that may be hard to overcome, but the economic savings are very real. Furthermore, the 2011 Duke-CFO Magazine survey shows that executives can look beyond some accounting losses if they think they will come out ahead on other margins.<sup>64</sup> The most salient concern for some businesses is a possible change to the interest deduction, although this concern does not constitute a critique of full expensing as a policy in its own right.

A second objection to expensing is that the existing bonus depreciation policy has already failed the litmus test for encouraging investment. Is bonus depreciation an effective tax incentive? The question is important to the discussion here because bonus depreciation is not only a form of accelerated depreciation but also a stepping-stone to full expensing. Federal Reserve Board economist Jesse Edgerton looks at whether accelerated depreciation or an investment tax credit is more effective as an investment incentive.<sup>65</sup> He concludes that accelerated depreciation is about half as effective as an investment tax credit. This effect is weak because accelerated depreciation provisions do not show up in the effective tax rate for book purposes. That rate is a key indicator for investors; thus, corporate executives may be less focused on other measures of effective tax rates.<sup>66</sup> Accounting professors David Hulse and Jane Livingstone compare investment in 2001 and 2004, when bonus depreciation was allowed, to years without bonus depreciation and also find it to be a weak investment incentive.<sup>67</sup> The literature seems to be in general agreement: temporary accelerated and

bonus depreciation provisions are middling stimulus measures.<sup>68</sup>

Despite the consensus that bonus depreciation is not a strong investment incentive, expensing has some important differences that may produce different results. Temporary bonus depreciation is intended to shift investment forward rather than induce a higher level of total investment.<sup>69</sup> Furthermore, the temporary provisions are often only 30 to 50 percent. The small effects found in papers examining bonus depreciation might increase significantly if the provision were expanded to 100 percent and made permanent. Expensing removes much of the uncertainty from the current depreciation system, which offers a parade of temporary write-offs and exemptions. Businesses generally make large-scale investment decisions on the basis of long-run economic considerations, not the temporary vicissitudes of congressional tax tampering.<sup>70</sup>

A more stable tax regime will allow businesses to focus on more productive pursuits and plan for the future with tax certainty.<sup>71</sup> As one of the authors of this chapter has pointed out in testimony before Congress, “Predictable tax policy is essential to long-term economic growth. Generally, temporary tax provisions should be avoided, especially when trying to correct or rectify a permanent problem. Further, allowing any provisions that favor one group or activity over another not only puts the government in the position of picking winners and losers, but also opens the Congress up to be influenced by those seeking special favors.”<sup>72</sup>

A third objection to moving to a full expensing system is uncertainty about the policy's revenue neutrality. Although much evidence supports the narrative that, in the long run, expensing will not be a net drain on federal revenue, any tax proposal can have unanticipated revenue effects.<sup>73</sup> This possibility may be an acceptable risk in return for a better tax code. A reduction in rent-seeking opportunities will allow businesses to allocate those dollars to value-creating enterprises, and parity in effective capital tax rates will allow investments to more efficiently flow to their highest-valued use.

## CONCLUSION

The complexity and breadth of the US tax code can make any change seem trivial on its own. Expensing may be one of many necessary tools to move toward better federal corporate tax policy. Expensing may have some short-run costs, but they are outweighed by the long-run gains in efficiency, fairness, and economic growth. Effective tax rates influence how businesses allocate their investments, and a flat zero rate on all investments will allow more efficient economic allocation.

Moving away from depreciation toward full expensing will not be an easy sell to stakeholders. Many industries enjoy their favored tax status, and many politicians enjoy the ability to hand out favorable depreciation schedules. Expensing should be an easy sell to those who have an eye on future economic growth. Full cost recovery will help move away from

distortionary taxes that have biased investors against long-lived investments, such as manufacturing plants and commercial buildings. Lower effective tax rates would be a boon for investment and would help stimulate domestic economic growth.<sup>74</sup> These changes might shake up some privileged industries, but almost everyone will be better off with an efficient and equitable tax treatment of capital investments.

Finally, as discussed at length in chapters 3 and 4, policymakers must take in account that any corporate tax is a tax on individuals—whether investors, workers, or consumers. Although abolishing the corporate tax code may not be politically feasible at this time, adopting expensing over depreciation is a step in the right direction.

- Opportunities, Multinationals, and the Determinants of FDI,” Discussion Paper in Economics 29, Ludwig Maximilian University of Munich, Munich, Germany, 2002.
23. Djankov, Ganser, McLiesh, Ramalho, and Shleifer, “Effect of Corporate Taxes,” 33.
  24. Harry Grubert and John Mutti, “Taxes, Tariffs, and Transfer Pricing in Multinational Corporate Decision Making,” *Review of Economics and Statistics* 73, no. 2 (May 1991): 285–93. See also James R. Hines and Eric M. Rice, “Fiscal Paradise: Foreign Tax Havens and American Business,” *Quarterly Journal of Economics* 109, no. 1 (February 1994): 149–82.
  25. Melvin, “Corporate Income Tax in an Open Economy”; Randolph, “International Burdens of the Corporate Income Tax.”
  26. Desai, Foley, and Hines, “Labor and Capital Shares of the Corporate Tax Burden,” 4.
  27. Laurence J. Kotlikoff and Jianjun Miao, “What Does the Corporate Income Tax Tax? A Simple Model without Capital,” *Annals of Economics and Finance* 14, no. 1 (May 2013): 1–19.

## CHAPTER 5: HOW DOES THE CORPORATE TAX CODE DISTORT CAPITAL INVESTMENTS?

1. 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,” Background Paper 67, Tax Foundation, Washington, DC, April 2013.
2. Congressional Budget Office (CBO), “Taxing Capital Income: Effective Rates and Approaches to Reform,” Washington, DC, October 2005.
3. Michael Schuyler, “Comparing the Growth and Revenue Effects of Four Proposed Depreciation Systems: Baucus, Camp, Wyden, and Full Expensing,” Fiscal Fact 433, Tax Foundation, Washington, DC, June 2014.
4. For accounting purposes, assets are often depreciated using the simple straight-line method. But there are other acceptable practices, as outlined in the Financial Accounting Standards Board’s Accounting Standards Codification of Generally Accepted Accounting Principles (GAAP). See also Entin, “Tax Treatment of Capital Assets”; *Hearing on Tax Reform Options: Incentives for Capital Investment and Manufacturing before the United States Senate Committee on Finance*, 112th Cong., 2nd sess. (March 6, 2012) (testimony

of Michelle Hanlon, associate professor of accounting, Massachusetts Institute of Technology).

5. The accounting process for shareholders to show profit and loss is called *book accounting*, which is different from accounting for tax purposes. Note that the effective tax rate for book purposes, as it appears to corporate executives and shareholders, does not always capture the effects of timing in the true economic sense. See *Hearing on Tax Reform Options: Incentives for Capital Investment and Manufacturing* (testimony of Hanlon).
6. The term *depreciation* often suggests that defined tax write-offs over time have some necessary link to the useful life of an asset. The term *cost recovery* is often more precise, because it refers unambiguously to recouping the original expenditure. This chapter favors the term *depreciation over cost recovery* for simplicity; depreciation should be understood as a cost-recovery mechanism.
7. An asset's useful life is difficult to assess because it varies by industry and by business. A piece of equipment could last 10 years if used during normal business hours but only four years if used 24 hours a day. The early evolution of asset lives illustrates this difficulty nicely. In a 1920 publication, *Bulletin F: Depreciation and Obsolescence*, the Bureau of Internal Revenue states, "It is considered impracticable to prescribe fixed, defined rates of depreciation which would be allowable for all property of a given asset or character." David W. Brazell, Lowell Dworin, and Michael Walsh, "A History of Federal Tax Depreciation Policy" (Paper 64, Office of Tax Analysis, Washington, DC, May 1989), 6.
8. IRS, "How to Depreciate Property," Publication 946, Washington, DC, February 2013, appendix B.
9. Declining-balance depreciation is often called *200 percent depreciation* because it allows double the straight-line equivalent. Depreciation is accelerated when the declining balance becomes more than 100 percent of the straight-line equivalent. See Joint Committee on Taxation (JCT), "Background and Present Law Relating to Cost Recovery and Domestic Production Activities," Washington, DC, March 6, 2012, 20–21.
10. Depreciation can be accelerated by any number of methods. Bonus depreciation and declining-balance depreciation both change the timing of a write-off within a given useful-life time frame. Depreciation can also be accelerated by shortening the time frame or useful life, often arbitrarily.

11. In 1920, the Bureau of Internal Revenue first published *Bulletin F: Depreciation and Obsolescence*, which did not list specific asset lives or depreciation schedules. The bureau asked taxpayers to estimate depreciation time lines in accordance with their own experiences. *Bulletin F* evolved through subsequent revisions, which listed industry average asset lives determined by surveys of industry depreciation. The 1942 version of *Bulletin F* became the de facto standard for asset lives and remained the standard that auditors used until 1954. See Brazell, Dworin, and Walsh, "History of Federal Tax Depreciation Policy," 6-12.
12. *Ibid.*, 14. The *Depreciation Guidelines and Rules* were adopted in place of *Bulletin F* in July 1962.
13. *Ibid.*, 18. These new standards were called *asset depreciation ranges* and were adapted from *Bulletin F* and modified by using research from the newly established Office of Industrial Economics.
14. *Ibid.*, 20. This new system of tax treatment was called the *accelerated cost-recovery system*.
15. MACRS and ADS were a combination of explicit class lives dictated by Congress and a framework created by the secretary of the treasury. The secretary was able to modify the class lives until 1988. See JCT, "Background and Present Law," 21.
16. *Ibid.*, 22. MACRS uses both 150 percent and 200 percent declining-balance accelerated depreciation.
17. *Ibid.*, 24. ADS is required for foreign property holdings and some tax-exempt property. It is available to any taxpayer in any class of property. When given the option (which is the case for almost all types of property), businesses tend to use MACRS because it offers accelerated depreciation. Also, a list of asset classes and depreciation schedules can be found in IRS, "How to Depreciate Property," appendix A.
18. Brazell, Dworin, and Walsh, "History of Federal Tax Depreciation Policy," 12.
19. The Job Creation and Worker Assistance Act of 2002 was the first instance of bonus depreciation. During the passage of the Jobs and Growth Tax Relief Reconciliation Act of 2003, Congress explained the rationale for bonus depreciation as "to spur an economic recovery." See JCT, "Background and Present Law," 25.
20. See Job Creation and Worker Assistance Act of 2002, Pub. L. 107-147, 116 Stat. 21 (2002); Jobs and Growth Tax Relief Reconciliation Act of 2003, Pub. L. 108-27, 117 Stat. 752 (2003); American Jobs Creation Act of 2004, Pub. L.

108-357, 118 Stat. 1418 (2004); Economic Stimulus Act of 2008, Pub. L. 110-185, 122 Stat. 613 (2008); American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, 123 Stat. 115 (2009); Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, Pub. L. 111-312, 124 Stat. 3296 (2010); American Taxpayer Relief Act of 2012, Pub. L. 112-240, 126 Stat. 2313 (2013). These laws all offer some level of bonus depreciation on specific types of assets. Each law's stipulations are multifaceted, applying to several different types of property for different lengths of time, both retroactively and into the future. For a comprehensive summary of each law, see JCT, "Background and Present Law," 25-26. For the 2012 law, see Ernst & Young, "Fiscal Cliff Legislation Extends 50% Bonus Depreciation and Leasing Provisions," in *Ernst & Young Tax Guide 2013: Tax Updates* (New York: Wiley).

21. There is some debate among economists regarding the definition of *tax expenditures*. For more, see Jason J. Fichtner and Jacob Feldman, "When Are Tax Expenditures Really Spending?," Mercatus Working Paper 11-45, Mercatus Center at George Mason University, Arlington, VA, November 2011.
22. Government Accountability Office, "Corporate Tax Expenditures: Information on Estimating Revenue Losses and Related Federal Spending Programs," Washington, DC, March 2013, 11.
23. Jane G. Gravelle, "Reducing Depreciation Allowances to Finance a Lower Corporate Tax Rate," *National Tax Journal* 64, no. 4 (December 2011): 1039-54. See also CBO, *Reducing the Deficit: Spending and Revenue Options* (Washington, DC, March 2011), 180-81; JCT, "Background and Present Law," 25.
24. Gravelle, "Reducing Depreciation Allowances."
25. The time horizon is important because of the nature of accelerated and straight-line depreciation. Accelerated depreciation allows larger deductions early in the asset's life compared to the straight-line method. Hence, projected savings would be larger in the 5- or 10-year budget window, when accelerated depreciation would have allowed larger deductions. At the end of an asset's life, straight-line depreciation allows larger deductions relative to the accelerated schedule, thus balancing out some of the earlier revenue gains. This phenomenon is more prominent in asset classes that have longer lives. See Gravelle, "Reducing Depreciation Allowances."
26. CBO, *Reducing the Deficit*. Gravelle also analyzes the budget effects of CBO's proposal. The effect on the statutory tax rate is smaller than under the ADS proposal. See Gravelle, "Reducing Depreciation Allowances."



27. Depreciation lifetimes are currently 3, 5, 7, 10, 15, or 20 years. CBO's proposal would raise the lifetimes to 4, 8, 11, 20, 30, or 39 (most structures would be unaffected by this option). See CBO, *Reducing the Deficit*, 180.
28. *Ibid.*, 180–81. CBO's proposal is only a temporary fix because tax rates would no longer be in parity when inflation changes in the future. A system could be imagined wherein depreciation schedules were indexed for inflation, but such a system would prove complex administratively. The 2.3 percent inflation rate from the consumer price index is from CBO, "The Budget and Economic Outlook: Fiscal Years 2013 to 2023," Washington, DC, February 2013, 5.
29. Entin, "Tax Treatment of Capital Assets," 10–11.
30. *Ibid.*, 12.
31. *Ibid.*, 10–11. Entin provides a full discussion of how the future value of depreciation write-offs alters the after-tax returns on investments.
32. CBO, "Taxing Capital Income: Effective Rates and Approaches to Reform," Washington, DC, October 2005.
33. *Ibid.* The effective rates cited under expensing also include removing contributions, eligibility, and withdrawal restrictions on retirement savings accounts. CBO's full analysis also removes interest deductions to get a zero effective rate on both debt- and equity-financed investments.
34. Curtis S. Dubay, "The Proper Tax Treatment of Interest," Backgrounder 2868, Heritage Foundation, Washington, DC, February 19, 2014.
35. Mackie estimates that intangibles have an effective rate of 4.4 percent, compared to rates of 30.5 and 38.8 percent for equipment and structures, respectively. See James B. Mackie, "Unfinished Business of the 1986 Tax Reform Act: An Effective Tax Rate Analysis of Current Issues in the Taxation of Capital Income," *National Tax Journal* 55, no. 2 (June 2002): 293–337, 310.
36. Entin, "Tax Treatment of Capital Assets," 18.
37. CBO, "Taxing Capital Income."
38. *Ibid.*, 7–8.
39. CBO estimates inflation over the years 2013–23 to be 2.3 percent. See CBO, "Budget and Economic Outlook: Fiscal Years 2013 to 2023," 5. Entin suggests that competitive investments must earn back 3.0 to 3.5 percent. See Entin, "Tax Treatment of Capital Assets," 9.

40. This is the case for both straight-line and accelerated depreciation, although the effect is largest when cost recovery is longer.
41. Entin, "Tax Treatment of Capital Assets," 10–11.
42. JCT, "Background and Present Law," 47–59.
43. Ibid.
44. Matthew Mitchell, "The Pathology of Privilege: The Economic Consequences of Government Favoritism," Mercatus Center at George Mason University, Arlington, VA, July 2012, 11, 17–18.
45. Seth H. Giertz and Jacob Feldman, "The Costs of Tax Policy Uncertainty and the Need for Tax Reform," *Tax Notes* 138, no. 8 (February 25, 2013): 951–63.
46. This number includes individuals' and businesses' direct outlays, time spent on filing requirements and audits, and IRS administrative costs. It is estimated that businesses spent 2.94 billion hours complying with the federal tax code in 2008. See Arthur B. Laffer, Wayne H. Winegarden, and John Childs, "The Economic Burden Caused by Tax Code Complexity," Laffer Center, Austin, TX, April 2011, 3.
47. Ibid., 23.
48. Vernon L. Smith, "Tax Depreciation Policy and Investment Theory," *International Economic Review* 4, no. 1 (January 1963): 80–91, 91.
49. Alan J. Auerbach and Dale W. Jorgenson, "Inflation-Proof Depreciation of Assets," *Harvard Business Review* (September–October 1980): 113–18.
50. Duke–CFO Magazine Global Business Outlook Survey, September 2011.
51. Entin, "Tax Treatment of Capital Assets," 12.
52. Alan J. Auerbach, "A Modern Corporate Tax," Center for American Progress and Hamilton Project, Washington, DC, December 2010.
53. Entin, "Tax Treatment of Capital Assets," 13.
54. Because bonus depreciation was extended as part of the American Taxpayer Relief Act of 2012, many investments have used the 50 percent deduction. Previous years had bonus depreciation allowances of as much as 100 percent. See Ernst & Young, "Fiscal Cliff Legislation Extends 50% Bonus Depreciation and Leasing Provisions."
55. The transition costs arise because of a disruption in tax collection during the first year, when a business writes off the

- entire investment. If a large portion of past investments has already been fully deducted, there will be less disruption in tax revenue during a transition from depreciation to expensing.
56. Schuyler, "Comparing the Growth and Revenue Effects of Four Proposed Depreciation Systems." Projections are from the Tax Foundation's "Taxes and Growth" model, with all results presented in steady state.
  57. The data used are from IRS, "Table 12—Returns of Active Corporations, Other than Forms 1120-REIT, 1120-RIC, and 1120S" (1998–2012), June 27, 2014. These statistics do not include S corporations and other pass-through entities. Pass-through corporations are taxed differently.
  58. Industry sensitivity to depreciation reform is measured by examining which industries would experience the largest increase in average effective tax rates if depreciation were removed as a deduction. These same businesses would likely have the most to gain from adopting expensing.
  59. CBO, "Taxing Capital Income," 7–8.
  60. Neubig's seven reasons are (a) expensing's timing benefit does not show up in the book effective tax rate, (b) many assets are already fully expensed, (c) corporations fear the removal of interest deductibility, (d) expensing does not reduce taxes on profits—a lower tax rate applies more broadly, (e) not all companies will be able to benefit from expensing immediately, (f) expensing reduces the tax wedge between tangible and intangible assets—a lower statutory rate would reduce the wedge for all corporate decisions, and (g) expensing does not reduce the fear that statutory rates may go up in the future. See Tom Neubig, "Where's the Applause? Why Most Corporations Prefer a Lower Rate," *Tax Notes* 111 (April 2006): 483–86.
  61. J. D. Foster, "The Big Choice for Growth: Lower Tax Rates v. Expensing," *Tax Notes*, December 17, 2012.
  62. Gravelle, "Reducing Depreciation Allowances."
  63. Foster makes a similar argument when he claims that business leaders are more likely to support lower taxes than expensing if given the tradeoff. This chapter does not argue that expensing is the only necessary tax reform. A robust tax reform plan must fit many of these smaller reforms together. See J. D. Foster, "The Big Choice for Jobs and Growth: Lower Tax Rates versus Expensing," Backgrounder 2810, Heritage Foundation, Washington, DC, June 19, 2013.
  64. Duke—CFO Magazine Global Business Outlook Survey.

65. Jesse Edgerton, "Investment, Accounting, and the Salience of the Corporate Income Tax," Working paper, Oxford University Centre for Business Taxation, Oxford, UK, October 2012.
66. Ibid.
67. David Hulse and Jane Livingstone, "Incentive Effects of Bonus Depreciation," *Journal of Accounting and Public Policy* 29, no. 6 (2010): 578–603.
68. Research from Eric Zwick and James Mahon of Harvard University finds significant positive effects of changes in accelerated depreciation policy. Most strikingly, they find bonus depreciation raised investment by 17.3 percent on average between 2001 and 2004 and by 29.5 percent between 2008 and 2010. The strong incentive found in this new research may be from the inclusion of small and medium firms, which are more responsive to tax incentives. See Eric Zwick and James Mahon, "Do Financial Frictions Amplify Fiscal Policy? Evidence from Business Investment Stimulus," Job Market Paper, Harvard University, Cambridge, MA, January 7, 2014.
69. Robert E. Hall and Dale W. Jorgenson, "Tax Policy and Investment Behavior," *American Economic Review* 57, no. 3 (June 1967): 391–414.
70. Hulse and Livingstone, "Incentive Effects of Bonus Depreciation."
71. Kevin A. Hassett and Gilbert E. Metcalf, "Investment with Uncertain Tax Policy: Does Random Tax Policy Discourage Investment?," *Economic Journal* 109 (July 1999): 372–93.
72. *Hearing on Extenders and Tax Reform: Seeking Long-Term Solutions before the United States Senate Committee on Finance*, 112th Cong., 2nd sess. (January 31, 2012) (testimony of Jason J. Fichtner, senior research fellow, Mercatus Center, "Increasing America's Competitiveness by Lowering the Corporate Tax Rate and Simplifying the Tax Code").
73. Auerbach, "Modern Corporate Tax," 12. See also Schuyler, "Comparing the Growth and Revenue Effects of Four Proposed Depreciation Systems."
74. Entin, "Tax Treatment of Capital Assets," 19.

## CHAPTER 6: WHY SHOULD CONGRESS REFORM THE MORTGAGE INTEREST DEDUCTION?

1. Edward L. Glaeser and Jesse M. Shapiro, "The Benefits of the Home Mortgage Interest Deduction," in *Tax Policy and the Economy*, vol. 17, ed. James M. Poterba (Cambridge, MA: MIT Press, 2003), 37–82.