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When Are Capitalization Exceptions Justified?

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I. INTRODUCTION

It is a widely accepted general principle that a taxpayer should capitalize an expenditure that produces a benefit lasting beyond the current tax period. Yet rules putting this principle into practice are among the most controversial in all of federal income taxation. Many argue that a retreat from the general principle is warranted when designing capitalization rules, and even those who argue that capitalization rules ought to be sweeping usually conclude that exceptions are necessary or desirable. For instance, most commentators accept uncritically that expenses incurred to procure certain intangible capital should be expensed, as under current law, without exploring whether expensing of intangibles costs is inevitable, although some have considered the implications of excepting intangibles costs from capitalization. Although the arguments with respect to exceptions to capitalization for tangible assets have received more attention, no consensus view has emerged regarding whether many of the exceptions are desirable as a matter of policy.

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3 Fullerton & Lyon, note 2 (evaluating welfare loss of allowing costs of intangible capital to be expensed).
This Article is a systematic analysis of the arguments in favor of departing from the normative or first-best capitalization rule. There are six principal arguments:

(1) For certain classes of assets, rights, and benefits, it is impossible to set rational depreciation rules and, in their absence, capitalization does more harm than good.

(2) The severe departure from normative capitalization rules with respect to intangible capital, the bulk of which can be classified as business goodwill, is necessary to offset the corporate double tax.

(3) Given a steady-state pattern of continuing investment, the results of expensing and capitalization (followed by depreciation) are approximately equivalent. In such cases, expensing is appropriate, at least where the cost of the resulting income-measurement inaccuracy is less than the administrative costs of capitalization.

(4) For short-term assets the efficiency cost of expensing is less than the administrative costs of capitalization.

(5) The cost of repairs should be deductible based on governing precedent.

(6) Indirect costs should be expensed when it is too burdensome either to identify them, or to allocate them when they relate to more than one capital asset, or both.

My conclusion is that the general capitalization principle is more robust than generally is appreciated. Some of the arguments justify departure from normative capitalization in limited instances, but none of them operates as a constraint on normative capitalization to the extent commonly accepted.

A common strand running through the arguments for departing from normative capitalization is that capitalization imposes high administrative costs—compliance costs on taxpayers and enforcement costs on the Service—and these costs often exceed the benefit of normative capitalization. Administrative costs undoubtedly outstrip benefits in certain cases, although the administrative costs argument depends critically on unavailable empirical data. When evaluating the administrative costs argument, policymakers often will be forced to rely on experience, anecdotal evidence, and intuition. There are, however, cases where policymakers can reach firm conclusions. For example, I develop a method of identifying cases where flaws in depreciation schedules are so severe that capitalization is unambiguously bad without regard to administrative costs.

The Article proceeds as follows. Section II introduces capital income neutrality as the basic goal of capitalization rules and describes how capitalization and depreciation rules can operate in tandem to tax capital income neutrally. Section II also describes how the tax burden
II. CAPITAL INCOME NEUTRALITY

A. Why Neutrality Matters

An income tax that affects investor choice among assets is not neutral. Suppose that there are two nearly identical assets, $A$ and $B$, and that before tax the rate of return on both assets is 10%. If an income tax is imposed on $A$ at a flat rate of 50%, but not on $B$, one would expect investors to shift capital from $A$ to $B$ until the after-tax rates of return from the two assets equilibrate. This would occur, for example, if the pretax return from assets $A$ and $B$ reached 14% and 7%, respectively. If, instead, a 25% tax applied to both assets, the 10% pretax return on both assets would be reduced to 7.5% after tax. Because the rates of return remained equal, no tax-induced investment shift would occur. Thus, this tax would be neutral.4

Neutrality is important because it leads to an efficient allocation of capital.5 Assets $A$ and $B$ provide an equal benefit to society and should be produced in the same proportion; if, however, the tax law treats them differently, they will be produced in different proportions. This inefficiency results in welfare loss. The tax makes taxpayers who act other than in accordance with their preferences worse off (here, taxpayers who switch to low-taxed asset $B$ from high-taxed asset $A$ even though, but for taxes, they would prefer asset $A$). And the government is no better off (the government raises no revenue from the taxpayers who switch since the tax rate on asset $B$ is zero).6

A perfectly neutral system would impose the same effective tax rate on all categories of capital investment.7 The extent to which non-neutrality translates into inefficiency is a function of “substitution effects,” or responses by taxpayers to differential taxation of competing

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5 E.g., Richard A. Musgrave & Peggy B. Musgrave, Public Finance in Theory and Practice 283-84 (5th ed. 1989); Gann, note 4, at 108; David F. Bradford & Treasury Dep't, Blueprints for Basic Tax Reform 46 (2d ed., rev. 1984) [hereinafter Blueprints]; 1 Treasury Dep't, Tax Reform for Fairness, Simplicity, and Economic Growth 15, 13 (1984); see also David A. Weisbach, Measurement and Tax Depreciation Policy: The Case of Short-Term Intangibles, 33 J. Legal Stud. 199, 208-09 (2004) [hereinafter Measurement] (“Optimal tax theories may indicate that some deviation from neutrality is desirable, but the size of the adjustments tends to be sufficiently small and of uncertain direction, and the benefits sufficiently minimal, that most economists assume that neutrality is best.”).
7 Musgrave & Musgrave, note 5, at 283.

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institutions. Familiar economic assumptions of perfect markets hold that investors are fully informed profit-maximizers who are completely responsive to changes in after-tax rates of return. In this hypothetical world, taxpayers always substitute low-taxed commodities for high-taxed commodities until after-tax returns equilibrate.

Real world markets are not perfect, however. In the face of differential taxation of competing investments taxpayers do not always substitute high- for low-taxed investments until after-tax returns reach equilibrium. Neutrality is still an important policy goal even in cases where differential taxation does not skew taxpayer behavior, since neutrality is important for a second reason: Non-neutrality results in inequity where markets do not fully adjust for the tax-favored status conferred on a given investment. For instance, if a 50% tax is imposed on asset A and no tax is imposed on asset B, experience shows, paradoxically, that the tax will affect the after-tax returns on A and B, but not to the point of complete equilibrium.

For instance, the pretax return on asset A might rise to 12% and the pretax return on asset B might fall to 8%, so the after-tax returns are 6% and 8% for A and B. Since, by hypothesis, the two assets are nearly identical, there is no reason why the owner of A should wind up 25% worse off after taxes than the owner of B.

B. The Building Blocks of Capital Income Neutrality—Normative Capitalization and Economic Depreciation

Income, according to the accretion (or Haig-Simons) definition, equals consumption plus accumulation. That portion of accumula-

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8 Id.
9 Weisbach, Line Drawing, note 6, at 1652-54 (defining an efficient tax as a tax that does not distort investor choice among investments and explaining that the definition assumes perfect markets).
10 E.g., Merle Erikson, Austan Goolsbee & Edward Maydew, How Prevalent Is Tax Arbitrage? Evidence From the Market for Municipal Bonds, 56 Nat'l Tax J. 259 (2003). Some economists have argued that the case for improving neutrality to promote economic efficiency is weak, but even they have conceded that improving neutrality might “contribute[s] to the perceived fairness of the tax system.” Lawrence H. Summers, Should Tax Reform Level the Playing Field?, in 1986 Proceedings of the 79th Ann. Conf. on Tax'n 119 (Stanley J. Bowers ed.).
12 David F. Bradford, Untangling the Income Tax 16 (1999); Henry C. Simons, Personal Income Taxation 50 (1938). It could be argued that the accretion income concept is not apposite when examining the taxation of businesses—particularly those operating in corporate form—because the definition was aimed at the taxation of individuals, not businesses, and particularly not businesses to which a separate entity-level tax applies. See Simons, supra, at 61-62, 206. Nevertheless, the accretion definition can be adapted to fit this situation, by replacing consumption with transfers to (and receipts from) investors, but leaving unaltered the accretion component of the familiar Haig-Simons definition, the por-
tion from the return to savings is referred to as capital income. Taxing capital income neutrally depends critically on two fundamental building blocks, capitalization and depreciation.

In an income tax, the function of normative capitalization rules is to identify instances where the taxpayer incurs an expense (whether in the form of a cash outlay, a purchase on credit, or part of a barter transaction) but does not suffer a diminution in wealth because the expense procures something with lasting value. Normative capitalization does not depend on the form of the investment: An outlay should be capitalized whether it is for a building, a piece of equipment, a quantity of natural resources, a contract right, or intangible value created through advertising or research and experimentation, and so forth, so long as the thing procured has lasting value.

When capitalization is required, the cost of acquiring the asset (or right, or future benefit, as the case may be) forms the taxpayer’s basis in the asset—the cost is suspended in an account representing either deductions to be allowed in the future, an offset to the amount realized when computing gain (or loss) on sale, or some of each. Depreciation deductions generally are allowed as the capital asset declines in value.
The combination of normative capitalization rules and economic depreciation achieves a matching of income and related expenses and an accurate periodic measurement of net income.

Capitalization is a binary determination: Capitalization is either required or it is not. In contrast, depreciation schedules are set across a continuum with a limit at only one end, where depreciation is allowed currently and in full. From this point, the period of depreciation can be stretched to infinity and the pattern of depreciation can be allowed in endless variations. Because the depreciation continuum is bounded at one end but not the other, the range of possible errors caused by flaws in depreciation rules is asymmetrical—it is possible for depreciation schedules to be set infinitely too long, but depreciation schedules cannot be set more than 100% too short.

As capitalization and depreciation rules operate in tandem and variations in depreciation rules are infinite, the combination of capitalization and depreciation rules is also infinite. It is useful, however, to identify the three basic patterns in which capitalization and depreciation rules interrelate. First, a capital cost might be misidentified as a deductible expense. When this occurs, depreciation rules have no role to play, since without capitalization no basis is created and there is nothing to depreciate. (The converse of the first pattern—misidentifying a deductible expense as a capital cost—is also possible, though this seldom occurs in practice.) In the second pattern, a capital cost is identified correctly, but the depreciation rules allow basis to be recovered currently. Usually, this is the result of a policy determination that depreciation rules should be used as a subsidy to encourage capital investment. In the third pattern, a capital cost is identified cor-
rectly and the depreciation schedule allows for capital cost recovery over some finite number of tax periods.

The first two patterns result from application of different rules but are otherwise identical. In both cases expensing is permitted. Expensing a cost that should be capitalized is economically equivalent, under certain conditions, to exempting the yield on the capital investment from tax.23 The important difference between the third pattern and the first two is that capital income bears some tax burden only under the third pattern. Where capitalization is required, the extent of the burden on capital income depends on the length and pattern of the applicable depreciation schedule and the nominal tax rate.

Thus, taxation of capital income depends on both capitalization rules and depreciation rules. Flaws in either capitalization rules (misidentifying a capital cost as a deductible one or vice versa) or depreciation rules (an unduly long or short recovery period, or recovery at the wrong pace within the designated period, or both) can cause over- or undertaxation of capital income. Unless the flaws are consistent across all capital assets, which is never the case, non-neutrality results.24 (It is also possible for flaws in capitalization rules and depreciation rules to offset, so that the resulting tax burden on capital income is more neutral than is implied by either set of rules considered alone.25)

Most commentators agree that the proper way to evaluate the relative neutrality of tax rules is the internal rate of return approach.26 Under this approach, neutrality is judged by comparing how taxes change the internal rates of return of competing investments. A tax system that causes the same percentage reduction in the internal rates of return for all assets is considered neutral.27 In the economics litera-


24 Joseph E. Stiglitz, Economics of The Public Sector 548 (2d ed. 1998) ("no economy has ever imposed a uniform tax on capital income").

25 For instance, if 90% of some capital investment were required to be capitalized, the taxpayer would derive a benefit from being able to expense the other 10%. Stretching the depreciation deductions on the 90% of the cost that was capitalized over an uneconomically long period would mitigate this benefit however. Cf. Musgrave & Musgrave, note 5, at 383 (explaining that many different combinations of depreciation schedules and tax rates can be set that will produce equivalent tax burdens in present value terms).

26 See, e.g., id. at 384-85; Mackie, note 2, at 294; Weisbach, Measurement, note 5, at 10-12. Some economists use an alternative measure, the rental cost of capital, though this measure leads to flawed conclusions in certain cases as discussed below. See Section III.D.

27 See Weisbach, Measurement, note 5, at 13, 18-19.
tured, the metric used to evaluate tax systems based on the internal rate of return approach is the marginal effective tax rate (hereinafter "effective tax rate"), which is the percentage reduction in the internal rate of return caused by taxes.\(^{28}\)

A tax system that imposed a neutral burden on capital income would impose equal effective tax rates on all capital assets.\(^{29}\) A neutrality-enhancing policy change is one that reduces the disparity in effective tax rates among assets.\(^{30}\)

The effective tax rate takes into account both the tax costs and tax benefits of holding an asset. Because the tax benefit of depreciation deductions varies depending on both the length of the depreciation schedule and the pattern of depreciation allowed over that schedule, for a given nominal tax rate, the effective tax rate will change as either the length or the pattern of the depreciation schedule changes.\(^{31}\) The length and pattern of depreciation deductions that cause the effective tax rate to equal the nominal rate is known as economic depreciation, which requires that the depreciation deduction allowed in every period match exactly the decline in the property’s value during that period.\(^{32}\)

It generally is accepted that economic depreciation for tangible assets is geometric, that is, decay in value proceeds at a constant percentage rate.\(^{33}\) Depreciation schedules that allow depreciation deductions on either on a straight line (ratable) or accelerated declining balance basis\(^ {34}\) cause the effective tax rate to be less than the nominal rate even where the tax depreciation schedule matches the economic useful life of the asset. The same is true when depreciation schedules are too short (to an inconsistent degree) relative to economic useful lives.\(^ {35}\)

\(^{28}\) Musgrave & Musgrave, note 5, at 384. The marginal effective tax rate technically is the difference between the pretax and post-tax internal rates of return on the investment divided by the pretax internal rate of return.


\(^{30}\) 2000 Treasury Study, note 29, at 35 ("Starting from a nonneutral tax system that imposes different marginal effective tax rates on different investments, a tax change is said to promote neutrality to the extent that it reduces the variation of marginal effective tax rates across investments.”).

\(^{31}\) See id. at 38.

\(^{32}\) Paul A. Samuelson, Tax Deductibility of Economic Depreciation to Insure Invariant Valuations, 72 J. Pol. Econ. 604, 606 (1964) ("[T]he only sensible definition of depreciation relevant to measurement of true money income is putative decline in economic value.”).


\(^{34}\) See, e.g., IRC § 168(b).

\(^{35}\) E.g., Mackie, note 2, at 308.
Finally, it is important to note that capital income neutrality is distinct from and does not depend on taxation of income from capital at the nominal tax rate. It is possible, perhaps even desirable, to have a system of capitalization and depreciation rules that at the same time taxes capital income neutrally and gives a tax preference to capital income vis-à-vis other forms of income such as wages. From the point of view of capital income neutrality, the important feature of the tax system is that all classes of capital are taxed at the same effective tax rate, not that the effective rate is set equal to the nominal rate. A set of depreciation schedules that are uniformly too short relative to economic depreciation thus would be fully consistent with capital income neutrality.

III. ANALYZING THE ARGUMENTS

Commentators have offered six distinct arguments for departing from normative capitalization rules. Each argument includes one or more of the following claims: (1) some unanswered empirical question defeats any reasonable expectation that moving closer to normative capitalization rules will enhance neutrality; (2) the administrative burden of normative capitalization rules exacts a higher price on the tax system than do the nonneutralities that result from nonnormative capitalization rules; or (3) some feature of the tax system counterbalances the nonneutrality introduced by flawed capitalization rules. All the arguments are premised on the theory of second best: Each argument reduces to a claim that given a certain constraint, the optimal set of capitalization rules differs from the normative ideal. I consider each argument in turn.

A. Uneconomic Depreciation

Some have argued that departing from normative capitalization rules is warranted where capitalization is followed by an uneconomic depreciation schedule because in these instances, capitalization is more trouble than it is worth. This argument has been advanced
primarily in the context of costs incurred to produce intangible capital to justify expensing items like advertising, employee training, and packaging design. Proponents of this argument claim it is impossible to estimate with any degree of accuracy how long the benefits that flow from expenditures of this sort will last. Consequently, depreciation schedules allowing for the recovery of any capitalized cost cannot be set in a way that would enhance neutrality (as compared with expensing). Therefore, proponents argue, expensing is justified because there is no reason to expect that capitalization and depreciation will promote efficiency and equity. In other words, capitalization coupled with sufficiently uneconomic depreciation is worse than expensing.

This argument is appealing intuitively and underlies the view held by some that resolution of capitalization controversies should be influenced by the availability and timing of the depreciation deductions that will be allowed if capitalization is required, rather than solely by reference to the question whether the cost in question will produce a future benefit. Proponents of the argument usually frame their analysis in terms of the depreciation deductions allowed under current law, rather than testing the argument against the best possible depreciation schedule that could be designed given empirical and practical limitations on designing such schedules. And they have cut short their analysis before considering the range of situations where practical limitations on setting depreciation schedules (as opposed to limitations imposed by current law) make nonnormative capitalization rules a second-best optimum. No one has explored the extent to which the argument is persuasive if the policymaker is assumed to have the ability (within practical boundaries) to optimize both capitalization and depreciation rules. This Subsection fills that gap. I conclude that

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n.349 ("My notion that capitalization without depreciation produces more distortion than a current deduction has become conventional wisdom."); Case Comment, An Analysis of *INDOPCO, Inc. v. Commissioner*, 54 Ohio St. L.J. 1505, 1516-19 (1993).

40 Lee, note 1, at 343-45, 355.
41 Id. at 345.
42 Id.
43 See note 39.
44 E.g., Commissioner v. Idaho Power Co., 418 U.S. 1, 20-23 (1974) (Douglas, J., dissenting) (arguing that it was inappropriate to capitalize the cost of a truck that would last 10 years into the taxpayer's basis for a building with a 40-year tax depreciation schedule); Lee, note 1, at 354 & n.405, 351 & n.386 (espousing this view and citing cases where the courts were persuaded by this argument).
45 See, e.g., Lee, note 1, at 350-52.
46 E.g., id; Gunn, note 15, at 492 (acknowledging that "[i]deally, the costs of a special advertising campaign, or of training employees in new techniques, or of obtaining new customers should be capitalized and amortized over whatever period results in matching those costs against the revenues they were incurred to produce," but concluding that "it is inconceivable that amortization of such costs would be allowed") (emphasis added).
practical difficulties in setting depreciation schedules do justify a departure from normative capitalization but only in certain cases.

Assuming a policymaker has an unlimited ability to design both capitalization and depreciation rules (so questions of political feasibility are put to one side), the policymaker will encounter difficult problems when attempting to design neutrality-enhancing depreciation rules. Lack of empirical information about certain assets might make it impossible to design a depreciation schedule for such assets close enough to economic depreciation so that capitalization and use of that best possible schedule would result in greater neutrality than expensing. Even when a depreciation schedule can be set close enough to economic depreciation for a given asset so that capitalization and depreciation will be neutrality-enhancing (when compared with expensing), limitations on the design of administrable, system-wide depreciation rules might make expensing a better policy choice than capitalization and depreciation. For example, grouping heterogeneous assets into classes and assigning depreciation schedules class by class, rather than asset by asset, results in nonneutral taxation of dissimilar assets classed together, yet grouping is considered a practical necessity. Even if a depreciation system can be designed that overcomes such impediments, capitalization and use of this depreciation system might not be worth the candle if the incremental benefit from using the system (that is, greater efficiency and equity resulting from the neutrality enhancement) is smaller than the added cost of designing and administering the system.

In the remainder of this Subsection I first demonstrate that a depreciation schedule for a given asset need not be perfect to be neutrality-enhancing. Indeed, even a depreciation schedule many times longer than the useful life of the asset in question might be neutrality-enhancing when compared with expensing. Then I discuss the principal difficulties in setting depreciation rules, including the need (but, for some assets at least, the inability) to determine the useful lives of assets, problems caused by grouping assets into classes, and the problem of designing depreciation rules that account for asset price risk. Finally, I discuss how the administrative costs of requiring capitalization and depreciation should factor into the policymaker’s calculus.

1. Determining the Tolerance for Error in Setting Depreciation Schedules

A neutrality-enhancing change is one that reduces variation in effective tax rates across assets. Capitalization is superior to expensing,
provided that capitalization is followed by a pattern depreciation over a schedule that will result in a deviation in the effective tax rate (as compared with some benchmark effective tax rate determined to be the neutral rate) smaller than the deviation in the effective tax rate that is caused by expensing (when the zero effective tax rate that results from expensing is compared with the same neutral benchmark rate). Any such depreciation schedule is (at least) minimally acceptable. The most flawed tax depreciation schedule that is still minimally acceptable sets the tolerance for error.

Suppose that the economic depreciation schedule for a given asset—used in this example as the benchmark—is five years and the nominal tax rate is 35%; the effective tax rate also will be 35%. Expensing the cost of this asset would drive the effective tax rate for this asset to zero, a 35 percentage points deviation from the benchmark (from 35% to zero). A depreciation schedule that causes a deviation in the effective tax rate of less than 35 percentage points (resulting in an effective tax rate greater than zero and less than 70%) would enhance neutrality as compared with expensing and therefore would be within the tolerance for error.

If the cash flows from a project are known, the tolerance for error in setting minimally acceptable depreciation schedules can be computed mathematically. Using simple examples, I demonstrate that the tolerance for error is high, probably higher than most commentators believe, though no one has yet sought to quantify it. In the following examples, I hypothesize an expenditure that results in a benefit for \( n \) years, beginning in the year following the expenditure; and I assume the neutral effective tax rate is the effective tax rate that results from capitalization and use of straight line depreciation over the asset's useful life, that is, straight line depreciation over \( n \) years. I call this neutral effective tax rate the benchmark rate. (Because I am using straight line depreciation, rather than economic depreciation, the benchmark rate is slightly less than the nominal rate, and it changes, but only slightly, for assets with different useful lives.) I then test how the effective tax rate changes as the depreciation schedule is extended to gauge how far from a given asset's actual useful life the

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48 See note 30 and accompanying text.
49 If depreciation is economic, the effective tax rate equals the nominal tax rate. See note 32 and accompanying text.
50 Following Weisbach, I use straight line depreciation when computing the neutral benchmark rate to keep the math simple, but the results would not change under realistic patterns of depreciation. Weisbach, Measurement, note 5, at 14.
51 In the examples below, for instance, I assume straight line depreciation is allowed for assets that produce income in an even pattern alternatively over three, five, and ten years; given a nominal tax rate of 35%, the resulting effective tax rates are 34.45%, 33.95%, and 32.84%, respectively.
Consider the following. A taxpayer spends $400 currently on a seminar for its employees that will produce $100 in pretax returns for each of the following five years. Normative capitalization rules would require the $400 upfront cost to be capitalized, since it produces a future benefit. If the taxpayer must capitalize the cost of the seminar and is allowed depreciation deductions over five years on a straight line basis, the effective tax rate is 33.95%, assuming a flat nominal rate of 35%. If the cost is expensed, the effective tax rate is zero.\footnote{52 This assumes the scope conditions for the equivalency between expensing and yield exemption to hold are not violated. Graetz & Schenk, note 23, at 290-91 (describing conditions).}

Expensing is an extreme response to the difficulty of determining the lifespan of the benefits of the seminar, and results in a 33.95 percentage points (that is, a 100%) change from the benchmark effective tax rate resulting from straight line depreciation over five years.\footnote{53 Regardless of the effective tax rate under the benchmark case, expensing will always result in a 100% change in the effective tax rate so long as the scope conditions for the expensing-yield exemption equivalency to hold are not violated.} The other extreme response is “perpetual capitalization,” where the cost of the seminar is capitalized and cannot be recovered until the business is either dissolved (at which time the capitalized cost would be deducted)\footnote{54 See INDOPCO, Inc. v. Commissioner, 503 U.S. 79, 83-84 (1992) (“where no specific asset or useful life can be ascertained, [capitalized costs are] deducted upon dissolution of the enterprise”).} or sold (at which time the capitalized cost would offset the sale proceeds).\footnote{55 IRC § 1001(a).} If capitalization is in fact perpetual (that is, no depreciation deductions are ever allowed),\footnote{56 The computation described in the text assumes that neither a sale or dissolution occurs for such a long time that the present value of the benefit is nil.} the effective tax rate is 183%.\footnote{57 The pretax internal rate of return is 7.93%. The after-tax internal rate of return is negative 6.54%; it is negative because the sum of the after-tax cash flows (5 x $65 = $325) is less than the initial investment of $400. The effective tax rate is computed as follows: \[ 7.93\% - (-6.54\%) \] + 7.93\% = 183\% (rounded).} Thus, perpetual capitalization causes a deviation from neutrality of 149 percentage points, over four times greater than the deviation caused by expensing.\footnote{58 183\% - 34\% = 149\%} If these two extreme solutions were the only options, the argument that expensing should be allowed is clearly correct.

Consider what would happen, though, if depreciation were not disallowed completely but merely delayed. How long would the tax depreciation schedule of the seminar have to be extended to result in a greater deviation from the benchmark rate than the 33.95 percentage
points deviation caused by expensing? The answer is 29 years if depreciation is allowed on a straight line basis,\(^{59}\) implying a tolerance for error in setting the depreciation schedule of up to 23 years. Therefore, if the lifespan of the benefits from the seminar can be estimated even very roughly, expensing cannot be justified on the ground that it results in greater neutrality (that is, results in a smaller disparity in effective tax rates) than capitalization followed by depreciation.

To get a rough sense of how this result changes as the useful life of the capital asset in question changes, suppose the facts are varied so that, alternatively, the seminar’s benefit lasts for three or ten years, rather than five. In the 10-year case, assume that there is a $100 increase in pretax returns for each subsequent year. The cost is adjusted so the internal rate of return from the seminars that last three and ten years continues to be 7.93\%, as it was for the seminar that lasted five years. Thus, the seminars providing three- and ten-year benefits are assumed to cost $258 and $673, respectively. For expensing to dominate capitalization and depreciation of the three— and ten-year seminars, depreciation must be stretched over more than 17 and 64 years, respectively.\(^{60}\) In these three examples, depreciation schedules five and even six times longer than the economic life of the asset in question are within the tolerance for error.\(^{61}\)

These examples held constant the pretax rate of return of the seminar when the depreciation schedule was altered. It is reasonable to assume that the demand for and thus the price of seminars would change depending on the length of the depreciation schedule, since

\(^{59}\) If depreciation is allowed over 28 years on a straight line basis, then the effective tax rate equals 67.4\%, just under a 34 percentage point change from the benchmark of 34\% (the effective tax rate if straight line depreciation is allowed over five years). Stretching the depreciation schedule out for one more year to 29 years, the effective tax rate is slightly above 68\%, which amounts to over a 34 percentage points change from the 34\% benchmark rate.

\(^{60}\) A seminar costing $258.03 and providing a $100 benefit for the following three years has a pretax internal rate of return of 7.93\%. The effective tax rate for the three-year seminar is 34.45\%, assuming straight line depreciation is allowed over three years. See note 51. Holding the price of the seminar constant and allowing depreciation over 18 years, the after-tax internal rate of return is 2.46\%. The effective tax rate is 68.96\%, computed as follows: (7.93\% - 2.46\%) + 7.93\%. The change in effective tax rates is over a 34.45 percentage points change from the 34.45\% benchmark rate, and therefore exceeds the tolerance for error.

The effective tax rate for the 10-year seminar assuming depreciation is allowed over 10 years is 32.84\%. See note 51. Holding the price of the seminar constant and allowing depreciation over 65 years, the after-tax internal rate of return is 2.71\%. The effective tax rate is 65.86\%, computed as follows: (7.93\% - 2.71\%) + 7.93\%. The change in effective tax rates is over a 32.84 percentage points change from the 32.84\% benchmark rate, and therefore exceeds the tolerance for error.

\(^{61}\) The tolerance for error in setting depreciation schedules for the three-, five-, and ten-year assets is 5.7, 5.8, and 6.4 times the economic life of those assets, respectively.
the depreciation schedule affects the after-tax rate of return, which is the most important factor for investors.\(^{62}\) A more complex model could be designed—one that adjusts the price depending on the present value of the allowable depreciation deductions—though such a model would have to include an assumption regarding taxpayer response to a change in depreciation rules, which would be extremely difficult to predict.\(^{63}\) There is no a priori reason to conclude that the implied tolerance for error in setting the length of depreciation schedules would be less than the one under my more simplistic model. Indeed, there is good reason to think that the opposite would be true; that is, a more complex model would imply a substantially greater tolerance for error.\(^{64}\)

These examples are highly stylized. It seems unreasonable, for instance, to assume, as the examples did, that the benefits of a seminar (or of advertising, to take two common examples of items with respect to which the argument under consideration has been advanced) are reaped in a level pattern, and that they provide no current benefit (that is, no benefit in the year the cost is incurred). When a cost produces both a current and a future benefit, the extent of the current benefit is key because expensing is appropriate with respect to the portion of the cost producing the current benefit. It is also impossible in practice to determine the actual pattern of economic depreciation for most capital assets (especially intangible capital) since it is not ob-

\(^{62}\) If the pretax cost of the seminar is fixed, as the depreciation schedule is lengthened, the after-tax cost of the seminar rises since the present value of the depreciation deductions declines. Compressing the depreciation schedule will have the opposite effect. See Weisbach, Measurement, note 5, at 12-13 (proposing a similar model that adjusts asset price as the present value of the depreciation deductions change).

\(^{63}\) Predicting changes in behavior as a result of tax changes is a confounding problem. Michael J. Graetz, Paint-By-Numbers Tax Lawmaking, 95 Colum. L. Rev. 609, 670 (1995) (discussing the difficulty of “anticipating changes in behavior that will be induced by changes in the tax law”).

\(^{64}\) A model proposed by David Weisbach assumes that the price of an asset will fully reflect the tax benefit of accelerated depreciation (or, conversely, the tax detriment of delayed depreciation). Weisbach, Measurement, note 5, at 12-13. Making this assumption in the context of the five-year seminar used in the example, the depreciation schedule must be lengthened to over 61 years for the percentage change in effective tax rates to surpass the 100% change caused by expensing. This is more than a two-fold increase over the 29-year result yielded by my simpler model that holds the price constant as the depreciation schedule changes. As discussed above, economists have shown that markets adjust—though not completely—for the tax-favored status conferred on certain investments. See notes 10-11 and accompanying text. If, as is likely, markets adjust by lowering prices—but only in part—for the tax detriment of uneconomically long depreciation schedules, the tolerance for error in setting depreciation schedules will be greater than my model predicts. Designing a realistic model depends on the sensitivity of consumer behavior to changes in depreciation schedules, which is extremely difficult to predict. See Graetz, note 63, at 670.
servable directly. Thus, as a practical matter, computing the acceptable tolerance for error is usually impossible.

Still, given the difficulty of determining the pattern of economic depreciation for certain assets and the incremental administrative costs that follow from capitalization, to take just two of the difficult issues discussed below that the policymaker will encounter, developing a refined estimate of the tolerance for error in setting depreciation schedules should be less important to the policymaker than developing the intuition that the tolerance for error is high. And, given a rough sense of the high tolerance for error, policymakers should not jump to the conclusion that capitalization is more trouble than it is worth without first examining whether neutrality-enhancing depreciation rules can be established. I turn to that issue now.

2. Difficulties in Setting Adequate Depreciation Schedules

The argument that an inability to set acceptable depreciation schedules justifies expensing is most compelling in the context of intangibles. The argument has little persuasive force, however, in the context of most tangible assets—the consensus view of commentators is that adequate depreciation schedules for tangible assets can be (and some argue have been) set. In a large scale study published in 2000, Treasury estimated the effective tax rates under current law of various classes of capital used by corporations. Figure 1 shows Treasury's conclusions.

The first five categories of assets in Figure 1 are all tangible assets for which capitalization is required. The variation in the effective tax rates among these five categories is attributable to flaws in depreciation schedules. Others have considered the issues relating to tangible asset depreciation and have reached firm conclusions that (1) depreciation policy is intended to and in fact does operate as a subsidy to encourage capital formation, and (2) Congress could improve capital income neutrality with respect to tangible property if it chose to do so, though such a reform is not politically popular currently. Some have even concluded (3) that the non-neutralities that result

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65 See note 39.
66 See Gann, note 4, at 149.
68 Id. (effective tax rate “differences reflect differences in cost recovery provisions and imply that the current cost recovery system is not neutral, because neutrality implies a common marginal effective tax rate on all investments”).
70 E.g., Gann, note 4, at 149 (concluding that substantially neutral taxation of tangible assets is an achievable goal).
from flaws\textsuperscript{71} in depreciation rules as applied to tangible capital are not large enough to impose significant economic costs, suggesting they are not worth fixing.\textsuperscript{72} These conclusions all support the view that for tangible capital assets the argument that normative capitalization should be relaxed given an inability to set adequate depreciation schedules is unpersuasive, since adequate depreciation schedules in fact can be set.

The sixth category of assets, intangibles, presents a different story. As is readily apparent from Figure 1, intangibles are dramatically undertaxed relative to the first five categories. This is the result of a breakdown in capitalization rules, not favorable depreciation allowances.\textsuperscript{73} Under current law the cost of most intangible assets need not be capitalized.\textsuperscript{74} This implies that substantial improvement in neutrality could be achieved if the law required capitalization of the

\textsuperscript{71} By "flaws," I mean departures from neutral depreciation rules. Thus, flaws include unintended errors that result from lack of necessary empirical data as well as departures intended to operate as a subsidy.

\textsuperscript{72} E.g., 2000 Treasury Study, note 29, at 44 ("[S]everal analysts question whether remaining depreciation-induced tax differences across [tangible capital] investments within the business sector are large enough to impose significant economic costs.").

\textsuperscript{73} Id. at 38 ("Because of expensing, corporate investment in intangibles face [sic] a very low 3.8 percent marginal effective tax rate."); id. at 38, n.143 ("To the extent that intangibles are not expensed, they would face a higher marginal effective tax rate.").

\textsuperscript{74} For some intangibles expenditures—most notably research and experimentation costs—capitalization is required but the depreciation schedules allow for expensing. IRC § 174. As discussed above, whether expensing is allowed by capitalization rules or depreciation rules makes no economic difference. See text accompanying note 23.
cost of intangibles. This is true, however, only if neutrality-enhancing depreciation schedules could be set for intangibles.

To determine whether acceptable depreciation schedules can be set for intangibles, I leverage the extensive literature examining the practical limits on setting depreciation schedules for tangible assets I examine each of the practical difficulties encountered in setting depreciation schedules for tangible assets and explore whether each difficulty is likely to be more acute for intangibles.

The first, most basic problem encountered in fashioning depreciation rules is measuring economic depreciation, which tracks decline in value over time. To determine economic depreciation, value must be measured periodically. Some economists have concluded that economic depreciation of tangible assets can be measured based on trading prices in used asset markets. The fountainhead of the vast literature on this subject is in an empirical study that appeared in a series of papers published in the early 1980's by Charles Hulten and Frank Wykoff. Though the Hulten and Wykoff study is controversial, economists generally consider it to provide sufficiently accurate information to establish neutral depreciation schedules.

Unfortunately, no study similar to Hulten and Wykoff's can be performed for most intangible assets, given the absence of used asset markets. Business goodwill and a trained workforce, to take two examples, are not bought and sold like cars and buildings. When they do trade, they are exchanged as an inseparable part of a going business, and it is difficult to determine how much of the overall purchase price is attributable to the business’s constituent parts.

Facing this difficulty, economists have attempted to deduce the extent of any intertemporal benefits of intangibles expenditures by correlating one period’s expenditures for things like advertising or

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76 Id.; 2000 Treasury Study, note 29, at 111-15 (surveying the economic literature evaluating the Hulten and Wykoff study).
77 E.g., 2000 Treasury Study, note 29, at 45-46; David W. Brazell & James B. Mackie III, Depreciation Lives and Methods: Current Issues in the U.S. Capital Cost Recovery System, 53 Nat'l Tax J. 531, 544 (2000). But see Summers, note 10, at 8 (“Hulten and Wycoff [sic] did as much as probably can be done with the data they had at their disposal. But it is appropriate to attach a great deal of uncertainty to their calculations.”).
78 Section 1060 is a rough-justice measure prescribing rules for allocating purchase price among assets, including goodwill and going concern value. It was enacted to quell controversy between taxpayers and the Service that had arisen “principally because of the difficulty of establishing the value of” such assets. S. Rep. No. 99-313, at 254 (1986), reprinted in 1986-3 C.B. 1, 254. The presence of a rule that establishes value for tax purposes does not imply that the economic value of intangibles could be established satisfactorily for depreciation purposes.

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research and development to subsequent period sales (or, in some instances, the value of intangible assets held by a firm in subsequent periods). Although the results of these studies seemed promising at first, more recent economic studies conclude that no reliable method exists for gauging the durability of many forms of intangible capital. Thus, for intangible assets that do not trade in used asset markets, measuring economic depreciation is more problematic than it is for most tangible assets.

A second major problem in setting depreciation schedules is that administrative considerations force the use of depreciation schedules for groups (or classes) of assets, rather than individual assets. A system that groups all assets into one of a limited number of categories with a fixed depreciation schedule is inherently simpler to administer than one that requires a particularized determination of the useful life and pattern of depreciation of all assets. Most taxpayers probably do not know the precise pattern of economic depreciation for the assets they use in their businesses and, even if they did, it would be unrealistic to expect them to act with candor if required to supply this information as part of their periodic tax reporting. Allowing taxpayers to report according to their own estimate of the useful lives of the assets they own likely would result in substantial non-neutralities and inequities (a consequence of undetected aggressive reporting positions by some taxpayers) absent a substantial increase in the audit rate, an expensive proposition.

80 Id. at 275 (concluding that no model currently in existence can predict the durability of advertising or research and development costs); Kyle Bagwell, The Economic Analysis of Advertising 31 (2002) (concluding that the effect of advertising on long-term profitability is “difficult to determine and appears to vary across industries”); 2000 Treasury Study, note 29, at 31 (“The degree to which expenditures on advertising and research create long-lived assets that depreciate is uncertain.”).
81 This is an overgeneralization. There are, to be sure, tangible assets for which there is no used asset market. To overcome this problem, Hulten and Wykoff extrapolated from data on those assets that did trade to determine the rate of economic depreciation of those assets that did not trade. Hulten & Wykoff, note 75, at 92-94; see also 2000 Treasury Study, note 29, at 113 (defending the accuracy of Hulten and Wykoff’s extrapolation).
83 See id. at 76.
84 Id. at 74 (“individual taxpayers may not be the best evaluators of future asset obsolescence”); id. at 121 (discussing prior Treasury studies that failed for lack of empirical data from taxpayers: “[O]nce an asset had been fully depreciated, the accounting records of many companies were not well suited to provide information on whether the asset was still owned by the company, and if so, where within the company it was located. [T]his . . . suggests that relying heavily on the accounting records of the company . . . should be viewed with caution.”).
An alternative would be for the Service to determine depreciation schedules for each asset; however, this approach is impractical for several reasons. First, there is no reason to expect the Service to have better information regarding the useful lives of taxpayers’ assets than taxpayers themselves. Second, this approach would imply a more pervasive role for the Service in tax compliance than currently exists, which is likely to be politically unpopular and expensive. Third, the Service would have to hire additional economists and appraisers since the revenue agents currently employed likely lack the necessary skills to set depreciation schedules. Integrating these professionals into the Service’s bureaucracy would be difficult and costly. Since neither taxpayers nor the Service are well equipped to set depreciation schedules asset by asset, pragmatism dictates grouping assets into classes for which useful lives are established ex ante, either legislatively or by the Service. Experience bears out the conclusion that grouping avoids controversial, fact-based inquiries into the useful life of particular assets that would result from an asset-by-asset approach.

Income measurement errors result from grouping heterogeneous assets into a single class. The extent of these errors is a function of the extent to which the depreciation patterns for assets classed together differ. For example, grouping together assets that depreciate economically over a term of between four and six years in a class with a five year tax depreciation schedule, would result in more accurate income measurement more often than would grouping together assets that depreciate economically over periods of between one and nine years. Thus, narrowly defined groups allow the useful life and pattern of depreciation for each group to be tailored more closely to the economic depreciation of assets within that group. But narrowly defined groups implies more groups. The greater the number of groups, the greater the number of potential controversies regarding how particular assets should be classified. Thus, the policymaker’s goal in choosing the breadth and number of groups is to strike the right balance between the competing objectives of reducing controversies and

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85 E.g., id. at 76-77.
86 Before 1981, the use of asset classes was not mandatory. Congress found pre-1981 law “unnecessarily complicated” because it required “determinations on matters, such as useful life and salvage value, which are inherently uncertain and, thus, too frequently result in unproductive disagreements between taxpayers and the Internal Revenue Service.” S. Rep. No. 97-144, at 47 (1981), reprinted in 1981-2 C.B. 412, 425.
88 Id. at 76-77.
89 Id. at 76 (“Defining asset classes narrowly would increase the number of asset classes in the depreciation system and would increase the number of classification controversies that would need to be resolved.”)
minimizing the non-neutralities that result from heterogeneous groupings.

Establishing a grouping system that is both administrable and sufficiently accurate is an attainable goal for tangible assets since the heterogeneity of tangible property is not so pronounced that atomized (and therefore administratively unwieldy) groups are required. Current law groups nearly all personal property into one of six asset classes with recovery periods ranging from three to twenty years.\(^90\) Congress is content to group together, for example, a doctor’s car used for house calls that travels a mere 5,000 miles per year, a pizza-delivery truck that travels 10 times that far, and a pickup truck that routinely hauls tons of materials to job sites.\(^91\) It is unrealistic to think that the three vehicles will have identical useful lives. Nevertheless, Congress appears to have made a judgment that the variation in useful lives among the three assets is not so great that the resulting non-neutrality is intolerable.\(^92\)

It is an open question whether grouping together intangibles also would be tolerable from the standpoint of both income measurement and tax administration. It is at least possible, if not likely, that the income-measurement problem from grouping will be more severe for intangible assets than for tangible assets if asset classes are to be sufficiently broad to be administrable.

Consider the case of advertising. It has long been widely accepted that advertising produces both current and substantial future benefits.\(^93\) Under normative capitalization, therefore, advertising costs should be capitalized to the extent of the future benefit. Yet all advertising is not alike. Some advertisements provide no current benefit. Examples include war-time advertisements for products not currently offered for sale,\(^94\) and advertisements for an event that is not set to

\(^{90}\) IRC § 168(c).

\(^{91}\) IRC § 168(e)(3)(B)(i).

\(^{92}\) See notes 69-72 and accompanying text.

\(^{93}\) For example, economist Eugene Steuerle has said that a justification for requiring advertising to be capitalized is that “advertising is a capital expense and should be amortized over a period of time,” while others have argued that allowing advertising costs to be expensed gives “an unfair advantage to companies that invest principally in advertising, over those that invest mostly in plant and equipment.” Alan Murray, Businesses Are Worried Over Impact of a Plan to Reduce Tax Break for Advertising Expenses, Wall St. J., Feb. 28, 1986, at 54.

\(^{94}\) For instance, during World War II, many manufacturers advertised their consumer products even though their entire productive capacity was devoted to military supplies. Slogans included “for war today—for your products tomorrow” or “when victory is achieved . . . and consumer products are again more readily available . . . you’ll cherish the possession of this distinctive time piece.” See Dale L. Flesher, Accounting for Advertising Costs, app. iv at 90-91 (1979) (ellipses in original) (reprinting of World War II print advertisements). These advertisements were not intended to provide and indeed could not have provided any current benefit. Nevertheless, these costs were deductible (and still would be
occur until a future tax period. For example if the National Football League were a calendar year taxpayer, expenses incurred during the season (which runs from September through December) to increase attendance at the Super Bowl the following January would have no benefit during the year the costs are incurred.95

On the other hand, some advertising produces only a current and no future benefit. For example, the benefit of expenditures by the concert promoter trumpeting the 10 Bruce Springsteen concerts held during the summer of 2003 at the Meadowlands Sports Complex in New Jersey were fully perishable, expiring worthless as soon as the concerts were over (or perhaps even sooner—as soon as the tickets sold out). Springsteen may have derived a future benefit from the promotion if, for example, he picked up new fans or the loyalty of existing fans intensified. So too may the Meadowlands Sports Complex have derived a future benefit if concert goers found it a pleasant atmosphere and decide to go back based on their experience at one of his concerts. But for the concert promoter, there was no future benefit.96 Between these polar cases there is a continuum representing different combinations of future and current benefits.

How should advertising be grouped? Putting aside administrative considerations and the inherent difficulty of measuring the future benefit from advertising, this question can be answered easily: All advertisements with equal useful lives should be grouped together. The number of groups should be determined based on the range of useful lives observed in the marketplace. Yet there is reason to think that any more than one group might raise insoluble administrative problems. Suppose two groups were established: advertisements eligible for expensing, and two-year advertisements. Under this system who is to determine the appropriate classification for a given advertisement? Under the modified accelerated cost recovery system, the pickup truck in the foregoing example will be treated as five-year property (together with the doctor’s car and the pizza delivery car) so

deductible under current law). See Boris I. Bittker & Lawrence Lokken, 1 Federal Taxation of Income, Estates and Gifts ¶ 20.4.5 (3d ed. 1999) (dismissing the occasional suggestion by courts that advertising in extraordinary cases may be a capital expense as "reminders that a sleeping dog exists" and suggesting that the Service’s "long acquiescence in the deduction of advertising costs may have been implicitly ratified by congressional silence").

95 Advertisements promoting the NFL playoffs presumably heighten fans’ interest in the regular season, since the regular season determines who makes the playoffs. I have in mind an advertisement directed just at potential Super Bowl attendees with time and place information, for example, that does not promote NFL football more generally.

96 This assumes that the promoter is promoting this one concert series and advertising for this series will not help it attract attention to concerts in other cities in future taxable periods, which is possible.
long as the truck weighs no more than 13,000 pounds. But for most advertising there is no observable characteristic that could be used in a similar fashion to distinguish advertisements the cost of which should be expensed (those with no future benefit) from those the cost of which should be capitalized (those providing a future benefit).

Thus, although a multi-class depreciation system might be necessary for the class lives to be adequately congruent with the economic lives of the items classed together, administering a multi-class system for intangibles expenditures like advertising would pose serious administrative difficulties.

If a single asset class for all advertisements is the only practical solution, the NFL's Super Bowl advertisement, with no current benefit, and the concert promoter's advertisement, with only current benefit, would be grouped together. This would result inexorably in at least one of the two taxpayers being mistaxed. Whether the resulting non-neutrality is more pernicious than the non-neutrality that inevitably results from grouping together heterogeneous tangible assets is open to debate, but there is reason to think that it is. With respect to tangible asset depreciation, at least some distinctions are possible, whereas any distinctions with respect to certain intangibles (such as the advertisements in the prior examples) appear impossible (or, at a minimum, administratively infeasible).

Generalizing from the foregoing discussion, although grouping is a requirement of a workable depreciation scheme, grouping generally would be more problematic for intangible capital than it would be for tangible assets. The quality of being (at least potentially) "ungroupable" is not unique to advertising. An attempt to establish asset classes for other intangibles such as employee training or research and experimentation is likely to encounter many of the same problems as those identified for grouping advertising. Intangible assets can be broken down into broad classes—for instance separating the benefits procured by advertising, research and experimentation, and employee training is possible since the costs of procuring these benefits are divisible—but within each broad class, it may not be possible to create sub-

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98 E.g., Landes & Rosenfield, note 79, at 275.
99 Advertising durability may be more endogenous than is tangible asset durability. The external factor on which the useful life of advertising is thought to depend is the response of the advertiser's competitors. Bagwell, note 80, at 31. If the endogeneity of advertising is high enough, then the useful life of a particular advertisement is unknowable ex ante and there is no possibility of successfully administering a system with more than one asset class for advertising.
100 For instance the Service assigns taxis to a class for which depreciation is allowed over three years, trucks weighing under 13,000 pounds to a five-year class, and trucks weighing 13,000 pounds or more to a six-year class. Rev. Proc. 87-56, 1987-2 C.B. 674.
classes since intangibles do not lend themselves readily to categorization.

A third problem in setting rational depreciation schedules is that they are constructed ex ante rather than ex post, which means they do not account for asset price risk. Two examples of events that might trigger an unexpected decline in the value of capital assets are a technological breakthrough that causes premature obsolescence and a shift in consumer tastes that casts yesterday's preferred products (and the machinery used to produce them) out of favor. Unexpected events also can result in an increase in the value of capital assets, for example, the price of a building during a real estate bubble.

Economists have argued that depreciation schedules for relatively risky assets should be accelerated to compensate the owners of such assets for bearing a disproportionately large share of the capital price risk. The argument in favor of accelerated depreciation for risky assets is a corollary of the general proposition that the government shares a part of a taxpayer's asset price risk by capturing through taxes a portion of any unexpected windfall, or mitigating the taxpayer's bad fortune in the event of an unexpected decline in asset value through lower taxes (or even a refund). Although risk sharing between taxpayers and the government generally occurs throughout an income tax, it does not occur as fully for assets with pre-set depreciation schedules. The government does not share an unexpected decline (or rise) in the value of an asset (unless and until the property is scrapped or sold), since there is no mechanism for adjusting depreciation schedules once assets have been placed in service. The argument concludes that accelerating depreciation schedules for more-risky assets relative to the depreciation schedules for less-risky assets, would put the owners of more- and less-risky assets on par with one another. Accelerated depreciation for relatively risky assets essentially is used as a surrogate for the government's usual risk-sharing function.

Does asset price risk affect tangible and intangible assets differently? Some have suggested that the answer to this question is yes,
since intangibles are riskier than tangible assets.\textsuperscript{106} Although no econometric study has been conducted to support the proposition that intangibles are riskier than tangible capital, this is the widely held view of finance and accounting professionals and commentators.\textsuperscript{107} If this view is correct, then pre-set depreciation schedules' insensitivity to risk is more important for intangibles than for tangible assets. Consequently, the non-neutrality stemming from expensing intangibles costs is less than is implied by the radically different effective tax rates for intangibles and tangible assets.\textsuperscript{108} This adds credence to the argument that capitalization of intangibles is more trouble than it is worth, since expensing is closer to the economically correct treatment than is implied by an analysis that does not consider the (widely accepted yet unproven) incremental risk of intangibles. Theoretically, if the incremental risk for intangibles is high enough, the risk-adjusted depreciation schedule for intangibles might be equivalent to expensing.\textsuperscript{109} Short of an econometric study, however, there is no way to quantify how much risk matters in this context, that is, no way to judge the incremental risk of investing in intangible (as compared with tangible) assets as a class or the depreciation schedule adjustment necessary as a result of this increased risk.

In addition to the three difficulties that are (or at least that may be) more acute for intangibles—the absence of a used asset market, the grouping problem, and risk—there are a number of problems encountered when designing depreciation rules that are common across all asset classes. For instance, economic depreciation requires that changes in asset values, both positive and negative, be taken into account annually\textsuperscript{110} and that decline in value due to aging (for example) must be netted against accrued but unrealized gains.\textsuperscript{111} Also, economic depreciation requires that basis be indexed for inflation,\textsuperscript{112} which may be desirable and even feasible but has proven politically

\textsuperscript{108} See Figure 1 in text following note 66.
\textsuperscript{109} See Bulow & Summers, note 102; Mundstock, note 106, at 305 n.19 (suggesting that, taking risk into account, expensing is necessary to maintain neutrality between tangible and intangible capital).
\textsuperscript{110} Samuelson, note 32, at 605-06 (explaining that economic depreciation requires assets to be marked to market to reflect fluctuations in value).
\textsuperscript{111} Id; Gann, note 4, at 112.
\textsuperscript{112} 2000 Treasury Study, note 29, at 49.
unsuccessful thus far.¹¹³ Any workable solution to these problems is likely to be applied as easily to intangibles as to tangible assets. Thus, generic problems of this sort do not provide a sound basis on which to distinguish between the capitalization rules applicable to tangible and intangible assets.

The two prongs of the analysis discussed thus far regarding when an inability to set rational depreciation schedules can justify expensing point in opposite directions. The high tolerance for error in setting the depreciation schedule for an individual asset indicates that the need to depart from normative capitalization rules on account of an inability to set depreciation schedules is quite limited. It also gives reason to think that capitalization should be required far more often than it is under current law. On the other hand, the task of setting acceptable system-wide depreciation schedules presents vexing issues—especially for intangible assets—which cuts in the other direction, restricting the number of cases where neutrality-enhancing depreciation schedules likely will be attainable. Given the dearth of necessary empirical data to perform a refined analysis, the policymaker’s job is a difficult one that requires judgment calls in close cases. When the policymaker’s judgment is that neutrality-enhancing capitalization and depreciation rules are an attainable goal, one last factor must be considered—administrative costs.

3. Administrative Costs

Minimizing the costs of tax administration is as important a tax policy goal as improving neutrality. The incremental administrative burden imposed by a neutrality-enhancing switch to capitalization might outstrip the benefits to be realized from improving neutrality. If so, what appears to be a beneficial change ceases to be worthwhile.

A comprehensive account of the role of tax administration in setting capitalization policy would consider a host of different costs, including (1) involuntary compliance costs, meaning the costs imposed on taxpayers by the policymaker who designs the governing rules and determines what data must be collected and transmitted to the government, (2) the costs of tax avoidance, that is, the cost of planning activity undertaken voluntarily to reduce tax paid, (3) the cost of litigation, which is a function of the number of anticipated controversies, among other things, (4) the costs incurred by the Service in auditing taxpayers, and (5) the costs of law making, which include the costs of

promulgating statutes and regulations, including costs borne by the
government and costs borne voluntarily by taxpayer-lobbyists at­
temptsing to influence the law-making process. By their nature, ad-
ministrative costs are not susceptible to economic modeling, and
reliable estimates of the costs of tax administration are hard to come
by. Those estimates that exist vary widely and suggest that at a macro
level the costs of tax administration are not quantifiable. The in-
ability to quantify costs persists at the micro level—economists have
not even attempted to quantify the costs of a given set of rules such as
the capitalization rules.

As with reckoning the tolerance for error in setting depreciation
schedules and the ability to measure economic depreciation, the in-
ability to measure administrative costs does not mean that the poli-
cymaker should ignore them. First, if a modification of capitalization
rules appears worthwhile after considering the likelihood that deprec-
iation schedules might be set within the tolerance for error and after
considering the other difficulties in setting adequate depreciation
rules, past experience can be used as a guide for assessing the adminis-
trative burdens that are likely to result. For example, it might be rea-
sonable to conclude that a particularized determination of the
economic depreciation of a newspaper’s paid subscriber base can be
used to produce a neutrality-enhancing depreciation schedule, if costs
(such as advertising) paid to increase the number of subscribers were
required to be capitalized. Past experience shows, however, that
relying on a case-by-case determination of asset durability to set de-
preciation schedules would result in rampant controversy. Accord-
ingly, policymakers might reach an intuitive—even if not
quantitative—determination that administrative considerations in
some cases will undermine the conclusion that capitalization rules
should be expanded.

Second, if the tolerance for administrative complexity can be de-
veloped intuitively, this can be factored into the question whether neu-
trality-enhancing capitalization and depreciation rules can be
established. Returning to the discussion of grouping heterogeneous

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114 Joel Slemrod & Shlomo Yitzhaki, The Costs of Taxation and the Marginal Efficiency
Cost of Funds, 43 IMF Staff Papers 172, 173 (1996).
115 See id.
116 See Newark Morning Ledger Co. v. United States, 507 U.S. 546, 566-70 (1993) (find-
ing that the durability and value of a newspaper subscriber base are ascertainable).
117 Staff of the House Comm. on Ways and Means, 103d Cong., Fiscal Year 1994 Budget
Reconciliation Recommendations of the Committee on Ways and Means as Submitted to
the Committee on the Budget Pursuant to H. Con. Res. 64, at 242 (Comm. Print 1993),
1993-3 C.B. (vol. 3) 338 (explaining the high level of controversies over depreciable lives of
acquired intangibles like that at issue in Newark Morning Ledger led to proposal to enact
§ 197, allowing cost recovery over an arbitrary 15-year period).
assets into classes for purposes of setting depreciation schedules, clearly the smaller the number of groups employed, the lower the administrative costs of the system will be, since both taxpayers and the Service will have less data to keep track of, reporting will be simpler, and classification controversies will be reduced. If the policymaker can get an intuitive sense of the maximum number of classes that would be consistent with an administrable system, she can hold the number of asset classes constant at the tolerable limit (accepting that the resulting administrative burden will be manageable) and then proceed to the question whether neutrality-enhancing depreciation schedules can be set where the number of asset classes is so constrained.

4. Summary

A sufficiently severe error in the applicable tax depreciation schedule can render capitalization and (flawed) depreciation inferior to expensing, but the tolerance for error in setting neutrality-enhancing depreciation schedules is very large. Setting depreciation schedules that are at least minimally acceptable, however, is still a difficult task, particularly for intangibles. Intangibles present special problems, stemming from the inability to observe or accurately measure the pattern of economic depreciation for such assets. When the policymaker's judgment is that minimally acceptable—that is, neutrality-enhancing—depreciation schedules are possible, capitalization still might be inferior to expensing if the costs of administering a capitalization and depreciation system outstrip the benefits of enhanced neutrality that would result from such a system. All of the aspects of the problem require unavailable empirical data for a refined analysis to be feasible; nevertheless, the foregoing discussion should give the policymaker a structure for exercising judgment based on the best available assumptions and anecdotal evidence, even without all of the necessary empirical data.

B. Multiple Taxation of Corporate Income

Like the argument considered in the prior Subsection, the argument considered here focuses on intangible capital. The bulk of intangible capital takes the form of goodwill held by business entities. The favorable capitalization rules applicable to the cost of producing goodwill work as a subsidy in favor of business entities that hold goodwill. At the same time, however, the ultimate beneficial owners of a large percentage of business goodwill—corporate shareholders—are sub-

118 See note 125.
subject to the corporate double tax. The corporate double tax may cancel out, at least in part, the subsidy from favorable capitalization rules. Some have argued that remedying the non-neutrality between tangible and intangible capital would be inappropriate so long as the corporate double tax persists, since the combined effect of the two sets of rules is better (that is, more neutral) than a system that taxes intangible capital correctly but taxes corporate earnings twice.119

Two forms of this argument are advanced. The first assumes that there are no fundamental constraints on improving the taxation of income from intangible capital and that classical corporate taxation is an immutable trait of the system and posits that improvement of capitalization and depreciation rules for intangibles is not warranted in the face of the classical corporate tax.120 The second form of the argument assumes that there is a fundamental constraint on taxing returns to intangible capital (no set of capitalization and depreciation rules can be designed for intangible capital that would be administrable and neutrality enhancing) and justifies classical corporate taxation as a response to the shortcomings in intangible capitalization and depreciation rules.121 The difference between the two forms of the argument is diametrically opposing views of the possibility of designing adequate (administrable and neutrality-enhancing) capitalization and depreciation rules. The common thread is the claim that current law's capitalization and depreciation rules for intangibles combined with a classical corporate tax system are a second-best approach.

My conclusion is that the netting effect of the corporate double tax and favorable treatment of intangible costs is highly imperfect, that the benefit to the holders of intangible capital from favorable capitalization rules is probably much larger than the detriment of the corporate double tax, and consequently that the claim that the corporate tax justifies a departure from normative capitalization is dubious. I accept

119 2000 Treasury Study, note 29, at 39 ("Accelerated depreciation, even if inconsistent with uniform taxation of all business assets, nonetheless may help reduce certain tax differences arising from other features of the current tax system."); id. at 46-48 ("Switching to economic depreciation has a small effect on overall tax neutrality because economic depreciation moves the tax system away from tax neutrality at some margins of choice, while simultaneously promoting tax neutrality at other margins."); Brazell & Mackie, note 77, at 542 ("Accelerated depreciation may help reduce tax distortions arising from other features of the current income tax system. To the extent that corporate industries are relatively heavy users of tax favored assets, accelerated depreciation helps reduce some of the tax distortions caused by the double-taxation of corporate . . . equity income.").

120 This is the general view of the 2000 Treasury Study, which is aimed at analyzing the effects of current law's depreciation regime. The study notes, however, that improvements to depreciation schedules could finance other policy goals, like reducing the tax burden on corporate income. 2000 Treasury Study, note 29, at 46.

the possibility that the classical corporate tax system mitigates the non-neutrality caused by rules allowing intangibles costs to be expensed, but since the neutrality cost of allowing long-lived intangibles costs to be expensed is likely more severe than that caused by the corporate tax rules, there is considerable room for improving the capitalization rules for intangibles without upsetting whatever balance exists between such rules and the classical corporate tax system.

There are three problems with this line of argument. First, the tax expenditure analysis from the fiscal year 2005 federal budget supplies estimates that give insight into the degree to which the corporate dividend tax and expensing of the costs of intangible capital offset each other. If the baseline is an entity-level tax that taxed corporate income only once, the budget estimates that, for 2003, the double tax on corporate profits was a "negative" tax expenditure of $24 billion.\textsuperscript{122} If all intangible capital were held by businesses subject to the double tax on corporate profits and the tax expenditure for departing from normative capitalization with respect to intangible capital were in the neighborhood of $24 billion, then the corporate double tax and the capitalization exception for the cost of intangibles would offset, in the aggregate.

The tax expenditure budget does not list the benefit from exceptions to normative capitalization for intangibles, so direct comparison is impossible. One can use other tax expenditure figures, however, to gauge, at least roughly, the magnitude of the subsidy resulting from capitalization exceptions for intangible capital. For instance, the 2005 budget estimates that for fiscal year 2003, against the normal tax expenditure baseline, accelerated depreciation of machinery and equipment was a $49 billion tax expenditure.\textsuperscript{123} The government, therefore, has estimated that current law’s favorable depreciation schedules and allowances for machinery and equipment (as compared with economic depreciation) were nearly two times more beneficial to taxpayers than the corporate double tax was detrimental.\textsuperscript{124} These figures demonstrate that the corporate double tax does not come close to fully off-

\textsuperscript{122} Budget of the United States Government: Analytical Perspectives, Fiscal Year 2005, at 323-25, available at http://www.whitehouse.gov/omb/budget/fy2005/pdf/spec.pdf ("This negative tax expenditure is measured as the shareholder level tax on dividends paid and capital gains realized out of earnings that have been fully taxed at the corporate level. It also includes the corporate tax paid on inter-corporate dividends and on corporate capital gains attributable to the sale of stock shares.").

\textsuperscript{123} Id. at 288 tbl.18-1.

\textsuperscript{124} Id. at 288 tbl.18-1, 308; see also 322 ("Beginning with the 2004 Budget, the tax expenditures for accelerated depreciation under the normal [tax] law concept have been re-calculated [and] are intended to approximate the degree of acceleration provided by current law over a baseline determined by real, inflation adjusted, and economic depreciation.").
setting the advantage of accelerated depreciation for machinery and equipment.

It is likely that the subsidy from the rules for the capitalization of intangibles surpasses the detriment of the corporate double tax by an even larger margin, for at least two reasons. First, there is probably far more intangible capital than tangible capital in the economy. Second, taxpayers can expense most costs incurred to procure intangible capital, which is even more generous than the current accelerated depreciation allowed for machinery and equipment. These two factors imply that the benefit to taxpayers from expensing intangibles costs is greater than that arising from accelerated depreciation for machinery and equipment.

If the corporate double tax only offsets a fraction of the tax preference given to intangible capital, then it seems unlikely that improving capitalization and depreciation rules with respect to intangible capital would upset the balance holding the two offsetting features in equipoise. A more reasonable conclusion would be that the corporate double tax may mitigate the non-neutrality stemming from the favorable treatment of intangible capital to some degree, but not enough so that increasing the effective tax rate on intangible capital through modifications to the capitalization and depreciation rules is counterproductive.

A second criticism of the argument is that the corporate double tax applies indiscriminately (1) to income derived from tangible capital and intangible capital subject to normative capitalization and depreciation rules (such as patents) (collectively, "hard assets"), and (2) to intangible capital created by deductible expenses (that is, all intangible capital other than intangible capital grouped with hard assets). No conscious effort has been made to impose a higher tax on those taxpayers that enjoy a greater benefit because they are in an industry where intangible capital is more significant. Some have argued, nonetheless, that the corporate tax rules operate in a way that imposes a higher burden on intangibles-intensive businesses.

The argument is as follows. The presence of "excess" cash flows—returns not attributable to the return to hard assets—correlates with the payment of dividends. The only businesses that can be expected to pay dividends are those with cash flows in excess of amounts needed to fund working capital, to acquire necessary tangible assets, and to fund depreciation reserves. These excess cash flows probably

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125 Cassanos, note 121, at 1673 (estimating that public companies collectively hold $7 trillion of goodwill versus $3 trillion of tangible capital); Fullerton & Lyon, note 2, at 12 (finding that intangible capital attributable to advertising and research comprised 11% of the capital stock, and noting that this "may only account for a small part of total investment in intangible capital").
are related, at least in part, to profit attributable to goodwill. In essence, the costs of procuring goodwill are deducted in the year incurred but the transaction is held open until it can be ascertained whether those expenses served to create or enhance goodwill. If the expenses do produce goodwill, then excess profits will result and when distributed to shareholders, those excess profits will be subject to tax. The dividend tax on distributed profits that represent returns to goodwill serves to "recapture" the deduction for the cost of producing the goodwill that was, in hindsight, inappropriate. If, on the other hand, the expenses do not produce goodwill, then there will be no excess profits, the deduction was appropriate, and no "recapture" tax is necessary.126

There are significant problems with this argument. First, while it may be true in most cases that firms that distribute dividends have excess corporate profits attributable to intangible capital, it is patently not true that firms always distribute cash flows in excess of the reasonable needs of the business. There are a significant number of non-dividend paying firms that have both vast stocks of intangible capital and cash hoards far in excess of the reasonable needs of the business.127 Both tax and nontax factors induce firms to retain earnings that might be distributed without harming the business's ability to fund working capital, replace tangible assets, and fund depreciation reserves. Rules are in place to combat the tax-motivated retention of profits,128 but they have proven ineffective in inducing dividends on a large scale. Corporate law rules designed to mitigate the nontax factors militating in favor of retained earnings are wholly absent. Thus, the argument that firms with a large stock of intangible capital return the profits on such capital to their shareholders through dividends is premised on a view of corporate dividend behavior that does not describe reality.

Second, some of the payments subject to the dividend tax grow out of earnings attributable to hard assets. To the extent this is the case, the corporate tax cannot be fairly characterized only as a mechanism for recapturing excessive intangibles deductions since a portion of the recapture will be of returns attributable to hard assets with respect to

126 Cassanos, note 121, at 1674-75.
128 IRC §§ 531, 541.
which recapture is largely inappropriate.\textsuperscript{129} In other words, if leveling the playing field between hard assets and intangible capital is the goal of the dividend tax, it should apply only to distributions that represent a return to intangible capital; it applies, however, to returns to both hard assets and intangibles.

A third major criticism of the argument that the corporate double tax is a recapture mechanism is that it does not account for intangible capital held by businesses not subject to the classical corporate tax system. Non-publicly traded businesses have a large tax incentive to operate in noncorporate form (or as a subchapter S corporation), to avoid the corporate double tax altogether. Most do so. Those that do not have numerous techniques available to mitigate the extent to which they bear the brunt of the corporate double tax.\textsuperscript{130} Thus, if one accepts the basic premise that the tax on dividends can operate to offset a prior, inappropriate deduction for a cost incurred to procure intangible capital, then one must conclude that double taxation should be more widespread than it is.

\textit{Summary}—Taxpayer-favorable capitalization rules that allow expensing are probably a bigger benefit than the corporate double tax is a detriment. The difference is likely substantial. On the one hand, since the detriment is (at least roughly) visited upon the same taxpayers who enjoy the benefit of expensing for intangibles, the conclusion that corporate integration would be antithetical to neutrality is plausible. On the other hand, the conclusion that in the face of classical corporate taxation there is no benefit to be realized from improving capitalization and depreciation rules for intangibles is difficult to support. To the extent the corporate tax provides a detriment offsetting the benefit from expensing intangibles costs, it is only partial for corporate taxpayers (given the relative magnitudes of the detriment and benefit) and is incomplete (given the presence of businesses with intangible capital not subject to classical corporate taxation).

\textsuperscript{129} Prior to the 1986 Act, this was a smaller problem that it is today. The 1986 Act repealed the investment tax credit and the ACRS depreciation system, both of which tended to reduce (and sometimes even to eliminate or make negative) the effective tax rate on tangible capital. Tax Reform Act of 1986, Pub. L. No. 99-514, §§ 201, 211, 100 Stat. 2085, 2121-70. If neither hard asset capital nor intangible capital bears any tax at the corporate level (approximately true prior to the 1986 Act), and corporate dividends are taxed when distributed, the tax system treats hard assets and intangibles symmetrically—neither is taxed at the corporate level; both are taxed at the shareholder level. Today, however, hard asset capital is subject to a meaningful corporate level tax that is substantially neutral, but intangible capital is not. Still, one could argue that some recapture is appropriate even for excess returns to certain hard assets given the presence of accelerated depreciation for certain tangible assets like machinery and equipment. See note 123 and accompanying text.

\textsuperscript{130} E.g., Boris I. Bittker & James S. Eustice, Federal Income Taxation of Corporations and Shareholders ¶¶ 4.01, 8.05 (7th ed. 2000).
C. Steady-State Investment Patterns

Some have argued that given a level pattern of continuing investment over time, capitalization is more trouble than it is worth since income is not seriously distorted. Consider the following hypothetical. A starts a bicycle rental business, intending to purchase one bicycle per year for as long as the business continues. Suppose that bicycles cost $900, last for three years, have no residual value, and depreciate economically in a straight line pattern ($300 per year). Table 1 compares the allowable deductions if A is, alternatively, (1) allowed to expense the cost of each bicycle or (2) required to capitalize the cost of each bicycle and allowed to recover it as each bicycle depreciates economically.

| Table 1 |

| Expensing Versus Straight Line Depreciation for Three-Year Property Where Pattern of Investment Is Constant and the Total Amount Invested Is Constant After Two Years |
|---|---|---|---|---|
| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| Expensing | $900 | $900 | $900 | $900 | $900 |
| Total | 900 | 900 | 900 | 900 |
| Capitalization and Depreciation | | | | |
| Purchased Year 1 | 300 | 300 | 300 | | |
| Purchased Year 2 | 300 | 300 | 300 | 300 | |
| Purchased Year 3 | 300 | 300 | 300 | | |
| Purchased Year 4 | 300 | 300 | | | |
| Purchased Year 5 | 300 | | | | |
| Total | $300 | $600 | $900 | $900 | $900 |

Once the expansion phase of A's business ends, that is, once investment peaks at three bicycles in Year 3, the aggregate depreciation from the bicycles in A's stock exactly equals the cost of each new bicycle purchased. Thus, after the second year, A enjoys a $900 deduction per year regardless of whether A expenses or capitalizes the cost of each new bicycle. For the first two years, however, A has lower taxable income under expensing than capitalization (due to greater deductions). When the continuing investment ends, the tax advantage of expensing reverses.

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131 E.g., Encyclopaedia Britannica, Inc. v. Commissioner, 685 F.2d 212, 215 (7th Cir. 1982) ("Under [steady-state] conditions the benefits of capitalization are unlikely to exceed the accounting and other administrative costs entailed in capitalization."); William Popkin, Introduction to Federal Income Taxation 387 (1987) (arguing that given a steady-state pattern, "it will not always be worth the effort to capitalize every outlay with a savings feature"); Lee, note 1, at 336-42.

132 Several factors could precipitate the end of the continuing investment. In the examples that follow I assume it is because the business is being wound up; however, it is likely
Suppose that when A winds up her business at some future date she is able to sell the bicycles on hand for their fair market value. If A winds up her business on the last day of Year 1, she will have one bicycle on hand with a fair market value of $600.13 If capitalization is required, A's basis will also equal $600 (given the assumption that the straight line depreciation allowed for tax purposes is economic), resulting in no gain or loss on sale. On the other hand, if expensing is permitted, her basis will be zero and A will incur gain of $600 on the date the bicycle is sold. Either way A ends up in exactly the same place, because (1) if A is allowed to expense, the net effect of the expensing deduction ($900) and the gain on sale ($600) exactly equals the result to A if capitalization is required—a depreciation deduction of $300 and no gain or loss on sale, and (2) there is no timing advantage since all of the items would be reported on the same return in either case.

If A winds up her business later, however, the results under expensing and capitalization diverge because of the time value of money. If A winds up her business at the end of Year 2 or any subsequent year, she will have bicycles on hand worth $900, as follows:

<table>
<thead>
<tr>
<th></th>
<th>(1) Cost</th>
<th>(2) Cumulative Depreciation</th>
<th>(3) FMV ((1) less (2))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased at beginning of year</td>
<td>$900</td>
<td>$300</td>
<td>$600</td>
</tr>
<tr>
<td>Purchased at beginning of prior year</td>
<td>$900</td>
<td>$600</td>
<td>$300</td>
</tr>
<tr>
<td>Purchased two years prior (or earlier)134</td>
<td>$900</td>
<td>$900</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$900</td>
</tr>
</tbody>
</table>

Where capitalization is required, the amount realized on sale at the end of Year 2 or any subsequent year ($900) will equal A's basis, so no gain or loss will be realized. Where expensing is permitted, on the other hand, the gain on the sale of the bicycles on hand135 will reverse that continuing investments stop for other reasons (such as products falling out of favor). I discuss below the extent to which this affects the analysis. See notes 135 and 139.

133 The cost of the bicycle purchased at the beginning of Year 1 ($900) less depreciation allowed during Year 1 ($300) equals $600.

134 This row is only relevant in Year 3 and later years.

135 A's gain is the excess of the $900 amount realized over her zero basis. On different facts, the analysis in later years when the business winds down might change, but the bottom line result likely would be similar if not identical. For example, if the capital asset is an intangible (say business goodwill) that cannot be sold apart from the business, then assuming the cost of procuring the goodwill had been capitalized, it would be deductible on dissolution of the enterprise. INDOPCO, Inc. v. Commissioner, 503 U.S. 79, 83-84 (1992) ("[W]here no specific asset or useful life can be ascertained, [capitalized costs are] deducted upon dissolution of the enterprise."). The write-off of the goodwill might be more or less valuable to the taxpayer than an offset to the amount realized on the sale of the
the benefit reaped by A in Years 1 and 2 from expensing as opposed to capitalization ($900\textsuperscript{136}$). Thus, ignoring the time value of money, both the government and the taxpayer should be indifferent between expensing and capitalization.

Considering the time value of money, however, the taxpayer always fares better under expensing than under capitalization.\textsuperscript{137} The extent to which expensing is taxpayer-favorable depends on three factors: (1) the discount rate, (2) the number of years over which the property is depreciable, and (3) the number of years of continuing investment. The first two factors are extremely significant; the third factor is relatively insignificant.

The significance of the discount rate is intuitively obvious. An expensing taxpayer gains a timing benefit from accelerated deductions and deferral of gain on the sale of the bicycles on hand when the business winds up. The higher the applicable discount rate, the greater these benefits, all else being equal.

The depreciable life of the property is also extremely significant. This factor influences the analysis in two ways. First, the longer the depreciation schedule following capitalization, the greater the relative benefit to the taxpayer allowed to expense. For instance, expensing dominates depreciation over 10 years by a wider margin than it dominates depreciation over three years. Second, the gain on the sale of the assets on hand when the business winds up will be smaller—both in absolute and present value terms—if the business winds up before the level of continuing investment hits its peak. For example, if A’s business winds up after the first year, the gain on the sale of the bicycle on hand would be $600 ($900 cost less $300 depreciation). As demonstrated above, if the business ends after Year 2 or any subsequent year, the gain will be $900.\textsuperscript{138} Thus, this second point is only relevant when the business winds up during the initial expansion phase.

The third factor, the number of periods of continuing investment, is relatively insignificant compared with the discount rate and the length

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\textsuperscript{136} The benefit of expensing over capitalization was $600 in Year 1 (the excess of the expensing deduction of $900 over the depreciation deduction of $300). The benefit in Year 2 was $300 (the excess of the expensing deduction of $900 over the depreciation deduction of $600). Hence the total benefit in Years 1 and 2 is $900.

\textsuperscript{137} This assumes the business is carried on for more than one year. See note 133 and accompanying text (demonstrating that if an asset is sold in the year acquired, expensing and capitalization yield the same result).

\textsuperscript{138} See text accompanying note 134.
of the depreciation schedule. The duration of the continuing investment influences two factors, the net effect of which usually will be quite small. For an expensing taxpayer, the longer the period of continuing investment, the greater the deferral of the gain realized on the sale of the assets when the business ends.\textsuperscript{139} The absolute amount of the gain neither rises nor falls after the level of investment peaks, but the present value of the gain shrinks as it becomes more distant.

As the benefit of deferring this gain grows, the benefit reaped during the expansion phase of the business (additional deductions during Years 1 and 2 in this example) shrinks in proportion to the overall stream of investments. Expensing of investments during the start-up phase provides a benefit the absolute size of which is constant; however, the relative magnitude of the expensing benefit as a portion of the overall stream of investments diminishes the longer the steady-state investment continues. Consider the following. If the business in the prior example continues for six years, the pattern of depreciation deductions under expensing and capitalization are as follows:

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|}
\hline
Year & Expensing & Capitalization \\
\hline
1 & $900 & $300 \\
2 & 900 & 600 \\
3 & 900 & 900 \\
4 & 900 & 900 \\
5 & 900 & 900 \\
6 & 900 & 900 \\
\hline
\end{tabular}
\caption{Table 3}
\end{table}

\textsuperscript{139} Consistent with the facts of the example, I assume that the period of continuing investment lasts until the business ends, and that winding up involves selling all assets on hand for their fair market values.

Suppose instead that the taxpayer just suspends investment, but does not sell the assets on hand. In the years following the year investment is suspended, a capitalizing taxpayer will be entitled to depreciation deductions for any remaining basis; an expensing taxpayer, by contrast, will get no such deductions. The relative fortunes of a capitalizing and an expensing taxpayer would be approximately the same under these new facts. The benefit to the capitalizing taxpayer who suspends her investment (depreciation deductions equal to the basis left on the date investment is suspended) would not have been realized if the property had been sold. This benefit does not improve the capitalizing taxpayer's position vis-à-vis the expensing taxpayer because the detriment the expensing taxpayer would have suffered had she sold assets (gain on sale) is avoided if the property is retained. Thus, both are better off by the same amount. (Considering the time value of money, the tax detriment the expensing taxpayer avoided by not selling the assets on hand (gain on sale) would have been slightly worse than the tax benefit enjoyed by the capitalizing taxpayer (a deduction of any remaining basis), since the gain for the expensing taxpayer would have occurred all at once, whereas the depreciation deductions would be allowed over a number of years.)
If, on the other hand, the business in the prior example continues for only three years, the pattern of depreciation deductions is:

**Table 4**

<table>
<thead>
<tr>
<th>Year</th>
<th>Expensing</th>
<th>Capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$900</td>
<td>$300</td>
</tr>
<tr>
<td>2</td>
<td>900</td>
<td>600</td>
</tr>
<tr>
<td>3</td>
<td>900</td>
<td>900</td>
</tr>
</tbody>
</table>

The sum of the present values of the deductions for the three-and six-year businesses, assuming a 10% discount rate, are:

**Table 5**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3) as a % of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PV of</td>
<td>PV of</td>
<td>(2) as a</td>
</tr>
<tr>
<td></td>
<td>Expensing Deductions</td>
<td>Capitalization Deductions</td>
<td>% of (1)</td>
</tr>
<tr>
<td>Three-Year Business</td>
<td>$2,238</td>
<td>$1,445</td>
<td>65%</td>
</tr>
<tr>
<td>Six-Year Business</td>
<td>$3,920</td>
<td>$3,126</td>
<td>80%</td>
</tr>
</tbody>
</table>

As demonstrated by this example, the “extra” depreciation deductions taken by an expensing taxpayer during the expansion phase of the business affords her an advantage with a greater relative significance the earlier the continuing investment stops. But if the business winds up sooner (so the continuing investment stops sooner), the present value of the gain on the sale of the assets on hand at that time will be larger, mitigating this benefit in part.

Figure 2 depicts the results if the bicycle business continues for between one and twenty years, assuming a 10% discount rate. Figure 2 demonstrates two things: (1) The benefit of expensing increases with the length of the period of continuing investment because the benefit of deferring the gain when the business winds up is always more significant than the decrease in the relative benefit of expensing during the expansion phase (so from the expensing taxpayer’s point of view, the longer the period of continuing investment, the better); and (2) The incremental benefit of expensing (as opposed to capitalization and depreciation) increases in absolute terms as the period of continuing investment is extended.140

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140 As described below, the relative benefit of expensing over depreciation is extremely (though not completely) insensitive to the duration of continuing investment. See text following note 141.
The significance of the four curves in Figure 2 is as follows:

(1) \textit{PV of gain on sale} This curve shows the present value of the gain that will result when the business owner allowed to expense her investment disposes of those assets on hand at the end of the period of continuing investment. The gain is negative because it generates a tax liability. The magnitude of the present value of the gain decreases as the period of continuing investment grows because the gain is pushed further into the future.

(2) \textit{PV benefit of expensing} This curve shows the present value of the aggregate deductions for expensing. This curve rises as the duration of the continuing investment lengthens because the longer the duration of investment, the greater the aggregate investment and corresponding expensing deductions. Because the present value of the incremental deductions for each successive future periods is less than for the prior period, the rate of growth decelerates; this is why the slope of the curve flattens as the duration of continuing investment lengthens.

(3) \textit{PV of expensing (net of gain on sale)} This curve shows the present value of the expensing deductions net of the present value of the gain on sale. It combines the first two curves.

(4) \textit{PV of depreciation deductions} This curve shows the present value of the deductions allowed a taxpayer who is required to capitalize and depreciate the costs of the capital investments. The depreciating taxpayer will incur neither gain nor loss on sale so this curve shows net benefit of depreciation deductions.
The spread between curves (3) and (4) represents the difference between the present value of the depreciation and expensing deductions. The present value of the deductions allowed an expensing taxpayer net of the gain on sale (curve (3)) is always greater than the present value of the deductions allowed a taxpayer required to capitalize her investment (curve (4)).\textsuperscript{141} Although the \textit{absolute} size of the incremental benefit to the expensing taxpayer grows as the period of continuing investment grows (observe that curve (3) rises more rapidly than curve (4)), the \textit{relative} benefit changes only slightly.

The relative benefit afforded the expensing taxpayer, depicted in Figure 3, can be expressed as the percentage by which the present value of the expensing deductions surpasses the present value of depreciation deductions for a given period of continuing investment.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure3.png}
\caption{Figure 3}
\end{figure}

Figure 3 demonstrates that after an initial phase, the \textit{relative} benefit of expensing levels off; no matter how long the continuing investment persists, the proportional benefit to the expensing taxpayer remains almost constant.

The relative benefit of expensing, measured in percentage terms, rather than the absolute dollar amount of the benefit, is the appropriate metric to consider when assessing the argument under consideration. This is because the administrative costs of requiring

\textsuperscript{141} As noted, the two are equal during the first year. See text accompanying note 133.
capitalization and depreciation should be weighed against the costs of the nonneutrality stemming from a rule that permits expensing. The principal cost of a nonneutral rule is its impact on taxpayer behavior and the resulting deadweight loss. For instance, the possibility of deferral is not likely to influence the behavior of a taxpayer making a $1 million investment because the benefit from expensing, the present value of which is $100, is only .01% of the amount invested, whereas deferral worth $100 is likely to influence greatly a taxpayer making a $1,000 investment, for whom the benefit is 10% of the amount invested. When assessing the probable costs of a rule that allows expensing of investments that fall into a steady-state pattern, therefore, the relative benefit of expensing is more telling than the absolute dollar value of that benefit.

The example depicted in Figures 2 and 3 was based on three-year property and a 10% discount rate. Table 6 shows how the relative difference between expensing and capitalization plays out for assets with a range of depreciable lives, at three separate discount rates.

<p>| Table 6 |</p>
<table>
<thead>
<tr>
<th>Incremental Net Tax Benefit From Expensing Deductions Over Depreciation Deductions 142</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
</tr>
<tr>
<td>Two-Year Property</td>
</tr>
<tr>
<td>Three-Year Property</td>
</tr>
<tr>
<td>Seven-Year Property</td>
</tr>
<tr>
<td>Ten-Year Property</td>
</tr>
</tbody>
</table>

Commentators often explain the sensitivity of the tax benefit of expensing to the durability of the asset and to the discount rate by analogy to an interest-free loan by the government to the expensing taxpayer. 143 Suppose capitalization and depreciation are required (that is, expensing is prohibited) and the government takes the incre-

142 Each percentage in Table 6 is (1) the excess of (a) the present value of expensing deductions (net of gain on sale) over (b) the present value of depreciation deductions, divided by (2) the present value of depreciation deductions. These are approximations, since determining the incremental benefit from expensing requires a precise assumption regarding the number of periods the investment in question continues. Each percentage listed in Table 6 is the average benefit derived from expensing under eight alternatives: The business continued for 5, 10, 15, 20, 25, 30, 60, and 90 years. The results for the alternatives are tightly clustered. The largest standard deviation—1.6 percentage points—is for 10-year property at a 10% discount rate. The smallest—less than one-twentieth of a percentage point—is for three-year property at a 3% discount rate.

mental tax proceeds collected as a consequence of normative depreciation deductions (as compared with the proceeds that would have been collected if expensing were permitted) and loans those proceeds interest free to the owners of depreciable assets. Suppose, in addition, that each taxpayer must repay the loan over time as depreciation is allowed. The lender's (government's) forgone interest with respect to a given taxpayer is equal to the net tax benefit that taxpayer would have enjoyed from expensing. The taxpayer winds up better off (1) the longer the loan is outstanding, and (2) the higher the avoided interest charge. As the durability of the asset in question grows, the loan is outstanding for a longer period (that is, the period of deferral is longer); as the interest rate grows, the avoided interest on the loan is greater (that is, deferral is more valuable).

The premise of the argument under consideration is that given an even pattern of continuing investment over time, income is not seriously distorted.\(^{144}\) The conclusion drawn from this premise is that given a pattern of continuing investment, capitalization is more trouble than it is worth. Table 6 shows that for certain combinations of discount rates and depreciable lives, the present value of the benefit of expensing rather than capitalization is slight (in percentage terms) and therefore it is likely that the costs of capitalization are not worth incurring. For long-lived property, however, the present value of the benefit of expensing is relatively large, particularly if interest rates are high, and therefore the neutrality enhancement that flows from capitalization is likely to exceed the resulting administrative costs. The argument, therefore, is too broad and needs to be refined to be plausible.

A refined version of the argument would be that given a pattern of continuing investment, expensing is appropriate when (1) the administrative costs of capitalization exceed (2) the benefit of capitalization (that is, neutrality improvement), which benefit is likely to be slight given certain combinations of low discount rates and short depreciation schedules. Two inputs necessary to refine the argument are available. Discount rates used by businesses vary widely, but in many instances Congress and the Service have made assumptions regarding the appropriate discount or interest rate, and this has proven workable in practice.\(^{145}\) The second input, the depreciation schedule, is for most tangible assets at least, set by law or regulation and thus freely available.\(^{146}\) Two additional inputs make it difficult to evaluate where this argument is persuasive. First, as discussed above, no refined esti-

\(^{144}\) See note 131.
\(^{145}\) See IRC §§ 382(f), 1274(d).
mate of the administrative costs that follow from capitalization is possible. Even a crude approximation that takes into account all of the relevant aspects of administrative burden is difficult to determine.\textsuperscript{147} Second, gauging the benefit of capitalization (that is, the benefit of neutrality improvement) is not an easy task. The extent of the inefficiency caused by expensing depends on how taxpayers respond to expensing, which is difficult to predict. Arguably, also, an inequity would arise from excepting certain taxpayers from capitalization but not others, even though they are purchasing identical assets, simply because one makes regular investments and the other does not. Translating any inequity into a dollar figure to be weighed against the administrative burdens cannot be done formulaically; quantifying the cost of inequity ultimately depends on subjective value judgments.

In the absence of empirical data that would allow the policymaker to weigh the administrative burden of capitalization and the cost of permitting expensing, one could fairly ask whether the foregoing analysis has any practical significance. I believe that it does. I have identified cases where the argument under consideration is unlikely to be convincing given the magnitude of the income measurement error. For example, an argument that an exception to capitalization is appropriate given a steady state of continuing investment in property with a useful life of 10 years or longer should be rejected (absent huge administrative burdens) since even at very low discount rates, the resulting nonneutrality is substantial, implying significant excess burden. Second, the inability to measure administrative costs does not mean that the policymaker should ignore them. Cases where the administrative burden is known to be high (even if unquantifiable) and the depreciable life of the property at issue is short might present a case where my refined version of the argument should lead to an exception. In the next Subsection, I consider such a case.\textsuperscript{148}

The point of this analysis is not to forecast the level of investment by an expensing taxpayer, but to forecast the difference in the tax incentive to invest for taxpayers depending on whether they must capitalize and deduct their outlays or may expense them. In cases where expensing creates a significant incentive for expensing taxpayers vis-à-vis deprecating taxpayers, the resulting inefficiency is likely to be substantial as taxpayers reallocate their investments to take advantage of the tax incentive. It is an heuristically useful technique when assessing the magnitude of the incentive and the level of inequity to set equal

\textsuperscript{147} See note 114 and accompanying text (identifying the components of the administrative costs of formulating, complying with, and enforcing tax rules).

\textsuperscript{148} See text following note 168, discussing the 12-month rule of the proposed INDOPCO regulations.
the pattern of investment and observe how different variables—here changes in the discount rate, depreciable life of the property, and the period of reinvestment—alter the present value of the allowable cost recovery deductions assuming alternatively expensing or depreciation. Setting equal the pattern of investment is not based on an assumption—as some have suggested—that taxpayers are indifferent to the relative benefit of expensing versus capitalization and depreciation;[149] rather using an equal pattern of investment helps to gauge the magnitude of the preference and gain insight into the likely impact of creating an exception to capitalization.[150]

Summary—I have shown that where investment occurs in an even pattern over a number of years, the present value of expensing and depreciation deductions are not as different as they are when assessing a solitary investment. The extent of the difference between the present value of expensing and depreciation deductions depends critically on (1) the durability of the property in question (which controls the length of the depreciation schedule) and (2) the discount rate, and less significantly on (3) the number of years of continuing investment. Cases where expensing does not provide a substantial relative advantage over capitalization in present value terms, as is the case for short-lived investments in a low-interest-rate environment, may justify an exception from normative capitalization if the administrative costs of capitalization surpass the costs of the nonneutrality and inequity from allowing certain taxpayers with steady-state investment patterns to expense their investments.

D. Short-Lived Assets

Some commentators have argued that the prices of short-lived assets are less sensitive to defects in depreciation schedules than are the prices of long-lived assets, and therefore errors made in setting depreciation schedules for short-lived assets matter less.[151] It follows that creating an exception to capitalization for short-lived assets will not

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[150] Cf. Alvin C. Warren, Jr., How Much Capital Income Taxed Under an Income Tax Is Exempt Under a Cash Flow Tax?, 52 Tax L. Rev. 1, 10 (1996) (making a contrary assumption in a related context, and explaining that although portfolio adjustments in the presence of risk might not occur, it is useful to assume that they will for purposes of illustrating the result that follows).

[151] E.g., Jane G. Gravelle, Whither Tax Depreciation, 54 Nat'l Tax J. 513, 524 (2001) (arguing that assets that “depreciate very rapidly . . . are likely to be less sensitive to slower write-offs because the rate of return is less important to the economic cost of using these assets”).
result in costly non-neutralities. Given certain assumptions, this is true. Suppose there are two assets, a one-year asset and an asset with an infinite useful life ("perpetual asset"), both cost $100, and both will generate a 10% annual return net of depreciation. This means the one-year asset returns to the owner her cost ($100) plus a $10 profit. The perpetual asset lasts forever so no cost recovery is allowed (the $100 investment is maintained in the value of the asset); at the end of each year the owner gets only the $10 profit. Suppose also that the tax rate is 35%. The facts of the example thus far are:

<table>
<thead>
<tr>
<th></th>
<th>One-Year Asset</th>
<th>Perpetual Asset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>Capital recovery</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Return</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Tax (35% Effective rate) (^{155})</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>After-tax return</td>
<td>6.50</td>
<td>6.50</td>
</tr>
<tr>
<td>Yield</td>
<td>6.5%</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

Now suppose instead that the owner of each of the assets is allowed to expense the cost of the assets. Expensing is equivalent to exempting the yield from tax. Thus, the facts change as follows:

<table>
<thead>
<tr>
<th></th>
<th>One-Year Asset</th>
<th>Perpetual Asset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>Capital recovery</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Return</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Tax (zero effective rate)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>After-tax return</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Yield</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

\(^{152}\) Regulations governing capitalization of costs to procure intangible assets, rights, and benefits contain just such an exception. See Reg. § 1.263(a)-4(f)(1) (excepting from capitalization costs that procure benefits that expire within 12 months). Courts also have concluded that allowing expensing for short-lived assets is appropriate, citing high administrative costs. E.g., U.S. Freightways Corp. v. Commissioner, 270 F.3d 1137, 1147 (7th Cir. 2001).

\(^{153}\) This assumes static interest rates.

\(^{154}\) Many assets could fit these descriptions. The one-year asset could be a financial asset like a bond, a piece of machinery or equipment with a short useful life, or a license or permit to do business for a short period of time. The perpetual asset could be a financial asset (a perpetuity) or a piece of land. The significant point is the pattern of cash flows from the assets, not their identity.

\(^{155}\) The 35% nominal tax rate translates into a 35% effective tax rate because depreciation is economic (recovery after one year for the one-year asset; no recovery for the perpetual asset). See Weisbach, Measurement, note 5, at 9.

\(^{156}\) See note 23 and accompanying text.
Investors quickly will bid up the price of both the one-year asset and the perpetual asset, given the tax-preferred status of these investments, assuming the market is efficient. If the prevailing return on capital generally available is 6.5% after tax, the price will increase until the yield on both assets drops from 10% to 6.5%. After prices adjust, the facts will be:

<table>
<thead>
<tr>
<th></th>
<th>One-Year Asset</th>
<th>Perpetual Asset</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>$103.29</td>
<td>$153.84</td>
</tr>
<tr>
<td><strong>Capital recovery</strong></td>
<td>100.00</td>
<td>—</td>
</tr>
<tr>
<td><strong>Return</strong></td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td><strong>Tax (zero effective rate)</strong></td>
<td>—</td>
<td>10.00</td>
</tr>
<tr>
<td><strong>After-tax return</strong></td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td><strong>Yield</strong></td>
<td>6.5%</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

The present value of $110 (the after-tax cash flow on the one-year asset, which includes the return on invested capital and capital recovery) discounted for one year at 6.5% equals $103.29. The present value of the perpetual asset, $153.84, equals the after-tax return ($10) divided by the prevailing yield (6.5%). In an efficient market these are the prices at which the one-year asset and the perpetual asset will settle. Moving from economic depreciation to expensing causes the perpetual asset’s price to spike by 54%, and the one-year asset’s price to increase by a mere 3.3%.

It is the widely different price sensitivity of short- and long-lived assets to errors in depreciation schedules that leads to the conclusion that expensing matters less for short-lived assets than for long-lived assets.\footnote{157 See Gravelle, note 151, at 524.} If expensing has a smaller effect on the price of short-lived assets, the resulting efficiency costs will be smaller (less loss of neutrality, smaller excess burden).\footnote{158 See id.}

The foregoing analysis, however, includes an assumption that renders the two investments incomparable. The implicit assumption when comparing a one-year asset and a perpetual asset is that the owner of the one-year asset will consume the entire return, part of which represents a return of capital, whereas the owner of the long-lived asset will consume only the after-tax yield.\footnote{159 Weisbach, Measurement, note 5, at 12 (explaining that when short- and long-lived assets are compared for just one period, it “do[es] not allow comparison of equivalent consumption flows over time”).} A proper comparison would evaluate the relative price sensitivity of one long-lived asset and a series of short-lived assets that, if purchased seriatim, would...
have the same lifespan as the long-lived asset.\textsuperscript{160} The reason this is true lies in what economists call the intertemporal nature of capital. Alan Auerbach explained the concept concisely as follows:

If the firm invests in a very short-lived asset, which yields flows over a brief period of time, the stockholders are presumed to consume the same fraction of this return as they would of a much smaller flow coming over a longer period from a more durable asset of equal value. It seems . . . reasonable to assume that the rate of saving [will] be inversely related to the durability of the asset . . . .\textsuperscript{161}

In other words, investors' decisions regarding whether to consume or reinvest are likely independent of the durability of the assets they hold. Given that the opportunity to reinvest recovered capital is unfettered, this is a much more realistic assumption than the contrary assumption that consumption patterns match asset durability.

Basing the comparison on an assumption that is consistent with the intertemporal nature of capital, the prices of long- and short-lived assets move in tandem as depreciation errors (including expensing) are introduced. For example, compare the perpetual asset from the prior example with an infinite number of one-year assets, purchased seriatim. A taxpayer seeking to secure a fixed annual return for the foreseeable future at the market yield (6.5%) could purchase the one-year asset for $103.29. In one year's time, she would receive $110, a $6.714 profit. This profit is tax-exempt given the assumption that expensing is permitted. She then could reinvest the $103.29 difference ($110 less $6.714) and the next year she would receive another $110. And so on. Alternatively, she could purchase a perpetual asset that would return the same after-tax yield. Such a perpetual asset would cost $103.29.\textsuperscript{162} This is the perpetual asset that is comparable to the series of one-year assets.

If instead a taxpayer wanted to secure a $10 return after taxes, rather than $6.71, she could buy, alternatively, a perpetual asset for $153.85 ($10 ÷ 6.5%) or a one-year asset for $153.85, which in one year's time would return her $163.85 (a 6.5% profit), leaving her with $10 to consume and $153.85 to reinvest, and so on.

The important point is that if the after-tax return for two assets with different useful lives is an equal sum of money (net of capital recov-

\textsuperscript{160} Id. at 9-10, 12 (explaining that the key when comparing assets with different useful lives is to "compar[e equal] consumption patterns over equivalent time periods").


\textsuperscript{162} $6.714 ÷ 6.5\%$. 

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ery, which is assumed to be reinvested), the price of one long-lived asset is always the same as the price of a series of short-lived assets that collectively have a comparable duration. After-tax yields on the two investments are necessarily equal as well. Consequently, the sensitivity of after-tax yields to flaws in depreciation is the factor that controls the relative price sensitivity of short- and long-lived assets, not the sensitivity of prices of individual assets to changes in investment yields.

Differences between economic depreciation and tax depreciation skew effective tax rates. Depreciating an asset for tax purposes at a pace faster than economic depreciation results in an effective tax rate below the nominal rate. Conversely, depreciating an asset for tax purposes at a pace slower than economic depreciation results in an effective tax rate higher than the nominal rate. Because the effective tax rate measures the impact of flaws in tax depreciation schedules on after-tax yields, it is the appropriate metric to judge the relative impact on neutrality of allowing assets of varying durability to be expensed.

As Weisbach has demonstrated, a given percentage error in measuring the useful life of an asset translates into a change in the effective tax rate that is equal for all assets, regardless of their durability. Setting the depreciation schedule for a 10-year asset at eight years rather than 10 years (a 20% error) reduces the effective tax rate roughly 11%. Weisbach shows that to understate the effective tax rate of a five-year asset by the same amount (11%), depreciation would have to be allowed over four years (again, a 20% error); for a one-year asset, depreciation would have to be allowed over 9.6 months, and so on. It follows that mismeasuring depreciation for short-lived assets will have the same impact on effective tax rates (and hence neutrality) as a comparable (that is, equal percentage) measurement error for long-lived assets. The argument that short-lived assets are less sensitive than long-lived assets to uneconomic depreciation schedules or expensing is therefore unpersuasive.

A second argument for expensing the costs of short-lived assets is that such costs likely will be incurred regularly, given that the asset or benefit procured thereby will wear out quickly. This increases the likelihood that the costs will fall into a steady-state investment pat-

163 Musgrave & Musgrave, note 5, at 382-83.
164 Id.
165 See Weisbach, Measurement, note 5, at 13 ("Because we care about deviations of effective tax rates from neutrality, we should try to create roughly equal percentage measurement errors regardless of durability . . . .").
166 See id. at 12-14.
167 See id.
tern. As demonstrated above, for short-lived assets purchased in a steady-state pattern, the income-measurement error occasioned by expensing is likely to be slight.\footnote{168 See Subsection III.C.}

Take the case of a trucking company that purchases licenses and insurance policies, none of which has a lifespan of over 12 months. Because licenses and policies must be purchased throughout the year as old licenses and policies expire, a substantial portion of the benefits of licenses and policies purchased one year will be enjoyed during the following year.\footnote{169 These are the essential facts of U.S. Freightways Corp. v. Commissioner, 270 F.3d 1137, 1147 (7th Cir. 2001).} So long as the pattern of investment remains level, the income measurement error is likely to be small. If this small measurement error imposes a lower cost on the tax system than the administrative burden of requiring the costs to be capitalized, then an exception to capitalization is justified. Designing a rule to implement such an exception might be difficult, however, given that it should be restricted to taxpayers with a level pattern of investment, a trait observed only retrospectively. If the business is expanding (so the level of the insurance premiums and the number of licenses is continually increasing from year to year), then the approximate equivalency between capitalization and expensing does not hold.\footnote{170 Musgrave & Musgrave, note 5, at 385 (noting that if expensing is permitted for a taxpayer with a continually rising stock of assets, tax theoretically could be postponed forever).}

There is an apparent tension between my conclusions that (1) equal percentage measurement errors in depreciation schedules matter as much for short-lived assets as long-lived assets, and (2) expensing capital costs will not seriously distort income assuming a steady-state investment pattern in short-lived assets.\footnote{171 Compare text accompanying notes 166-67 with Section III.C.} The first conclusion implies that expensing short-lived assets will introduce substantial non-neutrality and the second conclusion implies the opposite. The difference lies in the subject analyzed in reaching the two conclusions. The first conclusion arose from an analysis focusing on the taxation of individual assets. The second conclusion, in contrast, arose from an analysis focusing on the net effect of the expensing allowance on taxpayers with particular patterns of investment. Since the federal income tax is imposed on taxpayers, not on assets, this latter mode of analysis, at least in theory, can identify instances where expensing assets acquired in a steady-state pattern is not seriously distortive.

Others have pointed out that rules allowing taxpayers to expense short-lived assets are a risky proposition for the policymaker, since taxpayers can replicate the benefits of deferral without limit by manu-
facturing circular cash-flows between taxpayers and financial intermediaries.\(^{172}\) Apparently the drafters of the *INDOPCO* regulations were concerned about this possibility. The exception for short-term assets (the "12-month rule")\(^{173}\) itself contains an exception. The 12-month rule does not apply to financial interests, including loans, insurance, derivatives, stocks, and the like.\(^{174}\) Any tax shelter designed to exploit the 12-month rule therefore must involve nonfinancial capital. This means that nontax factors at some point will limit the maximum size of the shelter. Application of the 12-month rule to financial assets would allow a transaction similar to the one in *Knetsch v. United States*,\(^{175}\) where the only limit on the size of the transaction is the taxpayer's appetite for tax avoidance.\(^{176}\) Despite the exclusion of financial assets from the 12-month rule, some fear that the 12-month rule will result in substantial taxpayer abuse.\(^{177}\)

**Summary**—The argument that expensing the costs of short-lived assets will not result in significant efficiency costs because the prices of short-lived assets are relatively insensitive to errors in depreciation schedules is flawed. The analysis underlying this argument unrealistically assumes that investors in short-lived assets have different consumption patterns than investors in long-lived assets. Substituting a more realistic assumption—that consumption and reinvestment are independent of asset durability—reveals that the prices of short- and long-lived assets respond similarly to equal changes in investment yield. Because equal percentage measurement errors in setting depreciation schedules for short- and long-lived assets produce comparable deviations in after-tax investment yield, it follows that mismeasuring depreciation for short-lived assets will be as costly as for long-lived assets. When, however, a taxpayer purchases short-lived assets in a steady-state investment pattern, expensing may be justifiable, at least


\(^{173}\) The 12-month rule does not require capitalization of costs related to certain intangible assets with a life that does not extend beyond the earlier of (1) 12 months after the first date on which the taxpayer realizes a right or benefit and (2) the end of the taxable year following the taxable year during which payment is made. Reg. § 1.263(a)-4(f)(1).

\(^{174}\) Reg. § 1.263(a)-4(f)(3).

\(^{175}\) 364 U.S. 361 (1960).

\(^{176}\) See Daniel N. Shaviro & David A. Weisbach, The Fifth Circuit Gets It Wrong in *Compaq v. Commissioner*, 94 Tax Notes 511, 512 (Jan. 28, 2002) (explaining that, in *Knetsch*, "[t]he circularity of the transaction ensured that it would not subject [the taxpayer] to any downside economic risk, or alter market interest rates even if thousands of taxpayers did the same deal").

\(^{177}\) Johnson, note 172, at 1383 (predicting a wave of "multi-billion dollar" tax shelters manipulating the 12-month rule).
where the administrative costs of capitalization outstrip the efficiency costs of departing from normative capitalization.¹⁷⁸

E. Repairs

Current law allows the cost of repairs to be expensed yet requires the cost of improvements and replacements (collectively, “improvements”) to be capitalized.¹⁷⁹ This dichotomy between repairs and improvements grew out of the statutory antecedents to § 263, as well as regulations, and case law applying these authorities.¹⁸⁰ Courts have crafted ephemeral distinctions to implement the dichotomy, like the one distinguishing between costs that “put” an asset into working condition (capital) and those that “keep” it that way (deductible).¹⁸¹

Although neither Congress, the Service, nor the courts have offered anything but arguments based on precedent for allowing repairs to be deducted, some commentators have done so.¹⁸² The argument is that expensing repair costs makes sense when, if capitalized, they would be subject to uneconomic depreciation that would result in greater income measurement errors than would expensing.¹⁸³ This is the same argument that I considered in Subsection III.A in the context of intangibles costs. The argument is worth revisiting because it has two unique aspects as applied to repair costs that deserve separate analysis: (1) Expensing the cost of long-lived repairs creates a bias in the used asset market, whereas expensing intangibles costs creates a bias across asset classes; and (2) where the cost of repairs are required to be capitalized and depreciated over a period longer than the useful life of the repair, the resulting increase in the effective tax rate for the asset being repaired actually may be neutrality enhancing in some cases. Consider the following example.

A machine will last for exactly nine years if after every three years the machine is overhauled. If the overhaul merely keeps the machine in “ordinarily efficient operating condition” there is a good chance the cost of overhaul is deductible.¹⁸⁴ Figure 4 depicts the value of the

¹⁷⁸ See, e.g., note 169 and accompanying text.
¹⁷⁹ Bittker & Lokken, note 94, ¶ 20.4.8.
¹⁸⁰ Id. (discussing cases).
¹⁸¹ E.g., Illinois Merchants Trust Co. v. Commissioner, 4 B.T.A. 103, 106 (1926).
¹⁸² E.g., Lee, note 1, at 351.
¹⁸³ Id. (arguing that where “[T]he recovery period for [a] capitalized [repair] expenditure was more than twice as long as the repair cycle . . . a current deduction . . . would produce less distortion of income . . . than such ideal slow or no depreciation would cause.”) (emphasis in original).
¹⁸⁴ E.g., Ingram Industries v. Commissioner, 80 T.C.M. (CCH) 532 (2000) (allowing taxpayer to deduct the cost of overhauling tugboat engines where the overhaul would last three to four years). But see Vona1co v. Commissioner, 78 T.C.M. (CCH) 251 (1999), aff’d sub nom. Smith v. Commissioner, 300 F.3d 1023 (2002) (requiring periodic replacement of
machine over the course of its useful life assuming that (1) the machine depreciates in an even pattern, and (2) the periodic overhauls add value to the machine equal to their cost, which value dissipates in an even pattern until the next required overhaul.

**FIGURE 4**
**VALUE OF MACHINE WITH NINE-YEAR LIFE THAT MUST BE OVERHAULED EVERY THREE YEARS**

![Diagram showing the value of a machine with a nine-year life that must be overhauled every three years.](image)

Positing a market for used machines of this type highlights the problem caused by deducting the repair. The buyer of a machine immediately after repair must capitalize the entire purchase price, given that the machine is a distinct asset.\(^\text{185}\) The buyer of a machine immediately before an overhaul, on the other hand, must capitalize the purchase price but may (by hypothesis) deduct the cost of the overhaul. Considering the tax benefit from deducting the overhaul, all else being equal, the sum of (1) the cost of the machine immediately before the overhaul plus (2) the cost of the overhaul will be less than the cost of a machine that was just overhauled. Allowing a deduction for the repair thus introduces a bias into the used machine market in favor of machines in need of an overhaul.

This bias may lead to perverse incentives. Consider the following example, based loosely on a case from the 1920's.

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\(^{185}\) Bittker & Lokken, note 94, ¶ 20.4.1 ("The most definitive rule of law to emerge from Lincoln Savings and INDOPCO may be that expenditures resulting in the creation or enhancement of a separate and distinct asset must be capitalized.").
Suppose a taxpayer has a choice between buying a new tugboat for $100,000 or raising and restoring a sunken tugboat for $110,000. Assume that the subsequent life and utility of the old and new boats would be the same. In the absence of tax, the taxpayer should purchase the new boat. But if the taxpayer can expense the cost of raising and restoring the sunken boat, as opposed to capitalizing the cost of purchasing the new boat, then the taxpayer has a tax incentive to make the inferior investment in the old tug.\footnote{186}

Requiring taxpayers to capitalize the cost of repairs lasting beyond one year eliminates this aftermarket disparity between machines in need of repair and those that have just been repaired. A new problem develops, however.

A capital asset usually will have a useful life longer than a repair to that asset (otherwise no more than one repair would be required). In the above example, for instance, new machines last for nine years but overhauls last for only three years. Recovery of the cost of the repair over three years is appropriate, but the law forbids this practice, known as "component depreciation."\footnote{187} Instead, the law requires capital improvements to machines and buildings to be recovered over the life of the asset as a whole.\footnote{188} Forbidding component depreciation has been justified on administrative grounds—it would be too difficult to administer component depreciation because of the difficulty ascertaining how many components comprise a given asset\footnote{189} and the useful life of each component.\footnote{190} In a system where tax depreciation schedules are economic, no solution other than component depreciation simultaneously can (1) tax new and used machines neutrally and (2) not overtax owners of machines by unduly delaying the recovery of repair costs.

\begin{itemize}
\item \footnote{186}Johnson, note 149, at 1088 (citing Zimmern v. Commissioner, 28 F.2d 769 (5th Cir. 1928)).
\item \footnote{187}IRC § 168(i)(6); Staff of Joint Comm. on Tax’n, 107th Cong., Technical Explanation of the “Job Creation and Worker Assistance Act of 2002,” at 25 & nn.38-39 (Comm. Print 2002).
\item \footnote{188}See IRC § 168(i)(6).
\item \footnote{189}For example, is a tug boat just a hull and an engine, or is each part in the engine a separate component?
\item \footnote{190}Joint Comm. on Tax’n, 95th Cong., Tax Reduction and Reform Proposals: Real Estate Depreciation 19 (Comm. Print 1978) (eliminating component depreciation would “contribute toward tax simplification by eliminating a source of controversy concerning the amounts allocable to various components, and the useful lives of the components”); cf. Metro National Corp. v. Commissioner, 52 T.C.M. (CCH) 1440 (1987) (grappling with the question whether partitions, false ceilings, and sprinkler systems constituted “structural components” of a building for purposes of the investment tax credit).
\end{itemize}
The constraint that component depreciation is too administratively burdensome to be worthwhile precludes the first-best solution where tax depreciation is economic. The appeal of the two alternatives—capitalizing the costs of repairs and recovering them over the useful live of the repaired asset or expensing repairs—depends on the impact on the effective tax rate. Where depreciation is economic, the closer the useful life of the repair is to the useful life of the asset as a whole, the more likely that capitalization is a second-best optimum; conversely, the greater the disparity between the useful life of the repair and the useful life of the asset as a whole, the more likely expensing is a second-best optimum.

The conclusion that expensing the costs of relatively short-lived repairs of long-lived assets is a second-best optimum given a world with economic depreciation does not necessarily hold if one substitutes current law’s depreciation schedules for economic depreciation. Treasury has estimated the effective tax rate for equipment at 30.9%; compare this with the much higher effective tax rates for inventories and land (both 37.5%).191 Requiring taxpayers to capitalize equipment repair costs would increase the effective tax rate on equipment and may bring it more closely in line with inventories and land. Consequently, eliminating the dichotomy between repairs and improvements for undertaxed assets like equipment in fact may promote neutrality.192

Summary—Arguments that repair costs should be expensed depend on the claim that uneconomic depreciation of repair costs renders capitalization of such costs inferior to expensing. This argument might be convincing if tax depreciation of the repaired asset were economic, at least in cases where the disparity between the useful life of the repaired asset and the useful life of the repair was significant enough so that the non-neutrality from depreciating the repair cost over the useful life of the asset was greater than the non-neutrality from expensing the repair.193 Under current law, however, where tax depreciation of equipment (for example) is faster than economic depreciation, resulting in an effective tax rate lower than that for competing investments, capitalizing repair costs and depreciating them over an uneconomically long period might be neutrality enhancing.

191 See text following note 66.
192 Requiring capitalization of all equipment repairs that provide a benefit in the next taxable period would impose a tremendous administrative burden, suggesting the need for a de minimis exception.
193 See Subsection III.A.
F. Indirect Costs

The argument for expensing indirect costs is simple: It is too administratively burdensome to identify them.\textsuperscript{194} By indirect costs I mean costs incurred in the process of procuring a capital asset that are not transmitted directly to the seller of the asset, or for assets that are not purchased but are instead self-constructed, costs for things other than the raw materials incorporated into the asset itself. The price paid to the seller for a building is a direct cost but the fee paid to the broker is an indirect cost. If instead the taxpayer self-constructs, the cost of materials is a direct cost, but the time-value of the taxpayer's labor is an indirect cost.

The claim that the administrative burden of identifying indirect costs is too great cannot be evaluated in isolation. Instead, this administrative burden must be weighed against the cost of the inefficiencies that result from failing to identify and properly treat indirect costs.\textsuperscript{195} As discussed in the context of the other arguments, this process of weighing the administrative costs and the costs of non-neutralities resulting from flawed capitalization rules is dependent on unavailable empirical data. The policymaker therefore is left to intuit her way to a policy determination that may be relatively easy in limited instances but, for the most part, will leave her to base policy decisions on assumptions and hunches about the unobservable balance between administrative costs and the cost of allowing indirect costs of procuring capital assets to be expensed.

Some identifiable features of the factual scenarios that raise indirect costs problems will make the policymaker's job easier or more difficult in certain cases. Where the indirect cost in question does not involve an arm's length transaction, or where the good or service procured by the cost is part of a package of goods or services, confounding valuation and allocation problems arise that are likely to raise the administrative burdens of requiring indirect costs to be capitalized.

For example, if the indirect cost in question is a brokerage commission that the buyer of a capital asset must pay, the commission alternatively might be paid (1) to an independent broker charging a one-time fee linked to the particular transaction in question, (2) to an independent broker as a retainer for handling any and all transactions

\textsuperscript{194} E.g., Guidance Regarding Deducting and Capitalizing Expenditures, 67 Fed. Reg. 77,701 (Dec. 19, 2002) ("The IRS and Treasury Department have concluded that the clearer reflection of income that might be gained by requiring capitalization of employee compensation and overhead does not offset the administrative and record keeping burdens imposed by a capitalization requirement.")

\textsuperscript{195} Id. (In formulating the INDOPCO regulations, Treasury claims to have performed the appropriate balancing of benefits and burdens.)
that occur in a given time interval, or (3) to an employee who is trained as a broker and who spends part of her time brokering acquisitions of capital assets and part of her time doing unrelated tasks. The first situation is clearly the easiest from the standpoint of tax administration. There is no difficulty either establishing the quantum of the indirect cost or allocating it to a particular asset, since the cost is the amount paid and the allocation is unambiguous.

The second situation presents more difficulties. If the taxpayer purchases more than one asset, how is the retainer fee paid to the broker to be divided among the assets purchased? According to time spent on each transaction? According to the relative values of the assets? If the broker worked on some potential acquisitions that did not come to pass, should part of the fee be deducted as a loss attributable to an abandoned project? There is, even in this second case, no difficulty determining the quantum of the fee, since it is set by the parties' agreement; all of the problems relate to allocation of the fee among projects.

In the third situation, administrative problems will be most severe since all of the allocation problems present in the second situation also are present and the quantum of the cost is not obvious. Some allocation of the costs of employing the broker (including both salary and overhead) must be made between the brokering and nonbrokering services she performs as an employee. It is not apparent whether time should be the only factor in the allocation or whether other factors (such as the relative market value of the brokerage and nonbrokerage services performed) should influence the allocation. In this situation, administrative costs are likely to be very substantial. Difficult allocation and valuation problems requiring collection of large amounts of data that otherwise would not have to be collected would be typical of these cases.

As in the case of repairs, allowing indirect costs to be expensed (or requiring them to be capitalized) may induce taxpayers to change their behavior. Certain costs of procuring capital assets can be either direct or indirect costs, depending on how the taxpayer structures her affairs. Recall that if she constructs a building herself, the time-value of her labor is an indirect cost, whereas if she purchases a building constructed by another, the price of the building (a direct cost) will include the time-value of the builder's labor. If the time-value of the labor of whoever builds the building is treated the same—required to be capitalized in both cases or allowed to be expensed in both cases—no tax-induced behavior change will result. If, on the other hand, the time-value of labor is treated differently depending on whether the

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196 See Subsection III.E.
cost is direct or indirect, then we would expect taxpayer to shift towards the tax-favored alternative.

Taxpayers are not, however, completely responsive to tax preferences. There are frictions in the marketplace that impede taxpayers from always planning their affairs to minimize taxes. For example, I might be worse at constructing buildings than the contractor I would hire in a world without taxes. If I may deduct the time-value of my labor but must capitalize the time-value of the contractor's labor, the tax-favored alternative is clearly to build the building myself. If, however, the tax advantage of the deduction is of less benefit to me than the cost of ending up with a less-well-constructed building due to my inferior skills as a builder, no tax-induced change in behavior will occur.

To the extent frictions are likely to prevent tax-induced behavior changes, the policymaker should be less concerned about creating or perpetuating rules that treat direct and indirect costs differently. The reason is that the tax-induced behavior change that takes place in the absence of nontax frictions is a source of social waste. Suppose that a rule allows me to expense the cost of my time. If I do not change my behavior (as in the example above because I am such a poor builder that the tax preference cannot overcome my natural disinclination to build myself) then I will pay and the government will collect more tax than if I had changed behavior, but society will be no worse off. If, on the other hand, I do change my behavior, my tax costs and the government's receipts will be lower, but again they will net to zero. Importantly, however, society will be worse off because the competitive advantage of the builder will have been squandered and society will end up with a more poorly constructed building.

Summary—There are clues available to assist the policymaker in weighing the administrative burden, on the one hand, and the costs to the tax system (for example, non-neutralities and resulting deadweight loss) of disparate rules for similar transactions, on the other hand. There will be cases where the burden obviously tips toward requiring indirect costs to be capitalized or allowing them to be expensed. Inevitably, however, there will be many cases in the middle where the policymaker lacks empirical data (or even good clues on which to base a

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198 Id. at 1315 ("End runs consume resources and warp transactions, yielding social waste."); Daniel N. Shaviro, An Efficiency Analysis of Realization and Recognition Rules Under the Federal Income Tax, 48 Tax L. Rev. 1, 31 (1992) (taxing relatively inelastic events raises more revenue and creates less welfare loss than taxing elastic events); Weisbach, Line Drawing, note 6, at 1663 ("We should tax similar things similarly to reduce substitution costs.").
hunch) with respect to both administrative costs and the costs of non-neutrality. In these cases, the choice between fidelity to normative capitalization and an exception is inescapably ambiguous.

IV. Conclusion

The following cases justify exceptions to normative capitalization:

(1) with respect to property for which neutrality-enhancing depreciation schedules cannot be set, or where the administrative burden of complying with and enforcing such depreciation schedules outweighs the benefits of the resulting neutrality improvement;

(2) with respect to investment in short-lived property that occurs in a steady-state pattern, where the non-neutrality introduced by expensing is relatively low and does less harm to the tax system than the administrative burden of normative capitalization; and

(3) with respect to indirect costs when the difficulty of quantifying and allocating such costs among capital assets imposes a burden on the tax system greater than the costs of the non-neutrality that will result if such costs are not allocated.

All three cases require the policymaker to compare the costs of failing to hunch to the normative ideal with the administrative costs of doing so. It is possible in identifiable cases to predict that the non-neutrality from relaxing normative capitalization will be modest, implying a low cost in terms of inefficiency (and also inequity), but even in these instances the policymaker's job is a difficult one, since the administrative burden of normative capitalization is not quantifiable. Still, the policymaker will be better able to perform her job armed with an estimate of the likely neutrality implications of creating an exception to normative capitalization in different situations than if she is left to guess about all of the inputs into the analysis.