

# Tax-Loss Mechanisms

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*Business losses are a persistent reality and far from an insignificant economic phenomenon. They are disruptive for businesses and burdensome for tax authorities. This Article builds a theory of tax-loss-mechanism design and discusses its normative implications. Although income-tax laws in the United States and elsewhere conclusively adopt a loss-offset mechanism, economists often advocate that losses be governed by a tax-refundability regime. Tax scholars, on the other hand, largely ignore the question of the desirable tax-loss mechanism.*

*This Article constructs and applies an economic framework for analyzing three prominent tax mechanisms for the treatment of losses: offset, refundability, and transferability. The economic theory that we develop yields several new insights and results. We show that all three tax mechanisms diverge primarily by legal design choices rather than by any inherent feature, and therefore, contrary to the common understanding in the literature, any normative choice can be implemented through any of the three, setting aside implementation costs. The commonly perceived differences among these tax mechanisms are erroneously grounded in observations of existing tax rules; this has prevented scholars from envisioning a redesign according to policy preferences.*

*The analysis further redirects the tax-policy focus to the desirable tax-rate schedule for losses (regardless of the choice of the tax mechanism). It uncovers the endogenous tax-rate schedule that applies to losses under typical tax-treatment mechanisms. In the case of loss offset, the revealed schedule seems capricious with decreasing or cyclical tax brackets. Our analysis derives a few additional new results, which are subsequently examined in our suggested normative framework.*

*Generally, this Article: (a) proposes a general, design-based approach to tax laws and (b) applies it to the treatment of losses, proving its value by inferring new results, which in turn (c) makes possible a broader and better-informed normative consideration for tax scholars and policymakers.*

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## INTRODUCTION

Business losses are a persistent reality.<sup>1</sup> They are disruptive for businesses and are an administrative inconvenience for tax authorities.<sup>2</sup> Under current federal income-tax law, business losses can be offset only against income.<sup>3</sup> The loss-offset mechanism is prevalent in many jurisdictions around the world, although the details and design of this mechanism may vary across jurisdictions and time.<sup>4</sup> Losses may be offset against future income only, against past income as well, over limited tax periods, in a certain order, against limited kinds of income, in limited amounts, and so on. The core idea, however, that losses should *offset* other income, is entrenched in income-tax laws.

The purpose and function of the loss-offset mechanism is to provide losing taxpayers with a tax benefit against their losses. This function can be accomplished through other mechanisms, two of which are prominent: tax refundability and loss transferability. Under a tax-refundability mechanism, taxpayers would cash the tax benefit attributed to their losses regardless of whether they have other income. A loss-transferability mechanism would allow taxpayers to sell their tax losses to other taxpayers, receiving a tax benefit through market transactions. The notions of refundability and transferability are present in various parts of the tax system, but they are not applied to tax losses,<sup>5</sup> and their potential in treating tax losses is not considered in the

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<sup>1</sup> See Rosanne Altshuler, et al, *Understanding U.S. Corporate Tax Losses*, 23 Tax Pol & Econ 73, 79–94 (2009) (describing the pattern and development of corporate losses in the United States); Nadja Dwenger and Florian Walch, *Tax Losses and Firm Investment: Evidence from Tax Statistics* \*4 (conference paper, Feb 2011), online at <http://hdl.handle.net/10419/48699> (visited Nov 3, 2014) (describing accumulated corporate losses in Germany).

<sup>2</sup> For example, the IRS responds to economic downturns and widespread loss incidence in the economy by relaxing tax-loss rules. In reaction to the 2001 and 2008 recessions, the IRS temporarily extended loss-carryback limitations from two years to five. See Job Creation and Worker Assistance Act of 2002, Pub L No 107-147, 116 Stat 21 (reacting to the 2001 recession); American Recovery and Reinvestment Act of 2009 (“Recovery Act”), Pub L No 111-5, 123 Stat 115; Worker, Homeownership, and Business Assistance Act of 2009 (WHBAA), Pub L No 111-92, 123 Stat 2984.

<sup>3</sup> See IRC § 172.

<sup>4</sup> See generally PriceWaterhouseCoopers, *Worldwide Tax Summaries: Corporate Taxes 2013/14* (2013), online at <http://www.pwc.com/gx/en/tax/corporate-tax/worldwide-tax-summaries/assets/pwc-worldwide-tax-summaries-corporate-2013-14.pdf> (visited Nov 3, 2014).

<sup>5</sup> See Part II.B.

legal literature.<sup>6</sup> For efficiency reasons, economists conclusively prefer refundability,<sup>7</sup> but they commonly assume, unrealistically, a flat-tax-rate schedule rather than a graduated one.<sup>8</sup>

In this Article, we study the tax treatment of business losses—best known as net operating losses (NOLs)—by carefully comparing three mechanisms: loss offset, tax refundability, and loss transferability.<sup>9</sup> Our main argument is that the three mechanisms vary by legal design rather than by any inherent features. Therefore, any difference among these mechanisms can be eliminated by legal design. The purpose of this Article is to uncover the implicit policy choices embedded in the different tax mechanisms in order to refocus the normative analysis of tax-loss treatment.

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<sup>6</sup> For a notable and important exception, see Mark Campisano and Roberta Romano, *Recouping Losses: The Case for Full Loss Offsets*, 76 *Nw U L Rev* 709, 709–11 & nn 1–2 (1981) (supporting tax refunds for losses and citing other “proposals endorsing recoupment”).

<sup>7</sup> This is the common result in the taxation-of-risk and subsequent tax-asymmetry literatures. See generally, for example, Evsey D. Domar and Richard A. Musgrave, *Proportional Income Taxation and Risk-Taking*, 58 *Q J Econ* 388 (1944); J. Tobin, *Liquidity Preference as Behavior towards Risk*, 25 *Rev Econ Stud* 65 (1958); Jan Mossin, *Taxation and Risk-Taking: An Expected Utility Approach*, 35 *Economica* 74 (1968); J.E. Stiglitz, *The Effects of Income, Wealth, and Capital Gains Taxation on Risk-Taking*, 83 *Q J Econ* 263 (1969); Agnar Sandmo, *Portfolio Theory, Asset Demand and Taxation: Comparative Statics with Many Assets*, 44 *Rev Econ Stud* 369 (1977); Jeremy I. Bulow and Lawrence H. Summers, *The Taxation of Risky Assets*, 92 *J Polit Econ* 20 (1984); Louis Kaplow, *Taxation and Risk Taking: A General Equilibrium Perspective*, 47 *Natl Tax J* 789 (1994); James M. Poterba, *Taxation, Risk-Taking, and Household Portfolio Behavior*, in Alan J. Auerbach and Martin Feldstein, eds, 3 *Handbook of Public Economics* 1109–71 (Elsevier 2002); Alan J. Auerbach, *The Dynamic Effects of Tax Law Asymmetries*, 53 *Rev Econ Stud* 205 (1986) (showing theoretically that asymmetric taxation affects investment decisions); Jeffrey K. MacKie-Mason, *Some Nonlinear Tax Effects on Asset Values and Investment Decisions under Uncertainty*, 42 *J Pub Econ* 301 (1990). See also generally Suman Majd and Stewart C. Myers, *Tax Asymmetries and Corporate Income Tax Reform*, in Martin Feldstein, ed, *The Effects of Taxation on Capital Accumulation* 343 (Chicago 1987) (offering a simulation). For related empirical analyses, see generally Jack M. Mintz, *An Empirical Estimate of Corporate Tax Refundability and Effective Tax Rates*, 103 *Q J Econ* 225 (1988); Rosanne Altshuler and Alan J. Auerbach, *The Significance of Tax Law Asymmetries: An Empirical Investigation*, 105 *Q J Econ* 61 (1990); Michael P. Devereux, Michael Keen, and Fabio Schiantarelli, *Corporation Tax Asymmetries and Investment: Evidence from U.K. Panel Data*, 53 *J Pub Econ* 395 (1994); Maureen Donnelly and Allister Young, *Policy Options for Tax Loss Treatment: How Does Canada Compare?*, 50 *Can Tax J* 429 (2002).

<sup>8</sup> See David A. Weisbach, *The (Non)Taxation of Risk*, 58 *Tax L Rev* 1, 38 & n 75 (2004) (noting that, aside from one article, graduated income-tax rates are ignored in the taxation-of-risk literature).

<sup>9</sup> The following analysis ignores the form of business—whether it is a corporation, partnership, sole proprietorship, or so on—as long as the applied tax schedule is graduated.

Specifically, we identify three fundamental characteristics of the tax treatment of losses: (a) timing (when the tax benefits are provided); (b) activity termination (the consequences of ending economic activity, such as bankruptcy or liquidation); and (c) tax-rate structure (the size of the tax benefit). In common practice and understanding, the three features are applied differently under the three mechanisms but can be redesigned to become economically equivalent. For example, a tax-refundability mechanism could provide tax benefits immediately upon incurring a loss, whereas a loss-offset mechanism may postpone such refunds to future periods, making such refunds susceptible to devaluation over time. The literature has addressed the devaluation problem, but no correct theoretical or practical solution has been offered.<sup>10</sup> We argue that the devaluation problem can be solved elegantly and that a loss-offset mechanism can be made equivalent to a tax-refundability mechanism on the timing issue by compensating losses with the annual after-tax yield on government bonds.<sup>11</sup>

The conventional wisdom among tax scholars acknowledges that timing and economic-activity-termination issues cause difficulties for the tax treatment of losses.<sup>12</sup> We show that these potential problems are not inherent in any loss-treatment mechanism and can always be mitigated or eliminated altogether. Furthermore, we argue that designing around these potential problems is generally not difficult. Thus, the positive analysis in this Article isolates the policy choices necessary for the treatment of tax losses, independently of implementation schemes.

The positive analysis also reveals the third feature of tax-loss treatment, which has been neglected in the literature to date and is arguably the most important normatively: the tax value of losses. Whether losses provide tax benefits through offset, refundability, or otherwise, the amount of the tax benefit must be determined. This is a normative choice and it is far from trivial. We show first that the tax value of losses materializes in the choice of a tax-rate schedule that applies to losses. We then expose the tax-rate schedule that is implicitly incorporated into typical designs of tax-loss-treatment mechanisms. For

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<sup>10</sup> See, for example, Poterba, *Taxation, Risk Taking, and Household Portfolio Behavior* at 1113 (cited in note 7) (noting the devaluation problem).

<sup>11</sup> See Part III.C.

<sup>12</sup> See note 7.

example, we show that the tax-rate schedule that implicitly applies to losses under the common loss-offset mechanism is peculiar and even capricious; tax rates may decrease or become cyclical, and these schedules vary across taxpayers. Intuitively, this may not look like a desirable choice and definitely requires normative attention. We argue that the applied tax-rate schedule is the most important policy choice in designing the tax treatment of losses. We also show how various tax designs can be applied to any selected tax mechanism.

This Article belongs to the emerging tax-design literature.<sup>13</sup> Unlike most of the legal literature on taxation, this Article does not purport to offer a normative analysis of tax laws or to suggest the next socially desirable reform. Rather, it is a positive project. It seeks to *positively* uncover implicit legal choices that are made in everyday laws and show that these choices are neither normatively trivial nor legally necessary. Laws can be designed as desired, and a positive analysis helps elucidate not only what social choices have been made in existing laws, but also how these laws can be redesigned in a socially desirable manner. Legal development and reform can be path dependent, and therefore past choices may lead current laws astray. Only by positively exposing the normative choices embedded in existing laws and by being aware of the available design options can normatively desirable choices be made.

This Article proceeds as follows. Part I traces the source of losses and explores their meaning. The combination of volatile income and limited tax periods generates losses. Thus, losses are identified with periodic excessive expenses. Because income is volatile, expenses can exceed income and cause a periodic loss in any given tax period. This identification is quite simple, and though it is not emphasized in the literature, it is what establishes the entitlement of losses to tax benefits. This discussion leads to a presentation in Part II of three tax mechanisms that can provide tax benefits against losses: tax refundability, loss offset, and loss transferability. Specifically, this Part defines these three possible tax regimes for the treatment of losses, explains their mechanics, and reviews their actual use in income-tax

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<sup>13</sup> See, for example, David Weisbach, *Instrument Choice Is Instrument Design*, in Gilbert E. Metcalf, ed., *U.S. Energy Tax Policy* 113, 155 (Cambridge 2011) (“Rather than focus on instrument choice, it is better to focus on the design of whichever instrument is chosen.”).

laws in the United States and elsewhere. Although losses are treated for tax purposes through an offset mechanism only, the refundability and transferability mechanisms are not unfamiliar to income-tax laws and cannot be ruled out for the case of tax losses.

In Part III we introduce the central contribution of this Article. We first present three characteristics of loss-treatment regimes—the timing of tax benefits, tax treatment at economic-activity cessation, and applied tax-rate schedule—and argue that these characteristics are fundamental to the design of tax-loss treatment. This argument is buttressed by showing how the three characteristics operate differently in typical loss-treatment regimes, and how the regimes become economically equivalent if these characteristics are assumed to be absent. We then proceed with the main positive analysis and show how it is possible to design around each of the three characteristics, separately or jointly (rather than artificially assuming that they do not exist), thereby making the three loss-treatment mechanisms equivalent. The purpose of the redesign exercise is obviously not to advocate the equivalent design of tax mechanisms but rather to prove that any typical nonequivalent design of a loss-treatment mechanism makes implicit policy choices along these characteristics. We expose these embedded policy choices, which are imperative for any normative analysis of tax-loss treatment, and illustrate the way in which the choices operate in a typical loss-offset regime and in potential loss-transferability and tax-refundability regimes. Under a typical loss-offset regime, the choices appear to be quite unexpected. Although our main purpose and focus in this Article is to provide a positive framework and analysis for the tax treatment of losses, Part IV develops a normative discussion of our positive results. We take the first steps in a normative analysis of design choices of tax-loss treatment and provide a framework for such an analysis.

## I. THE ORIGIN AND MEANING OF TAX LOSSES

### A. The Origin of Tax Losses

The tax analysis of losses is based on two interrelated elements: an economic variable (income volatility) and a structural choice of income taxation (tax timing).

### 1. Income volatility.

(Net) income is volatile over time and across taxpayers. It can be described in general by its magnitude and frequency.<sup>14</sup> Larger magnitudes or spreads indicate higher or lower income peaks; the rate of change in income levels over time represents frequency. Losses are indicative of income volatility. Greater volatility raises the chance of losses, and higher frequency raises the incidence of losses over time.

Income volatility is closely related to business risks. Larger income volatility and increased frequency are indicative of greater business risks. Taxpayers who engage in various activities undertake different risk levels and face different patterns of income volatility. To a large extent, income volatility results from taxpayers' voluntary (presumably utility-increasing) choices—in particular, the choice to incur more or less risk in the production of income.

Given any level of income volatility, longer time horizons mitigate or absorb volatility, whereas shorter time periods accentuate it. Thus, a continuously volatile income stream becomes less volatile if accrued and measured over longer time periods. Consider a recurring income stream of \$100 and \$700 in any two periods. If measured periodically, income goes up and down between \$100 and \$700. But if sampled biperiodically, income becomes steady at \$800 per “double period” and averages \$400 over single periods. Similarly, longer time horizons diminish the magnitude and incidence of losses.<sup>15</sup> Compare a recurring stream of income of  $-\$100$  and \$700. Measured (aggregated) biperiodically, the income stream converges into a steady stream of \$600 (averaging \$300 over single periods).

An illuminating example is provided by securities-exchange markets. Sampled continuously—say, daily—stock prices appear quite volatile, while annual sampling that ignores intrayear

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<sup>14</sup> Note that income volatility can be described (in *ex ante* terms) as an income-distribution function.

<sup>15</sup> The implicit assumption is that longer tax periods are longer than the frequency of volatile income. For example, if income over two shorter periods is \$500 and over the next two shorter periods is  $-\$500$ , redividing these four shorter periods into two longer periods would not reduce volatility: income will be \$1,000 and  $-\$1,000$  in the two longer periods. But once the longer tax periods are sufficiently long in relation to the frequency of income volatility, measured volatility is reduced. That is, if the length of a longer period equals the cumulative length of four shorter periods, volatility in this example disappears.



fluctuations reveals a less volatile picture.<sup>16</sup> The same is true for other time periods—for example, years versus decades.

## 2. Tax timing.

For tax purposes, the time horizon is determined by the choice of tax periods. Shorter tax periods accentuate income volatility for tax purposes, while longer tax periods tend to lessen volatility. Accordingly, the shorter the tax period, the more sensitive to income volatility tax consequences are expected to be.

The timing of tax imposition is a structural component of tax systems. Taxes can generally be levied at any point in time. Income taxes can be levied on periodic net income, however long or short the tax period. The tax period can be a day, a week, a month, a year, a decade, or even the lifetime of taxpayers.<sup>17</sup> The choice of optimal tax periods or time units for tax purposes is generally based on considerations of accuracy and complexity in implementing the tax system. The choice of periodicity, and whether it is socially desirable, is orthogonal to the purpose and focus of this Article. Therefore, we take any determined tax period, such as the common annual period, as a given. The only required assumptions for the following analysis is that the tax base measures net income and that income tax is calculated and imposed periodically—that is, over more than one period.<sup>18</sup>

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<sup>16</sup> See generally Jeremy J. Siegel, *Stocks for the Long Run: The Definitive Guide to Financial Market Returns & Long Term Investment Strategies* (McGraw-Hill 4th ed 2008).

<sup>17</sup> The “correct” identification of tax periods is complicated. See, for example, Jeff Strnad, *Periodicity and Accretion Taxation: Norms and Implementation*, 99 Yale L J 1817, 1863–84 (1990) (suggesting a theoretical framework for choosing tax periods); Eugene Steuerle, Richard McHugh, and Emil M. Sunley, *Who Benefits from Income Averaging?*, 31 Natl Tax J 19, 30 (1978) (“An annual period is as arbitrary as any other one and is a compromise between a shorter period which may better measure current welfare and a longer period which may better measure long-run or permanent income.”). This issue is strongly related to the income-averaging literature that struggles with the difficulties that arise under a periodic tax system with graduated tax rates. See generally, for example, William Vickrey, *Averaging of Income for Income-Tax Purposes*, 47 J Polit Econ 379 (1939) (discussing the problem of tax periods and progressive taxation and suggesting an averaging solution).

<sup>18</sup> Notice that any choice of a tax period implicitly ignores, or assumes away, intraperiod income volatility. For example, given an annual tax period, losses incurred within a year are irrelevant for tax purposes if they are offset by gains during the same year. Although this is a strong assumption, its effect is generally orthogonal to the analysis and conclusions of this Article. The reason is that intraperiod income volatility affects the optimal choice of periodicity (due to the time value of money). The following analysis takes tax periodicity as given, which is hence equivalent to assuming no intraperiod volatility.

To summarize, income volatility and tax timing are the cause of periodic tax losses. Given any social choice of tax periods, the economic reality of volatile income necessarily generates periodic losses.

## B. The Meaning of Tax Losses

It is largely accepted that a tax loss should entitle one to a tax benefit.<sup>19</sup> This widely held notion can be easily explained by the resemblance between losses and expenses, whereby losses can be perceived as excessive periodic expenses. Because expenses enjoy tax benefits under an income-tax base that taxes profits, so too should tax losses.

In practice, although not necessarily in theory, the income-tax base is structured around inflows and outflows. Tax is levied on net income, which is the difference between inflows (income) and outflows (expenses).<sup>20</sup> The identification of inflows and outflows that are relevant for an income-tax base, and hence for the calculation of net income, is a debated issue. Presumably, relevant inflows and outflows are different under an “ideal” income-tax base (whether it is equated with the Haig-Simons formulation<sup>21</sup> or any other formula or definition) than under a less-than-ideal income-tax base—for instance, a so-called conventional, politically acceptable, or practical income-tax base.<sup>22</sup> The following analysis is

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<sup>19</sup> See, for example, John O. Everett, et al, *Tax Planning Opportunities for Individual Net Operating Losses*, 119 J Tax 108, 108 (2013) (“Without [the NOL provisions of § 172], excess deductions occurring in one tax year would go to waste.”); Revenue Bill of 1918, S Rep No 617, 65th Cong, 3d Sess 7 (1918) (stating that “the present plan,” which did not allow for NOL carryovers, “does not adequately recognize the exigencies of business, and . . . may often result in grave injustice”). For various normative theories and models that reach the same result, see text accompanying notes 7, 168–71.

<sup>20</sup> See IRC § 63 (defining “taxable income” as gross income minus allowable deductions); IRC § 61 (defining “gross income” as “all income from whatever source derived”); IRC § 162 (“There shall be allowed as a deduction all the ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business.”).

<sup>21</sup> See Henry C. Simons, *Personal Income Taxation: The Definition of Income as a Problem of Fiscal Policy* 50 (Chicago 1938) (“Personal income may be defined as the algebraic sum of (1) the market value of rights exercised in consumption and (2) the change in the value of the store of property rights between the beginning and end of the period in question.”); Robert Murray Haig, *The Concept of Income—Economics and Legal Aspects*, in Robert Murray Haig, ed, *The Federal Income Tax* 1, 7 (Columbia 1921) (“Income is the money value of the net accretion to one’s economic power between two points of time.”) (emphasis omitted).

<sup>22</sup> The debate is particularly prominent in the tax-expenditures literature. See, for example, Stanley S. Surrey, *Pathways to Tax Reform: The Concept of Tax Expenditures* 50–60, 82 (Harvard 1973) (arguing that tax expenditures in favor of the wealthy reduce that population’s gross income and therefore narrow the tax base); Boris I. Bittker, *A*

independent of definitional uncertainties, and it does not subscribe to any specific view or definition of net income. The only necessary and trivial assumption is that, however net income is defined, it comprises outflows or subtractions. Subtractions may assume several doctrinal forms, such as expenses and exemptions.

In the calculation of net income, subtractions or outflows enjoy a tax benefit. Taxes are levied on net income, so any subtraction from the net income reduces the amount to be taxed and thus enjoys a tax benefit. For example, assume a flat tax rate of 20 percent and a net income of \$1,000, which yields a tax obligation of \$200. A subtraction from income—say, an expense of \$100—reduces net income to \$900, and tax liability drops to \$180. In general, subtractions from income enjoy a tax benefit that equals the product of the marginal tax rate and the subtracted amount.<sup>23</sup>

Importantly, for tax purposes, losses can be generated only if subtractions from the tax base are allowed. When outflows are larger than inflows, a loss for tax purposes is created. The most likely cause of losses for income-tax purposes is an excess of expenses over income.<sup>24</sup> Losses are commonly generated by expenses—in fact, losses actually represent excessive expenses.

As explained, volatility, and in particular the incidence of losses, diminishes as tax periods extend over longer periods. Over shorter tax periods, it happens more frequently that outflows are larger than inflows, causing a periodic loss. Therefore, given volatile income, shorter tax periods are more likely to transform expenses into losses. Indeed, except for tax timing, losses and expenses are the same.

Consider a steady stream of inflows of \$1,000 over two consecutive periods, and a stream of outflows of \$1,200 and \$500

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*“Comprehensive Tax Base” as a Goal of Income Tax Reform*, 80 Harv L Rev 925, 926–27, 934 (1967) (doubting the possibility of observing a conventional income-tax base and advocating instead a nuanced, provision-by-provision approach to widening the tax base); David Weisbach and Jacob Nussim, *The Integration of Tax and Spending Programs*, 113 Yale L J 955, 983–97 (2004) (doubting the possibility of defining a comprehensive tax base and hence suggesting an analysis based on institutional-design grounds).

<sup>23</sup> Formally, let  $x$  be the amount subtracted from income and  $t$  be the marginal tax rate that otherwise applies to income. The tax benefit is equal to  $x \times t$ .

<sup>24</sup> Subtractions by exemption are, by design, limited to included income and hence cannot generate losses. Credits are commonly subtracted only from current tax obligations, rather than income, and hence do not generate losses (that is, negative taxes). But see Part II.B.1 (discussing refundable tax credits). Also note that exemptions and credits increase the probability that a given amount of expenses will generate periodic losses.

over the same periods. If double periods are considered tax periods, a profit (or taxable income) of \$300 is created. But if the tax timing follows each of these periods, then \$200 of the expenses in the first period become a \$200 loss.

This example illustrates the similarity between expenses and losses (but for the choice of tax periods). It is, therefore, reasonable to argue that tax consequences should not change due to the choice of tax periods. If losses are the result of excessive expenses due only to shorter tax periods, the argument goes, then their tax treatment should not be different from that of expenses.<sup>25</sup> This seems to be a simple rationale for providing tax benefits for losses. Losses should be entitled to tax benefits in the same manner that regular expenses are.

## II. THE TAX TREATMENT OF LOSSES: MECHANISMS AND THE LAW

In this Part, we discuss three prominent mechanisms for delivering tax benefits for losses and the use of these mechanisms under US income-tax law. The general purpose of this Part is to highlight the potential applicability of all three mechanisms for the treatment of tax losses and prepare the ground for their comparison and analysis in Part III.

### A. Tax Benefits: Transfer Mechanisms

Tax benefits due to losses, however they may be determined, can be provided to losing taxpayers using various procedures or legal mechanisms. We focus here on three mechanisms: tax refundability, loss offset, and loss transferability. These mechanisms supposedly represent three different techniques of delivering tax benefits—nothing more. In this Part, we carefully define these mechanisms and demonstrate how they function.

#### 1. Tax refundability.

The most straightforward mechanism for providing tax benefits for losses seems to be tax refundability. Under this mechanism, the government would grant taxpayers periodic tax benefits for losses: it would refund the tax value of losses in any tax

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<sup>25</sup> The discussion in the text implicitly assumes that tax periods' lengths are exogenous. See note 17 and accompanying text.

period that ends with a loss.<sup>26</sup> For example, if a 20 percent rate is applicable to tax losses, a taxpayer who incurs a loss of \$1,000 in the current tax period receives \$200 in cash from the government. Note that the choice of applicable tax rate is immaterial to the operation of this mechanism.

Accordingly, we define a tax-refundability regime as a government obligation to provide taxpayers the tax value of their periodic losses with no additional conditions attached. In particular, no proof of past or future gain is required. Although a tax-refundability regime would commonly provide the tax benefit for the period in which the losses were incurred—that is, currently—we impose no such requirement in our analysis, and tax benefits could be received in any past or future period.

It is commonly argued that the principal rationale for the tax-refundability mechanism is based on its immediate receipt—that is, within the loss period.<sup>27</sup> If a taxpayer is currently entitled to a tax benefit because of current losses, receiving that benefit later diminishes its value to the taxpayer due to the time value of money. Receiving the tax benefit immediately upon incurring the loss prevents a reduction in its value. As we show below, however, the effect of the time value of money is not a distinguishing feature of the tax-refundability mechanism, and we therefore argue that it should not necessarily be part of its definition.<sup>28</sup>

## 2. Loss offset.

The loss-offset mechanism provides a tax benefit for losses by subtracting them from the taxpayer's gains in past or future tax periods.<sup>29</sup> A loss-offset mechanism necessarily requires a losing taxpayer to accumulate sufficient gains in other tax periods. Once a losing taxpayer accrues sufficient gains, she can receive the tax benefit for losses.

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<sup>26</sup> See Campisano and Romano, 76 Nw U L Rev at 711–15 (cited in note 6) (describing a tax-refundability regime); Michael Cooper and Matthew Knittel, *Partial Loss Refundability: How Are Corporate Tax Losses Used?*, 59 Natl Tax J 651, 652–54 (2006) (describing a tax-refundability regime and its advantages).

<sup>27</sup> See, for example, Campisano and Romano, 76 Nw U L Rev at 716 n 24, 719–22 (cited in note 6).

<sup>28</sup> See Part III.C.

<sup>29</sup> When income is divided into different kinds (or sources), such as active versus passive income or capital versus regular income, losses may also *currently* offset other kinds of income. Still, this transfer mechanism requires a gain.

Loss-offset mechanisms may impose additional conditions and requirements, but none is necessary. First, the relevant gain-accumulation periods can be, and usually are, restricted. For example, the US offset regime of business losses limits relevant accumulated gain to the preceding two and the following twenty years.<sup>30</sup> Other countries have different rules.<sup>31</sup> Second, the order of offset can be designed in various ways. For example, in the United States, the offsetting losses must be incurred in a specific order.<sup>32</sup> Other designs are possible—for example, taxpayers could be allowed to freely choose the gain period (or order of gain periods) against which they can offset their losses. Third, the type of gains may be restricted. Fourth, the maximum amount of losses carried backward or forward can be restricted per year or otherwise.<sup>33</sup> Fifth, the required amount of accumulated gain can also be determined in more than one way. Generally, loss-offset mechanisms allow a loss of one dollar to offset an income of one dollar, but this is not a necessary requirement of a loss-offset mechanism. Loss offset may be allowed in various loss-gain ratios—for example, offsetting every loss of one dollar against a gain of fifty cents.

Thus, we define a loss-offset regime as a mechanism that provides taxpayers with tax benefits because of their periodic losses if and only if the taxpayers accumulated sufficient gains. This distinguishing feature of the loss-offset mechanism—that the tax treatment of losses in any tax period is contingent upon gains realized in other tax periods—creates a complicated interdependence across tax periods that can have two effects: (a) the timing of tax benefits due to losses is contingent upon the incidence of gains and therefore likely to be postponed to future periods, and (b) the tax-rate structure that applies to losses also depends on gains, unless a predetermined tax rate applies.

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<sup>30</sup> IRC § 172(b)(1)(A).

<sup>31</sup> See notes 44–45 and accompanying text.

<sup>32</sup> See IRC § 172.

<sup>33</sup> For a description of such a restriction in Germany, see Nadja Dwenger, *Tax Loss Offset Restrictions—Last Resort for the Treasury? An Empirical Evaluation of Tax Loss Offset Restrictions Based on Micro Data* \*3–4 (Discussion Papers in Quantitative Tax Research No 44, May 2008), online at <http://ideas.repec.org/p/zbw/arqudp/44.html> (visited Nov 3, 2014). For a proposal to restrict carried-back losses in Australia by the Australian Treasury Department, see Business Tax Working Group, *Final Report on the Tax Treatment of Losses* \*19–34 (Commonwealth of Australia 2012), online at <http://www.treasury.gov.au/PublicationsAndMedia/Publications/2012/Business-Tax-Working-Group-Final-Report> (visited Nov 3, 2014).

### 3. Loss transferability.

A loss-transferability mechanism would use the market to provide taxpayers with their tax benefit due to losses.<sup>34</sup> This mechanism creates a market for tax losses. Taxpayers could sell their tax losses, and buyers would be entitled to deduct or offset these losses against their own income for tax purposes. It is a combined sale-and-loss offset mechanism (also referred to as a second-party-loss offset mechanism). Thus, a loss-transferability mechanism is defined as a regime that facilitates market transactions in tax losses by allowing taxpayers to offset purchased losses against their own gains, immediately or in the future.<sup>35</sup>

This mechanism is intended to provide losing taxpayers with a tax value for their periodic losses by conducting a market transaction with profitable taxpayers who are willing to pay for losses. Like the loss-offset regime, the loss-transferability regime also requires gains in order to provide tax benefits for losses. But, unlike the loss-offset regime, the loss-transferability mechanism is not restricted to income earned by the losing taxpayer. Instead, the loss-transferability mechanism depends on cumulative gains in the economy.

Transferability regimes can be implemented in various ways. A rather general design of a loss-transferability regime would allow taxpayers to sell their loss position or entitlement to tax benefits, with no strings attached.<sup>36</sup> It would be a pure sale of losses for tax purposes and would not require changing behavior or designing new instruments (for example, financial ones). More stringent forms of loss transferability would involve corporate reorganizations (such as mergers) or the purchase of businesses or of large portions thereof. In other words, rather than sell a stripped loss, the taxpayer would sell a loss together with

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<sup>34</sup> See New York State Bar Association Tax Section Committee on Corporations, *Report on Section 382 of the Internal Revenue Code as Amended by the Tax Reform Act of 1976*, 31 Tax Lawyer 283, 285–86 (1978) (advocating for the transferability of corporate losses); M. Bernard Aidinoff, *Utilization of Acquired Net Operating Loss Carryovers and the Tax Reform Act of 1976—A Face-Lift for Section 382*, 55 Taxes 874, 887 (1977) (questioning the rationale of § 382 restrictions on loss transferability).

<sup>35</sup> It is indeed reasonable to allow a losing taxpayer, under a loss-transferability regime, to offset her losses against her own past or future gains, as under a loss-offset regime. That is, these two regimes are not necessarily mutually exclusive.

<sup>36</sup> See James S. Eustice and Gerald G. Portney, *The Destiny of Net Operating Losses*, 22 San Diego L Rev 115, 146 (1985) (describing a system of “[f]ree [t]ransferability of [l]osses”).

some other asset.<sup>37</sup> For example, a profitable firm might be allowed to deduct the losses of the losing firm with which it merges,<sup>38</sup> and a financially successful, newly married woman might be permitted to deduct the losses of her husband if they file a joint return.<sup>39</sup>

In the absence of transaction costs, a loss-transferability mechanism would provide taxpayers with the market value of tax losses, which is dictated by the value of such losses to the buying taxpayers. For example, if taxpayers could deduct purchased losses against their own income, a 40-percent-bracket taxpayer would be willing to pay up to \$400 to purchase a loss of \$1,000. It should be stressed that no tax-rate schedule is inherent to the loss-transferability mechanism. Similar to the loss-offset regime, any tax rate can be applied to a loss-transferability mechanism.

The timing of the delivery of the tax benefits under a loss-transferability regime is commonly implied by the requirement of accumulated gains in the economy. To the extent that accumulated gains exceed accumulated losses in most tax periods, this mechanism is expected to provide losing taxpayers with an immediate tax-market benefit upon incurring a loss, rather than postpone a benefit to a future tax period.<sup>40</sup>

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In sum, each of these three mechanisms can provide losing taxpayers with tax benefits due to their losses. The mechanisms differ in the requirements that they impose for the delivery of benefits.<sup>41</sup> Whereas the tax-refundability regime requires nothing but losses, the loss-offset regime requires a sufficient amount of accumulated gains by the losing taxpayer, while the

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<sup>37</sup> There are various proposals of this sort with more or fewer limitations on market transactions in losses. See, for example, Richard L. Bacon and Nicholas A. Tomasulo, *Net Operating Loss and Credit Carryovers: The Search for Corporate Identity*, 20 Tax Notes 835, 843 (1983) (proposing a "neutral rule" that would allow for loss transferability via mergers and acquisitions on the condition that "a new owner of a loss company [could] use no more carryovers than the loss company itself could reasonably have expected to use based on the size and earnings 'prospects' of its assets at the time of sale").

<sup>38</sup> But see IRC §§ 269, 381, 382, 384.

<sup>39</sup> See Treas Reg § 1.172-7(b). This example is currently disallowed in the United States. See *Calvin v United States*, 354 F2d 202, 205 (10th Cir 1965) ("[T]he regulations contemplate that the parties be married . . . when the net operating loss was sustained.")

<sup>40</sup> For further discussion, see Part III.B.

<sup>41</sup> Discussion of implementation issues is deferred to Part IV.



loss-transferability regime requires a sufficient amount of accumulated gains in the economy. These requirements can produce other differences among the mechanisms, such as the timing of tax benefits or the applicable tax rate. Moreover, the mechanisms may be modified in different ways by applying additional restrictions and conditions. We will discuss these differences and possibilities in Part III.<sup>42</sup>

## B. Legal Doctrines

All three tax mechanisms described above are present in US income-tax law. Although the tax treatment of losses is always implemented through the offset mechanism, the other two mechanisms are used for other tax purposes. In this Section, we briefly review the US experience with these mechanisms and consider a few examples from other countries. Our goal is to show that despite the common, universal use of the offset mechanism in treating losses, tax laws also apply the other two mechanisms to different tax issues, which suggests that they may be adopted for treating losses as well.

Business losses are treated in the United States and in other countries by the loss-offset mechanism. In the United States, NOLs can be carried back two years and forward twenty years in a predetermined order to offset income in the relevant years.<sup>43</sup> In other countries, offset rules are similar. Most Organisation for Economic Co-operation and Development (OECD) countries allow taxpayers to carry losses forward several years or indefinitely, and a few allow loss carryback for up to three years.<sup>44</sup>

Only losing taxpayers are entitled to offset their losses against their gains. US income-tax law, like income-tax laws in other jurisdictions, explicitly prohibits transfers of losses to other taxpayers (or legal entities) through various specific and general

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<sup>42</sup> Additionally, notice that these three mechanisms are not exhaustive. Other mechanisms could be designed, or mixes of these mechanisms could be adopted.

<sup>43</sup> IRC § 172(b)(1)(A). Before 1997, NOLs could be carried back three years and forward fifteen years. See IRC § 172(b)(1)(A) (1994). There are a few extensions to the carryback rule. For example, “eligible loss” is entitled to a three-year carryback, “farming loss” and “qualified disaster loss” enjoy a five-year carryback, and “specified liability loss” can be carried back ten years. See IRC § 172(b)(1)(F)–(G), (J). See also IRC § 1212 (defining rules for the carryback and carryforward of capital losses).

<sup>44</sup> See Organisation for Economic Co-operation and Development, *Corporate Loss Utilisation through Aggressive Tax Planning* 34 (2011) (comparing carryback and carryforward rules in various OECD countries).

restrictions.<sup>45</sup> These include restrictions on transferring losses as part of a reorganization, through transfer-pricing schemes, between related or unrelated parties, within a consolidated group, across borders, or between family members, as well as restrictions on the carryover of losses after a change of ownership or restructuring.<sup>46</sup> The basic rationale for these restrictions is to prevent transactions in losses made strictly or primarily for tax benefit.<sup>47</sup> To the best of our knowledge, tax refundability is not used for losses anywhere, but carryback rules seem to function like (partial) refundability. To the extent that losses can be carried back and deducted against past income, their tax value can be cashed out immediately. Although many scholars view carryback rules as tantamount to refundability,<sup>48</sup> we explain below why this is wrong. Even though carrying losses back allows the immediate cashing of tax benefits, it affects taxpayer incentives in a fundamentally different manner than straightforward refundability.

Thus, transferability and refundability mechanisms are not applied to losses, but they are used in the US income-tax system in the provision of some tax credits. Typically, tax credits can be offset against tax obligations, but a few tax credits are refundable and a few are transferable.

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<sup>45</sup> See, for example, IRC §§ 279, 381, 382, 384. Other countries adopt similar restrictions. See OECD, *Corporate Loss Utilisation* at 29–59 (cited in note 44) (describing legal restrictions on the use of losses, as well as taxpayers' avoidance schemes).

<sup>46</sup> See IRC § 361 (disallowing the recognition of gain or loss on exchanges of property between parties to a reorganization); PriceWaterhouseCoopers, *Worldwide Tax Summaries* at \*2154–55 (cited in note 4) (describing the “arm’s-length” standard of the IRS transfer-pricing regulations and discussing limitations on the use of NOLs after a reorganization or change in corporate ownership); IRC § 267 (disallowing the deduction of losses from a sale or exchange to a related party); Bittker, 80 Harv L Rev at 973 (cited in note 22) (referencing the “disallowance of losses on intrafamily transactions” under US income-tax law).

<sup>47</sup> See Aidinoff, 55 Taxes at 877–86 (cited in note 34) (describing the legal development of rules limiting loss transferability); Robert A. Jacobs, *Tax Treatment of Corporate Net Operating Losses and Other Tax Attribute Carryovers*, 5 Va Tax Rev 701, 703–07 (1986) (same); Daniel L. Simmons, *Net Operating Losses and Section 382: Searching for a Limitation on Loss Carryovers*, 63 Tulane L Rev 1045, 1051–58, 1061–67 (1989); *Tax Reform Act of 1985*, HR Rep No 99-426, 99th Cong, 1st Sess 256–59 (1985) (evinced congressional concern about loss trafficking).

<sup>48</sup> See, for example, Robert Carroll and Alan D. Viard, *Progressive Consumption Taxation: The X Tax Revisited* 76 (AEI 2012) (“Carryback . . . most closely resembles refundability.”).

### 1. Refundable tax credits.

Scholars have long advocated making tax credits refundable and thus providing cash to taxpayers who have no tax liability against which tax credits can be used.<sup>49</sup> To date, there are a few fully or partially refundable income tax credits in the Internal Revenue Code (IRC): the Earned Income Tax Credit (EITC), the Child Tax Credit (CTC), the American Opportunity Tax Credit (AOTC), the Small Business Health Care Tax Credit (SBHCTC), and the Health Insurance Premium Tax Credit (HIPTC).<sup>50</sup> The EITC provides incentives to work and supports low-income working families;<sup>51</sup> the CTC provides assistance to families with children;<sup>52</sup> the AOTC encourages the pursuit of higher education and provides aid to students from low-income households;<sup>53</sup> and the health-related tax credits assist small employers and low-income, privately insured families.<sup>54</sup> All these fully or partially refundable tax credits are aimed at low-income taxpayers who would not have benefited from them otherwise. A few refundable tax credits were enacted in the past, such as the Making Work Pay Credit,<sup>55</sup> the Health Coverage Tax Credit,<sup>56</sup> and the Adoption

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<sup>49</sup> See, for example, Stanley S. Surrey and Paul R. McDaniel, *The Tax Expenditure Concept: Current Developments and Emerging Issues*, 20 BC L Rev 225, 266–71 (1979) (discussing refundable tax credits); Jonathan Barry Forman, *Beyond President Bush's Child Tax Credit Proposal: Towards a Comprehensive System of Tax Credits to Help Low-Income Families with Children*, 38 Emory L J 661, 684 (1989) (suggesting various refundable tax credits for low-income families with children); Lily L. Batchelder, Fred T. Goldberg Jr, and Peter R. Orszag, *Efficiency and Tax Incentives: The Case for Refundable Tax Credits*, 59 Stan L Rev 23, 42–65 (2006) (arguing for refundable tax credits on economic-efficiency grounds); Sean M. Stegmaier, *Tax Incentives for Higher Education in the Internal Revenue Code: Education Tax Expenditure Reform and the Inclusion of Refundable Tax Credits*, 37 Sw U L Rev 135, 161 (2008) (proposing refundable tax credits to encourage the pursuit of higher education). The refundable-credits proposals are reminiscent of the negative-income-tax literature. See, for example, Stanley S. Surrey, *Income Maintenance Programs*, 24 Tax L Rev 305, 322, 334–35 (1969) (considering various types of “plans to combat poverty” and favoring a mixed approach); Christopher Green, *Negative Taxes and the Poverty Problem* 159–68 (Brookings 1967); James Tobin, Joseph A. Pechman, and Peter M. Mieszkowski, *Is a Negative Income Tax Practical?*, 77 Yale L J 1, 3 (1967) (supporting “strongly [ ] some sort of negative income tax (NIT) plan” and offering several specific proposals).

<sup>50</sup> See IRC §§ 32, 24, 36A, 25A, 45R, 36B.

<sup>51</sup> See Batchelder, Goldberg, and Orszag, 59 Stan L Rev at 34–36 (cited in note 49).

<sup>52</sup> See id at 36–37.

<sup>53</sup> See IRC § 26A(i).

<sup>54</sup> See IRC §§ 36B, 45R.

<sup>55</sup> See Recovery Act § 1001, 123 Stat at 309–12.

<sup>56</sup> See Trade Act of 2002, Pub L No 107-210, 116 Stat 933, codified in relevant part at 26 USC § 35.

Credit.<sup>57</sup> There are also refundable tax credits at the state level.<sup>58</sup> Despite the somewhat different rules that govern the various refundable tax credits, they all provide cash to entitled taxpayers.

Refundable tax credits are incorporated in the income-tax laws of other jurisdictions as well. The United Kingdom, Belgium, and France have adopted an EITC-like refundable tax credit.<sup>59</sup> The United Kingdom also spun off a refundable child tax credit from its EITC-like program and adopted a Research & Development (R & D) tax credit that is partially refundable.<sup>60</sup> Iceland has a refundable tax credit for mortgage-related interest payments.<sup>61</sup> Australia adopted a refundable education deduction for primary and secondary school expenses, as well as a First Child Tax Offset.<sup>62</sup> In Canada, taxpayers enjoy the Working Income Tax Benefit, the Canada Child Tax Benefit, and the Refundable Medical Expense Supplement.<sup>63</sup>

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<sup>57</sup> See American Taxpayer Relief Act of 2012, Pub L No 112-240, 126 Stat 2313, codified in relevant part at 26 USC § 23. Unlike the other two, this refundable tax credit is still available.

<sup>58</sup> See generally, for example, Internal Revenue Service, *States and Local Governments with Earned Income Tax Credit* (Apr 24, 2014), online at <http://www.irs.gov/Individuals/States-and-Local-Governments-with-Earned-Income-Tax-Credit> (visited Nov 3, 2014) (listing states with a refundable EITC); Michigan Office of the Auditor General, *Michigan Economic Growth Authority (MEGA) Tax Credit Program—Performance Audit* (Report No 271-0415-09, Apr 2010), online at [http://audgen.michigan.gov/~audgenmi/finalpdfs/09\\_10/r271041509.pdf](http://audgen.michigan.gov/~audgenmi/finalpdfs/09_10/r271041509.pdf) (visited Nov 3, 2014); Elaine Maag, *State Tax Credits for Child Care*, 108 Tax Notes 239 (2005) (listing states that adopted a refundable child tax credit). See also Thomas W. Giegerich, *The Monetization of Business Tax Credits*, 12 Fla Tax Rev 709, 715 n 18, 797–99 (2012) (describing various states' refundable tax credits); Maryland Office of Policy Analysis, *Evaluation of the One Maryland Economic Development Tax Credit* \*3–5 (Oct 2013), online at <http://mgaleg.maryland.gov/Pubs/BudgetFiscal/2013-Evaluation-One-Maryland-Economic-Development-Tax-Credit-DRAFT.pdf> (visited Nov 3, 2014).

<sup>59</sup> See Olivier Bargain, *Making Work Pay—Assistance to Low-Paid Workers in Europe* \*2 (European Commission 2008), online at <http://ec.europa.eu/social/BlobServlet?docId=3987&langId=en> (visited Nov 3, 2014).

<sup>60</sup> See HM Revenue & Customs, *Tax Credits—Coming Soon to the United Kingdom (UK)* \*1 (2014), online at <http://www.hmrc.gov.uk/leaflets/wtc-fs5.pdf> (visited Nov 3, 2014); HM Revenue & Customs, *Research and Development (R&D) Relief for Corporation Tax*, online at <http://www.hmrc.gov.uk/ct/forms-rates/claims/randd.htm#6> (visited Nov 3, 2014).

<sup>61</sup> See Organisation for Economic Co-operation and Development, *Taxing Wages 2009–2010* 336 (2010).

<sup>62</sup> See *id.* at 196, 201.

<sup>63</sup> See Jonathan Barry Forman, *Using Refundable Tax Credits to Help Low-Income Taxpayers: What Do We Know, and What Can We Learn from Other Countries?*, 8 eJournal Tax Rsrch 128, 145–46 (2010).

## 2. Transferable tax credits.

There are only two transferable tax credits in the IRC: the Low Income Housing Tax Credit (LIHTC), enacted in 1986, and, the New Markets Tax Credit (NMTC), enacted in 2000.<sup>64</sup> There are also similar transferable tax credits at the state level.<sup>65</sup> The LIHTC provides incentives for the development of low-income housing, and the NMTC encourages investments in low-income communities. The mechanisms are quite similar in all these programs: developers are entitled to a tax credit and are able to transfer their credits to investors in return for the equity capital required for development. Investors can subsequently claim these tax credits on their tax returns. Note that the LIHTC and NMTC also function as financial-credit instruments: investors provide developers with capital, enjoying the tax credits over an extended time period of ten years under the LIHTC (starting with completion of the housing units) or seven years under the NMTC.<sup>66</sup>

In the early 1980s, the federal government adopted two tax measures to stimulate investment: the Investment Tax Credit (ITC) and the Accelerated Cost Recovery System (ACRS).<sup>67</sup> The former provided tax credits for certain eligible property, and the latter provided accelerated depreciation.<sup>68</sup> Both provided tax benefits in the form of subtraction from income. But taxpayers with insufficient gains could not enjoy these tax benefits and therefore were not encouraged to invest. In response, the US Treasury enacted safe-harbor provisions for leasing transactions that practically allowed taxpayers to sell their unutilized tax benefits (both credits and accelerated deductions) to other profitable

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<sup>64</sup> See IRC §§ 42, 45D. See also Clinton G. Wallace, Note, *The Case for Tradable Tax Credits*, 8 NYU J L & Bus 227, 238–44 (2011); Giegerich, 12 Fla Tax Rev at 744–58 (cited in note 58); Government Accountability Office, *Tax Policy: New Markets Tax Credit Appears to Increase Investment by Investors in Low-Income Communities, but Opportunities Exist to Better Monitor Compliance* \*1–6, 37 (GAO-07-296 Jan 2007), online at <http://www.gao.gov/assets/260/256201.pdf> (visited Nov 3, 2014).

<sup>65</sup> For example, sixteen states have adopted supplementary LIHTC programs. See Wallace, 8 NYU J L & Bus at 236 n 29 (cited in note 64); Mihir Desai, Dhammika Dharma-pala, and Monica Singhal, *Tax Incentives for Affordable Housing: The Low Income Housing Tax Credit*, 24 Tax Pol & Econ 181, 201 n 2 (2010). One state has adopted a local supplementary NMTC program. See Michael J. Novogradac, *Update on the New Markets Tax Credit*, 12 J Affordable Housing & Community Dev L 447, 456 (2003).

<sup>66</sup> IRC §§ 42(f)(1), 45D(a)(3)(B).

<sup>67</sup> See Economic Recovery Tax Act of 1981, Pub L No 97-34, 95 Stat 172, codified in various sections of Title 26.

<sup>68</sup> Economic Recovery Tax Act §§ 201, 211, 95 Stat at 203–19, 227–35.

taxpayers through sale-leaseback transactions.<sup>69</sup> The safe-harbor rules were rescinded a year later.<sup>70</sup>

A few additional transferable tax credits or deductions have been adopted in state income-tax laws, benefiting the film industry, renewable energy, R & D, historic preservation, land conservation, and so forth.<sup>71</sup> Others have been suggested at the federal level for property leases,<sup>72</sup> health care,<sup>73</sup> affordable non-rental housing,<sup>74</sup> and renewable energy.<sup>75</sup> Lastly, in several states, partnership arrangements allow for the allocation of tax credits to partners.<sup>76</sup> At times, these allocations are unrestricted, which makes them similar to the sale of credits between partners and investors.

In sum, all three tax regimes (refundability, offset, and transferability) are used in income-tax laws in the United States and elsewhere, but losses are treated for tax purposes only through the offset mechanism. Tax credits are also typically treated through an offset mechanism, but a few are treated through a refundability or transferability mechanism. This legal

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<sup>69</sup> See Economic Recovery Tax Act § 201(a), 95 Stat at 203–19. See also Alvin C. Warren Jr and Alan J. Auerbach, *Transferability of Tax Incentives and the Fiction of Safe Harbor Leasing*, 95 Harv L Rev 1752, 1753–62 (1982); Ronald W. Blasi, *A Proposal for an Elective Tax Benefits Transfer System*, 10 Fla Tax Rev 267, 270–71 (2010).

<sup>70</sup> See Tax Equity and Fiscal Responsibility Act of 1982, Pub L No 97-248, 96 Stat 324. The reason for withdrawing the ACRS was political. See Daniel N. Shaviro, *Taxes, Spending, and the U.S. Government's March toward Bankruptcy* 17–18 (Cambridge 2007). Similarly, loss refundability might be politically infeasible. See Eustice and Portney, 22 San Diego L Rev at 151 (cited in note 36) (“I doubt if you will ever see free transferability of tax losses . . . ; it just looks bad, regardless of whether it is bad.”).

<sup>71</sup> See Giegerich, 12 Fla Tax Rev at 798–99 (cited in note 58) (describing transferable tax credits for renewable energy in Iowa); *A Guide to Pennsylvania State Transferable Tax Credits*, Penn Accountant 8–9 (Fall 2007) (describing state improvement-zone tax credits, R & D tax credits, and film tax credits, all of which are tradable); Paul Rothstein and Nathan Wineinger, *Transferable Tax Credits in Missouri: An Analytical Review*, 3 Fed Reserve Bank of St. Louis Regional Econ Development 53, 54–60 (2007) (describing transferable state tax credits in Missouri).

<sup>72</sup> See Blasi, 10 Fla Tax Rev at 269 (cited in note 69) (proposing that “lessors be granted an election to transfer to lessees cost recovery deductions . . . and tax credits associated with property that is leased”).

<sup>73</sup> See Leonard E. Burman and Jonathan Gruber, *Tax Credits for Health Insurance*, 11 Tax Pol Issues & Options 1, 3–7 (June 2005) (describing a proposal by the Bush administration to allow a transfer of personal health credits to insurers to apply against reductions in health insurance premiums).

<sup>74</sup> See Desai, Dharmapala, and Singhal, 24 Tax Pol & Econ at 183 (cited in note 65).

<sup>75</sup> See Bethany C. Sullivan, Note, *Changing Winds: Reconfiguring the Legal Framework for Renewable-Energy Development in Indian Country*, 52 Ariz L Rev 823, 834, 845–46 (2010) (advocating for transferable renewable-energy tax credits).

<sup>76</sup> See Giegerich, 12 Fla Tax Rev at 799–801 (cited in note 58).

reality does not necessarily suggest that any one mechanism is superior to the others or that a refundability or transferability regime is unsuitable for treating tax losses. In the next Part, we examine the application of all three tax mechanisms to the treatment of losses.

### III. ANALYZING TAX-LOSS MECHANISMS

The three mechanisms for the treatment of tax losses—loss offset, tax refundability, and loss transferability—have different definitions, and scholars perceive them as distinct along several dimensions. In this Part, we positively compare the mechanisms. First, we identify the fundamental characteristics that can differentiate these three mechanisms. Next, we show that the three mechanisms are economically equivalent if these fundamental characteristics are neutralized. We then explain how the three mechanisms differ along each of the fundamental characteristics. Finally, we demonstrate the necessary corrections required for each mechanism and show how equivalence can be restored.

Our general approach is one of tax design. Rather than constrain the analysis to the doctrinal definitions of these mechanisms in a certain jurisdiction or time, we allow any redesign of a mechanism as long as its basic features, as defined in this Article, are retained. We show that the common understanding of these mechanisms and the differences among them is largely incorrect because of the focus in the literature on existing doctrines rather than on potential design. Our general conclusions are that: (a) the three mechanisms are nonequivalent due only to application of common tax rules but can be made equivalent by legal design; (b) thus, the question of mechanism design must be analyzed directly rather than by focusing on existing, possibly misguided, regimes; (c) the different tax mechanisms apply various tax schedules, at times implicitly and somewhat arbitrarily; and (d) a graduated-tax-rate schedule is most likely the vital component in the design of tax mechanisms, although it is largely neglected in the existing literature. Graduated tax rates may render the choice of a mechanism for the treatment of losses interesting and normatively important.

We do not advocate any one of the designs analyzed here, and we do not contend that the various mechanisms should be designed equivalently. We argue that divergence in the treatment

of tax losses is due only to choices of tax design rather than choices of mechanism.

#### A. Fundamental Characteristics

There are a few characteristics that cause divergence between the mechanisms: (a) the time value of money, (b) termination of economic activity, and (c) the tax-rate structure. In addition, tax-treatment mechanisms diverge in their procedural requirements—that is, in their complexity. In this Section, we briefly review these characteristics.

##### 1. Time value of money.

Inflation and real interest rates affect the value, and therefore the choice of, consumption over time—in particular, the amount or quality of goods and services that one can purchase with a nominal sum of money. Positive inflation rates affect purchasing power, and positive interest rates affect the relative value of intertemporal consumption.<sup>77</sup> Under the common economic reality of positive inflation and real interest rates, the real price of consumption rises, so that, over time, individuals are able to purchase fewer goods and services using a certain nominal sum of money. For example, if inflation and interest rates are positive, \$100 can buy more goods and services at the beginning of the year than at its end. This implies that individuals are better off having money now than in the future and therefore prefer current to future financial resources.

The tax implication of the time value of money is straightforward: individuals are, *ceteris paribus*, better off paying taxes in the future than now,<sup>78</sup> or, per an old saying: “a tax deferred is a tax saved.”<sup>79</sup> Practically, deferred tax payments produce value for taxpayers, whereas delayed tax benefits destroy value. Therefore, postponing tax benefits due to delayed losses hurts taxpayers.

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<sup>77</sup> See Angus Deaton, *Understanding Consumption* 60–75 (Oxford 1992) (analyzing the effect of time value on consumption). Notice that the time value of money may be contingent on various factors, such as risk.

<sup>78</sup> See William D. Andrews, *A Consumption-Type or Cash Flow Personal Income Tax*, 87 Harv L Rev 1113, 1123–28 (1974) (demonstrating the economic effect of tax deferral).

<sup>79</sup> Neil Brooks, *The Quest for Tax Reform: The Royal Commission on Taxation Twenty Years Later* 44 (Carswell 1988).



## 2. Duration of economic activity.

Economic activity is typically finite. Natural entities, such as people, are engaged in economic activity for a limited time: until retirement, disability, or death. Artificial entities, by contrast, can theoretically operate indefinitely, although in practice they often have a limited life span: organizations can go bankrupt and trusts may dissolve after a certain date. Time-limited economic activity implies that taxpayers may end up with a loss in their last tax period.<sup>80</sup> Naturally, the tax treatment of “last period” losses cannot be postponed.

## 3. Tax-rate structure.

Notwithstanding fuzzy theoretical support and reasoning,<sup>81</sup> it is commonly perceived that equity requires a progressive income-tax structure.<sup>82</sup> That is, the average tax rate under an equitable income-tax system must rise with income. The most widely used mechanism for progressivity is tax-rate graduation, which is implemented by establishing more than one income-tax bracket.<sup>83</sup> Higher net incomes are subject to higher tax brackets, and therefore higher marginal tax rates. Increasing marginal tax rates generates progressivity in income-tax systems. By contrast,

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<sup>80</sup> Indeed, individuals are less likely than nonnatural entities—such as a corporation—to end up with a loss. But this phenomenon is probably due to the fact that individuals tend to undertake much less risk when approaching their foreseen final periods of income generation.

<sup>81</sup> See, for example, Simons, *Personal Income Taxation* at 16–17 (cited in note 21) (criticizing support for tax progressivity on the basis of “ability”); F.A. Hayek, *Progressive Taxation Reconsidered*, in Mary Sennholz, ed., *On Freedom and Free Enterprise: Essays in Honor of Ludwig von Mises* 265, 265–84 (Van Nostrand 1956) (questioning the normative basis of tax progression); Liam Murphy and Thomas Nagel, *The Myth of Ownership: Taxes and Justice* 139–41 (Oxford 2002) (supporting graduated tax rates on a loose and elusive basis). See also generally Elmer D. Fagan, *Recent and Contemporary Theories of Progressive Taxation*, 46 *J Polit Econ* 457 (1938).

<sup>82</sup> See, for example, Richard A. Musgrave, *The Theory of Public Finance: A Study in Public Economy* 90–110 (McGraw-Hill 1959) (presenting a normative analysis of tax progression); Murphy and Nagel, *The Myth of Ownership* at 130–41 (cited in note 81) (discussing various normative criteria for tax progression); Edwin R.A. Seligman, *Progressive Taxation in Theory and Practice* 13–64 (American Economic 1894) (discussing the broad historical and philosophical bases for tax progression); Joseph Bankman and Thomas Griffith, *Social Welfare and the Rate Structure: A New Look at Progressive Taxation*, 75 *Cal L Rev* 1905, 1945–65 (1987) (presenting a “welfarist” theory of tax progression). But see Walter J. Blum and Harry Kalven Jr., *The Uneasy Case for Progressive Taxation*, 19 *U Chi L Rev* 417, 430–44 (1952) (discussing the problems of tax progression).

<sup>83</sup> See Louis Kaplow, *Taxation and Redistribution: Some Clarifications*, 60 *Tax L Rev* 57, 58–64 (2007) (presenting various ways to accomplish tax progression, such as through a flat tax).

an income-tax system that applies only one tax rate has a flat rate structure.

Taxpayers are entitled to a tax benefit against their losses. The tax-rate structure that applies to losses determines the size of the tax benefit. Either a flat tax rate or a graduated rate can be applied to losses. For example, applying a flat rate of 30 percent for a loss of \$2,000 produces a tax benefit of \$600; applying a graduated rate structure to the same amount of losses—say, 20 percent for a loss of up to \$1,500, and 40 percent for additional losses—results in a tax benefit of \$500.

#### 4. Complexity.

Tax complexity is a measure of the cost required to apply the tax rules.<sup>84</sup> These costs include administrative and compliance costs. Complicated tax regimes require more resources to work; therefore, society generally benefits from simpler tax rules. Different loss-treatment mechanisms may diverge in their complexity and hence in their social desirability. A more detailed discussion of complexity is postponed to the next Part.

Whereas the characteristics of time value and activity duration are economic variables, the tax-rate structure and mechanism complexity are matters of tax design. Nevertheless, all characteristics require the attention of policymakers, and accordingly, all characteristics or their effects are subject to tax design. This is the approach followed in the subsequent analysis.

#### B. Equivalent Mechanisms

To demonstrate the importance of the fundamental characteristics, we first neutralize all three of them and show that the loss-treatment mechanisms are equivalent. The three characteristics—time value of money, duration of economic activity, and tax-rate structure—are decisive in the analysis and choice of loss-treatment mechanisms. This analytical method focuses attention on the relevant effort in designing a loss-treatment regime and its consequences. Accordingly, assume (a) zero time value of money, (b) an infinite time horizon of economic activity,

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<sup>84</sup> See Joel Slemrod, *Optimal Taxation and Optimal Tax Systems*, 4 J Econ Persp 157, 158–66 (Winter 1990) (discussing the importance of complexity to optimal-taxation analysis).

and (c) a flat tax rate.<sup>85</sup> We ignore complexity issues at this point but will address them later.

Given these assumptions, it is straightforward to see the equivalence of loss-offset and tax-refundability regimes. With infinite periods of economic activity, a loss-offset mechanism provides a tax benefit to losses at some point in time when such losses are offset against positive net income.<sup>86</sup> Given a flat tax rate, the nominal tax benefit is equal under tax-refundability and loss-offset instruments.<sup>87</sup> And because the value of time is zero, nominal tax benefits equal their real value. In other words, under a tax-refundability regime, the real value of tax benefits (which are typically received now) is equal to their real value under a loss-offset regime (which may be received in the future).<sup>88</sup> That is, the different timing of tax-benefit distribution under tax-refundability and loss-offset regimes is of no economic consequence. Similarly, the interperiod dependence of losses and gains under a loss-offset regime generates identical outcomes to those under the interperiod-independent-tax-refundability regime.

The loss-transferability mechanism is equivalent to both the tax-refundability and loss-offset mechanisms.<sup>89</sup> Under a loss-transferability mechanism, the losing taxpayer would sell losses to another taxpayer, who could deduct such losses against her own positive net income.<sup>90</sup> The tax benefit enjoyed by the buying

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<sup>85</sup> We assume that the same flat rate applies to both gains and losses.

<sup>86</sup> We actually make a further, reasonable assumption that the expected value of the taxpayer activity is positive; that is, net losses are impossible over infinite tax periods. Otherwise, an infinite time horizon of economic activity is meaningless.

<sup>87</sup> Tax rates may change over time. If a flat tax rate changes over tax periods, the rate that applies to losses under different mechanisms may be different. First, this potential difference can be fixed by law—for example, by applying a specific flat rate to losses, such as the tax rate in the year that the loss was incurred. Second, *ex ante* there is actually no difference. That is, in expectancy terms, the flat rate that applies to losses under any regime is equal.

<sup>88</sup> To the extent that losses can be, and are, offset backward, tax benefits under a loss-offset regime are received immediately upon incurring losses. Further, an implicit assumption in the text is that financial markets are perfect. In particular, anyone can borrow or lend any amount of money over any desirable period of time in order to bridge differences in consumption timing. Given the zero time value of money, this is a weak assumption.

<sup>89</sup> See Batchelder, Goldberg, and Orszag, 59 *Stan L Rev* at 33 n 36 (cited in note 49); Wallace, 8 *NYU J L & Bus* at 233–34 (cited in note 64).

<sup>90</sup> In order to focus on the loss-transferability mechanism, we will ignore the possibility of a losing taxpayer who offsets her own losses against future income. Additionally, we assume either that the losing taxpayer can sell her losses in any tax period, or that the buying taxpayer can deduct purchased losses against her own gains in any tax period.

taxpayer naturally affects the market price of the losses. Given a flat tax rate, the tax benefit for losses is identical for all buyers, and it is not different from the tax benefit received by the losing taxpayer under a tax-refundability or loss-offset mechanism. Because the value of losses for the buying taxpayer is the same as the tax benefit of the losses, a buyer would be willing to pay no more than the tax benefit. For example, if a 20 percent flat tax rate applies to losses, the tax benefit of a loss of \$1,000 is \$200. Therefore, a buying taxpayer would be willing to pay no more than \$200 for such a loss. It is actually a “market for money”: buyers purchase money (to be received from the government) with money paid to the losing taxpayers.

If no additional complexity (for example, transaction costs) is involved in selling losses, the price will rise all the way to its tax value, leaving the buyer with zero profit and the seller with the full tax benefit of the losses.<sup>91</sup> Although this result is not necessary in general, it is the necessary outcome under the present assumptions. The reason is that, over time, the amount of profits exceeds the amount of losses. Because it is a market for money, and money sold in this market has identical value to all buyers (given the flat tax rate), prices will be competed all the way to the tax value. Any market price that is lower than the tax value of losses can provide a positive profit for a higher bidder. Put simply, as long as tax losses can supply their full tax benefit in the market (that is, aggregate tax profits are higher than aggregate tax losses), buyers purchase money with money and will therefore necessarily bid up the price of tax losses to their tax value.

The relationship between aggregate profits and losses in the market may be the opposite, but this is rare. In periods of extreme economic downturn, for example, losses might be more prevalent in the economy. In this case, focusing on any single period, aggregate losses may exceed aggregate gains, and therefore, the market result is expected to be the opposite: the market price of tax losses goes down to zero. In such a case, losing taxpayers receive no tax benefit for their losses, and buyers receive windfalls if they purchase tax losses. But as long as aggregate profits are higher than aggregate losses over several (perhaps

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<sup>91</sup> If transaction costs are positive, the price will not rise all the way to its tax value. But then, these transaction costs should be compared to the costs of implementing other mechanisms. This discussion is postponed to Part IV.

many) tax periods, market prices will still equal the tax value of losses because losing taxpayers can always postpone the sale of their losses to subsequent tax periods. By selling losses in future periods of expansion rather than in a current period of contraction, losing taxpayers receive in the future the full nominal tax value of their losses, which under the zero-time-value assumption is equal to their real value.<sup>92</sup> Furthermore, allowing buyers to deduct purchased losses not only against current gains but also against past gains would minimize the probability of net aggregate losses in the economy in any single period. Aggregated profits over several preceding years will most likely be larger than the sum of the losses in the current year.<sup>93</sup> Thus, under these simplifying assumptions, all three mechanisms are equivalent.

### C. (Non)Equivalent Mechanisms: Positive Time Value of Money

This Section relaxes one assumption and assumes a positive time value of money. In reality, the time value of money is everywhere and almost always positive.<sup>94</sup> A positive time value of money makes the timing of tax benefits due to losses economically important. Indeed, it partially breaks the equivalence of the three mechanisms.

As explained above, in the absence of a deep recession (that is, assuming that aggregate profits exceed aggregate losses) in any period, a loss-transferability mechanism would provide losing taxpayers with their full tax benefit in the tax period in which the loss is incurred. Furthermore, if purchased losses can be carried back—that is, deducted against past gains—a loss-transferability regime would provide tax benefits currently even

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<sup>92</sup> Indeed, if buyers can offset purchased losses in any tax period, they may buy losses even in recession periods since they will still be able to offset them in the future (at the same real tax value).

<sup>93</sup> Note that economic recessions are rather brief; they last about one year on average. See note 152 and accompanying text. See also E. Ray Canterbury, *The Global Great Recession* xiii (World Scientific 2011) (noting that, after World War II, the average recession length has been roughly ten months). Additionally, one source suggests that the mean and median length of recessions is actually closer to two years. See Matías Braun and Borja Larrain, *Finance and the Business Cycle: International, Inter-industry Evidence*, 60 *J Fin* 1097, 1105 (2005).

<sup>94</sup> See generally, for example, Robert A. Jarrow, *The Term Structure of Interest Rates*, 1 *Ann Rev Fin Econ* 69 (2009).

under a weaker assumption, when aggregate profits are larger than aggregate losses over any series of such past periods.<sup>95</sup>

Similarly, the loss-offset mechanism can provide losing taxpayers with their tax benefits immediately rather than in the future if losses can be carried backward and each taxpayer retains sufficient past gains. Under these assumptions, tax timing is not an issue because tax benefits due to losses are received currently under all three mechanisms.

If the possibilities of long periods of recession or of insufficient past personal profits are accounted for (as with start-up businesses, for example), the loss-transferability and loss-offset mechanisms provide losing taxpayers with their tax benefits in future periods rather than in the loss period.<sup>96</sup> Receiving tax benefits in the future rather than now decreases their value due to the positive time value of money. Thus, given the incidence of recessions and the forward offset of losses, the three mechanisms are not equivalent because of the time value of money.

The different consequences of these mechanisms stem from their varying designs. The loss-offset rules are contingent on the losing taxpayer's future gains, whereas the loss-transferability rules depend on net gains in the economy. Accordingly, tax benefits due to losses are likely to be received sooner under a loss-transferability mechanism than under a loss-offset mechanism. A tax-refundability mechanism, by contrast, imposes no conditions on the entitlement to tax benefits due to losses, and the benefits are therefore received in the present.<sup>97</sup>

Although the three mechanisms become nonequivalent as a result of the positive time value of money, equivalence can be restored by design. The theoretically simple correction is to adjust the carried losses to the time value of money. If losses are carried forward under either the loss-transferability or the loss-offset regime, the losses' nominal value can be adjusted for tax purposes by the *appropriate* time value of money.

To illustrate, consider an appropriate annual time value of money of 20 percent and a flat tax rate of 40 percent; a loss of

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<sup>95</sup> For example, if losses can be offset backward over two years, then as long as aggregate business gains over any series of three years are larger than aggregate losses over such a period, a transferability regime will provide tax benefits immediately upon incurring a loss.

<sup>96</sup> Additionally, carrying losses backward may be limited by design due to complexity considerations.

<sup>97</sup> See Part II.A.1.

\$1,000 carried forward one year should be adjusted to \$1,200 for tax purposes. If a taxpayer offsets the loss against profits or sells it in the market next year, then she enjoys a tax benefit of \$480 ( $\$1,200 \times 40$  percent). This is economically equivalent to an immediate refund of \$400 ( $\$1,000 \times 40$  percent). Given an appropriate time value of money, the real (time-adjusted) value of losses, and hence of a taxpayer's tax benefit, equals its current value, as it does under an immediate-tax-refundability mechanism.

There seems to be agreement in the literature that losses that are carried forward should be adjusted to the time value of money.<sup>98</sup> But the literature fails to define the *appropriate* time value of money that should be applied to losses. The apparent difficulty is that no single, or "correct," time value of money exists. The time value of money varies across taxpayers and taxpayers' choices and activities based on their personal characteristics: for taxpayers who engage in riskier behavior, money has a higher time value; for those with intensive personal preferences for early rather than deferred consumption, the time value of money is also higher. The question, therefore, is how to determine the discount rate applicable to different taxpayers. Admittedly, if the time value of postponed tax benefits should be personalized, our analysis would be rather weak—accurately implementing personalized discount rates is a formidable task and prohibitively costly.

Professor William Vickrey, for example, famously suggested an averaging scheme for addressing problems generated by the annual assessment of income under a graduated income-tax system.<sup>99</sup> His averaging method requires adjusting income to the passage of time, and hence, to the time value of money. Vickrey argued, in passing, that the appropriate adjustment rate should be individualized—that is, equal to the individualized rate of return

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<sup>98</sup> The economic literature on tax asymmetries particularly exemplifies this agreement. See, for example, Auerbach, 53 *Rev Econ Stud* at 211–13 (cited in note 7) (examining the distortive effect of carrying losses forward with no interest); Majd and Myers, *Tax Asymmetries and Corporate Income Tax Reform* at 359–60 (cited in note 7); Alan J. Auerbach and James M. Poterba, *Tax-Loss Carryforwards and Corporate Tax Incentives*, in Feldstein, ed, *The Effects of Taxation on Capital Accumulation*, 305, 307–11 (cited in note 7).

<sup>99</sup> See generally Vickrey, 47 *J Polit Econ* 379 (cited in note 17); William Spencer Vickrey, *Agenda for Progressive Taxation* (Ronald 1947). See also Simons, *Personal Income Taxation* at 154 (cited in note 21).

on the marginal investment.<sup>100</sup> But he pointed out that, for practical purposes, his analysis ignores rate differentiation. The tax scholarship, contemplating similar deferral issues, follows Vickrey and sidesteps the problem of interest-rate heterogeneity,<sup>101</sup> although some scholars have acknowledged the impossibility of regulating individualized interest rates.<sup>102</sup>

In the case of deferred losses, time adjustment is different. We argue that the appropriate discount rate for postponed losses should be uniform for all taxpayers and equal to the after-tax rate of return on annual government bonds (in the United States, Treasury bills). We do not suggest that the individualized rate of return is uniform for all taxpayers. It generally is not. But we maintain that individualized rates are irrelevant for the tax treatment of losses. The reason is that the deferral of tax benefits creates a creditor-debtor relationship between losing taxpayers and the government, except that the government becomes the debtor rather than the taxpayer, as in the case of tax deferrals. Deferred tax benefits are not different from receiving tax benefits currently and lending them to the government. Therefore, deferred tax benefits are actually a repayment on a loan to the government and have the same economic status as any other government obligation, but the form (or the circumstances) of the government obligation is different. Thus, deferring tax benefits is similar to buying government bonds; there is

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<sup>100</sup> See Vickrey, *Agenda for Progressive Taxation* at 173 n a (cited in note 99). See also Steuerle, McHugh, and Sunley, 31 Natl Tax J at 31 (cited in note 17) (“[I]t would be difficult to set an appropriate and fair interest rate to apply to different individuals . . . . The appropriate rate for one taxpayer may be a bargain rate for another.”).

<sup>101</sup> See, for example, Mary Louise Fellows, *A Comprehensive Attack on Tax Deferral*, 88 Mich L Rev 722, 727–29 (1990) (supporting an interest-rate charge on deferrals); Cynthia Blum, *New Role for the Treasury: Charging Interest on Tax Deferral Loans*, 25 Harv J Legis 1, 13–27 (1988) (suggesting a uniform interest-rate charge on tax deferral equal to the rate on federal loans); Stephen B. Land, *Defeating Deferral: A Proposal for Retrospective Taxation*, 52 Tax L Rev 45, 65–73 (1996) (discussing the possibility of an interest-rate charge on tax deferrals).

<sup>102</sup> See, for example, Michael S. Knoll, *Financial Innovation, Tax Arbitrage, and Retrospective Taxation: The Problem with Passive Government Lending*, 52 Tax L Rev 199, 205–07 (1997) (taking more seriously the impossibility of observing heterogeneous interest rates of taxpayers); David M. Schizer, *Realization as Subsidy*, 73 NYU L Rev 1549, 1597–99 (1998) (critiquing the feasibility of interest adjustment to tax deferral). See also Lily L. Batchelder, *Taxing the Poor: Income Averaging Reconsidered*, 40 Harv J Legis, 395, 437–38 (2003) (stressing the political difficulties that arise with statutory determination of interest rates).



no reason for taxpayers or the government to distinguish between the two.<sup>103</sup>

Admittedly, deferred tax benefits may not be identical to government bonds because the former are coerced rather than consensual.<sup>104</sup> The loss-offset rules force losing taxpayers to lend money to the government, whereas government bonds are purchased at will. But there are good reasons to believe that this apparent difference is irrelevant and should not affect the analysis. The explanation is based on portfolio theory. According to portfolio theory, it is to the advantage of every individual, regardless of personal preferences, to hold a portfolio of assets that contains both certain risky assets, known as a “market portfolio,” and a risk-free asset, typically short-term government bonds such as US Treasury bills.<sup>105</sup> Personal preferences affect the composition of the portfolio—that is, the allocation of resources between the market portfolio and short-term government bonds. Conservative investors tend to allocate a larger share of their resources to government bonds, and less-conservative investors tend to invest more in a market portfolio. It follows that, if individuals are forced, for some reason, to sell or buy an asset, they can and will neutralize the forced transaction by entering into an opposite one, thereby restoring their preferred portfolio.<sup>106</sup>

In the tax context, deferring tax benefits amounts to a forced purchase of government bonds. But taxpayers can and will enter into an opposite transaction and sell an equal value of government bonds that they already hold in their portfolio.<sup>107</sup> After losses are offset by gains and the forced loan matures, taxpayers will

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<sup>103</sup> The analysis in the text closely corresponds with the analyses in Stephen R. Bond and Michael P. Devereux, *On the Design of a Neutral Business Tax under Uncertainty*, 58 J Pub Econ 57, 62 n 16 (1995); Stephen R. Bond and Michael P. Devereux, *Generalised R-Based and S-Based Taxes under Uncertainty*, 87 J Pub Econ 1291, 1296 (2003). Yet, unlike these studies, our analysis is complete (that is, it examines financial portfolios as a whole), further refined (for example, it differentiates among various risk-free government bonds), and yields a different result (by using after-tax rather than before-tax rates of return).

<sup>104</sup> See Blum, *Charging Interest on Tax Deferral Loans*, 25 Harv J Legis at 19–21 (cited in note 101) (giving weight to the forced character of tax deferral).

<sup>105</sup> See Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance* 185–212 (McGraw-Hill 10th ed 2011).

<sup>106</sup> See Weisbach, 58 Tax L Rev at 42–52 (cited in note 8) (discussing adjustment in taxpayers’ investment positions due to tax status).

<sup>107</sup> For the completeness of discussion, we should note that on the government side, the outcome is similar: there is no change in the “portfolio” of the government.

enter again into an opposite transaction and buy an equal value of government bonds.<sup>108</sup>

To illustrate, suppose that a taxpayer holds a portfolio that contains, among other assets, \$100,000 in government bonds with an after-tax yield of 2 percent. Suppose further that the taxpayer incurs a loss of \$40,000 that can be offset only against future gains and that the applicable flat tax rate is 20 percent. This means that the taxpayer is forced to lend the government \$8,000 ( $\$40,000 \times 20$  percent). This changes the composition of the taxpayer's portfolio to \$108,000 in government bonds. But the taxpayer can and will revert to her preferred, original portfolio by selling \$8,000 worth of government bonds in the market. Suppose that the taxpayer offsets the losses in the following year. The losses will be adjusted by the after-tax yield on government bonds to \$40,800 ( $\$40,000 \times 1.02$ ). The taxpayer therefore receives a tax benefit of \$8,160 ( $\$40,800 \times 20$  percent), which is equivalent to redeeming \$8,000 of government bonds after one year. To restore the preferred portfolio, the taxpayer must simply purchase \$8,000 in government bonds.<sup>109</sup>

As this example illustrates, forced loans to the government due to deferred tax benefits are no different from consensual investment in government bonds,<sup>110</sup> and therefore, deferred tax benefits can be designed to be equivalent to receiving tax benefits immediately. Indeed, the above example proves that time-adjusted deferred tax benefits are *identical*, rather than merely equivalent, to currently received tax benefits. In other words,

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<sup>108</sup> Taxpayers cannot necessarily foresee the timing of tax benefits due to their losses. For example, under loss-offset rules, taxpayers should wait until they generate sufficient gains, which may occur next year, the year after, or later. This fact poses no difficulty to the choice of time-value adjustments. Losses should be adjusted annually by the (after-tax) yield on one-year Treasury bills; accordingly, taxpayers should sell (or sell short) one-year Treasury bills in the same amount. These adjustments require no prior knowledge of the timing of tax benefits. The reason is that the yield on long-term government bonds must equal the aggregate yield on consecutive one-year Treasury bills. See Brealey, Myers, and Allen, *Principles of Corporate Finance* at 45–73 (cited in note 105).

<sup>109</sup> It is assumed in the text that the investor-taxpayer does not reinvest the yield in government bonds. Otherwise, the taxpayer should buy \$8,160 in government bonds.

<sup>110</sup> The analysis in the text is based on the assumptions that individuals hold government bonds or can enter into short transactions in government bonds (including synthetically) and that such transactions can be exercised cheaply. In reality, many individuals—most likely, every individual who manages a business or is a shareholder—hold government bonds. Government bonds are often held through retirement saving plans (for example, pension funds). Alternatively, if taxpayers find it difficult, costly, and complicated to adjust their portfolios, these costs of adjustment should be perceived as another source of implementation costs of a loss-offset regime.

under a deferred-tax-benefits regime, taxpayers can create a homemade tax refund.

Following the above example, a tax-refundability regime would provide an immediate tax benefit of \$8,000 to the taxpayer for a current loss of \$40,000. Under a loss-offset or loss-transferability regime, the taxpayer receives the tax benefits in the next tax period (adjusted for time). But, as shown in the example, the taxpayer enters into an offsetting transaction in government bonds by selling \$8,000 of government bonds in the loss year and purchasing the same bonds back in the next period (for \$8,160). Thus, the taxpayer receives \$8,000 in the loss period (in return for selling the government bonds) and tax benefits in the amount of \$8,160 in the next period, minus the repurchase of \$8,160 in government bonds. This is illustrated in Table 1.

TABLE 1. EQUALIZING LOSS-OFFSET, LOSS-TRANSFERABILITY, AND TAX-REFUNDABILITY MECHANISMS THROUGH GOVERNMENT-BOND PURCHASES

| Transactions             | Loss Period |          | Transactions                                | Future Period |                    |
|--------------------------|-------------|----------|---|---------------|--------------------|
|                          | Change In   |          |   | Change In     |                    |
|                          | Portfolio   | Cash     |   | Portfolio     | Cash               |
| Deferred Tax Benefits    | +\$8,000    | \$0      | Receiving Tax Benefits<br>+ Time Adjustment | -\$8,160*     | +\$8,000<br>+\$160 |
| Selling Government Bonds | -\$8,000    | +\$8,000 | Purchasing Government Bonds                 | +\$8,160      | -\$8,160           |
| Total:                   | —           | +\$8,000 | Total:                                      | —             | —                  |
| Refundability            | —           | +\$8,000 |   | —             | —                  |

\* The future-period value of \$8,000 current worth of government bonds.

In sum, the positive time value of money partially undermines the equivalence of the three mechanisms, but the equivalence—indeed, the identity—can be restored by adjusting deferred losses to the time value. The adjustment is not idiosyncratic with respect to any individual but is uniform and equal to the after-tax yield on annual government bonds.

#### D. (Non)Equivalent Mechanisms: Finite Periods of Economic Activity

In this Section, we relax the assumption that economic activity continues indefinitely over tax periods<sup>111</sup> and instead assume that (a) human taxpayers are engaged in economic activity for a limited period of time (for example, until retirement), and (b) artificial-entity taxpayers also have a limited life span (such as non-pass-through corporations that may go bankrupt and trusts with a dissolution date). In other words, taxpayers may cease any tax-relevant activity at a certain point in time.

Time-limited economic activity implies that taxpayers may end up with a loss in their last tax period. A tax-refundability regime fully provides for such tax losses. A taxpayer's last period of economic activity is not different from any other tax period under a tax-refundability regime, and therefore, the last period functions similarly to all other tax periods. But under either a loss-transferability or loss-offset regime, losses in the last tax period may enjoy no tax benefit at all. A loss-transferability mechanism may offer no tax benefit to taxpayers who end up with losses in their last period of activity if that period falls in a slump year, because market prices for losses may plummet in such periods. Similarly, a loss-offset regime denies tax benefits for losses aggregated in a taxpayer's last period of activity because no future gains are expected. Therefore, unlike the tax-refundability instrument, the loss-transferability and loss-offset mechanisms do not provide for the entire tax benefit of losses incurred in the last tax period of activity (or in the last few periods).

The last-period loss poses a problem that can be partially mitigated without resort to tax refundability.<sup>112</sup> Carrying back losses to preceding years under a loss-offset regime greatly alleviates this problem. Removing typical limitations on carryback rules—in particular by extending the number of carryback periods—further relieves the problem. Similarly, allowing taxpayers to deduct purchased losses against any future or past income under a loss-transferability regime may completely obviate the issue.<sup>113</sup>

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<sup>111</sup> The other two simplifying assumptions are kept in place: zero time value of money and a flat tax rate.

<sup>112</sup> Our underlying, implicit assumption is that providing a tax benefit due to losses incurred or retained in the last period is normatively desirable.

<sup>113</sup> A three-year-carryback-deduction rule would probably suffice due to rather short recession spells. For a discussion of the brevity of recessions, see note 93.

A complete solution to the last-period problem may come in the form of a mixed regime, which would supplement either the loss-offset or loss-transferability mechanism with a tax refund applicable only to last-period losses. Such a correction would reestablish equivalence across the three mechanisms.<sup>114</sup> Identifying the last period in real time may not always be a simple matter, but retrospectively, possibly after a few years, identification should be easy. The refundability correction provides tax benefits either immediately or later, after the last period has been clearly established. Because we assume that money has no time value, the timing of the tax benefits is immaterial.<sup>115</sup>

In sum, the limited duration of economic activity is likely to pose no significant problems under a loss-transferability mechanism with a two- or three-year carryback of purchased losses. It does pose a problem under a loss-offset regime, even with a three-year carryback offset rule. A refundability correction for last-period losses, however, is feasible and would fully restore equivalence.

#### E. (Non)Equivalent Mechanisms: Graduated Tax Rates

In this Section, we relax the third assumption concerning the flat-tax-rate structure applicable to taxable income. Indeed, almost always and everywhere, income-tax systems adopt a graduated-tax-rate structure.<sup>116</sup> Applying graduated tax rates to losses, rather than to gains, raises a severe policy challenge, but as we show below, it does not necessarily make the three mechanisms nonequivalent. Any exogenously determined graduated rate structure can be applied equivalently to all three mechanisms.

We begin with a discussion of the appropriate tax-rate structure that should be applied to losses. Next, we show that any exogenous rate structure can be similarly applied to losses, by design, using all three mechanisms. Finally, we analyze the

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<sup>114</sup> An alternative solution may come in the form of an adjustment to carry-forward losses that purports to compensate the taxpayer ex ante for the probability that these losses will not be offset in the future due to termination of economic activity. This optional solution is much more complicated to implement and is inferior in efficiency terms to the refundability “patch.”

<sup>115</sup> A positive time value of money does not change this analysis as long as postponed tax benefits under the refundability patch are adjusted to the time value of money as explained above. See Part III.C.

<sup>116</sup> For a comprehensive, early twentieth-century account of tax regimes across time and geography, see Seligman, *Progressive Taxation in Theory and Practice* at 13–66 (cited in note 82).

common design of the loss-offset and loss-transferability mechanisms and reveal their implicit tax-rate structure.

What tax-rate structure should apply to losses? If a flat tax rate were applicable to gains, the answer would seem straightforward: apply the same flat rate to losses as well, otherwise the rate structure would become graduated because the tax rate would change as income increases from negative to positive. But given that a graduated rate structure applies to gains, the answer is far less evident. To the best of our knowledge, there is no well-justified answer to this question.<sup>117</sup> There is no “natural” or “implied” graduated tax schedule that should be applied to losses. Mark Campisano and Professor Roberta Romano, for instance, have suggested applying a symmetrical rate structure to losses and gains.<sup>118</sup> For example, if a 20 percent tax rate applies to the first \$1,000 of income, and a 40 percent tax rate applies to any additional income, then a 20 percent tax rate should be applied to the first \$1,000 of losses, and a 40 percent tax rate to any additional loss. Campisano and Romano provided no justification for their symmetric choice.<sup>119</sup>

Our discussion does not purport to justify a desirable graduated tax schedule for losses. Instead, we focus on positively comparing the three mechanisms, given a graduated income-tax system. To this end, we assume that a certain socially desirable tax-rate structure should be applied to losses. The first argument is that the choice of rate structure can be orthogonal to the choice of a loss-treatment mechanism.

The three mechanisms are generally independent of the choice of a tax-rate schedule because any tax schedule can be applied by design to each mechanism. The case of the tax-refundability mechanism is straightforward because it postulates no inherent rate structure. Therefore, any rate structure can be applied to this mechanism, including the socially desirable rate structure. In other words, tax refunds due to losses may be set at any socially preferable level.

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<sup>117</sup> For a discussion of normative justifications for tax regimes, see Part IV.

<sup>118</sup> See Campisano and Romano, 76 *Nw U L Rev* at 712–15 (cited in note 6). For a different—although implicit—suggestion, see Günter Bamberg and Wolfram F. Richter, *The Effects of Progressive Taxation on Risk-Taking*, 44 *J Econ* 93, 94 (1984).

<sup>119</sup> See Campisano and Romano, 76 *Nw U L Rev* at 715–32 (cited in note 6) (outlining the arguments for the refundability regime, which the authors term a “recoupment system”). Their justification for the suggested tax-refundability regime is based on equity, efficiency, and simplicity arguments. Yet none of these arguments necessarily supports a symmetric rate schedule over any other schedule. See *id.*

The loss-offset and loss-transferability mechanisms seem to imply a specific tax-rate structure for losses, dictated by their common design, which ties losses not only to gains in other periods but also to the tax rate that applies to those gains. But ignoring common tax law design, none of the tax mechanisms necessarily requires a particular rate structure. Although losses must be deducted from gains—and therefore, gains are necessary—the tax rate that applies to gains is not decisive. Losses that are offset by gains may enjoy, by design, any tax-rate schedule, including the socially desirable one. Therefore, the three mechanisms can be designed equivalently under a graduated income-tax system.

If the rate schedule is determined differently for each mechanism, the outcomes will not be equivalent. Below, we analyze the *common* application of the three mechanisms in a graduated income-tax system and reveal the implied tax schedule of losses under such applications.

We consider first the loss-transferability mechanism. Rather than determine the applicable tax schedule, tax rates under a loss-transferability regime commonly tend to depend on the taxpayers' tax position. Indeed, a likely application of this mechanism would allow a buyer of losses to offset those losses against gains and enjoy a tax benefit that would depend on the buyer's marginal tax rate. For example, the offset of \$1,000 in losses purchased on the market provides a tax benefit of \$200 to a taxpayer in a 20 percent tax bracket, versus \$400 to a taxpayer who is subject to a 40 percent tax bracket.

Higher-income taxpayers are typically subject to higher marginal tax rates under a graduated tax schedule and therefore enjoy a larger tax benefit for any amount of purchased loss. Naturally, larger tax benefits due to purchased losses drive up the market price of losses, providing a greater tax benefit to losing taxpayers.

The tax benefit enjoyed by losing taxpayers under a transferability regime is unrelated to any personal characteristic, such as the applicable past or future tax rate of the losing taxpayer. Rather, it depends on the aggregated amount of losses and gains in the market, on the distribution of gains across taxpayers (who are subject to various marginal tax rates), and on the structure of tax-rate graduation—in particular, on the top marginal tax rate. For example, incurring losses during periods of growth is cushioned by a high market price for losses because

of large aggregated gains that are likely to be subject to the highest marginal tax rates. Indeed, it seems that the tax value of losses is *usually* dictated by the top marginal tax rate in the tax code. As long as the aggregated amount of gains in the economy is sufficiently large, top-marginal-rate gains adequately offset current losses.<sup>120</sup> This outcome is reinforced if purchased losses can be offset against past or future gains because the likelihood of greater aggregate gains in the economy is even higher.<sup>121</sup> The conclusion, then, is that a likely design of a loss-transferability regime that allows a buyer to offset purchased losses against her own gains effectively applies a flat tax rate to sold losses that is equal to the top marginal rate in the tax code.<sup>122</sup>

Consider next the common design of a loss-offset regime. Losing taxpayers can typically offset losses against past or future gains so that their tax benefit depends on the marginal tax rate that applies to such periodic gains. Past or future gains can be of any size and are correspondingly subject to various tax brackets. Therefore, a loss-offset regime assigns various tax rates to losses depending on the taxpayer's outcomes in previous or subsequent tax periods. If gains in relevant past or future tax periods are large, losses enjoy high tax rates; if gains are small, the assigned tax rates are lower.

Consider a simple graduated income-tax rate of 20 percent on gains not exceeding \$1,000, and a 40 percent rate thereafter. Assume also current losses of \$1,000. If current losses are deducted from gains of \$1,000 realized in future or past years, the applicable tax rate for these losses is 20 percent, which provides a tax benefit of \$200. If the losses are deducted from future or past gains of \$2,000, the applicable tax rate is 40 percent, doubling the tax benefit to \$400. If losses are deducted from future or past gains of \$1,500, the applicable tax falls into two brackets: 40 percent for \$500 and 20 percent for the next \$500 (for a net tax benefit of \$300).

Indeed, offsetting losses against the gains of any tax period allocates the regular tax brackets only in a decreasing, rather

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<sup>120</sup> See Altshuler, et al, 23 *Tax Pol & Econ* at 105–08 (cited in note 1) (discussing aggregated losses for different types of corporations).

<sup>121</sup> In the case of deducting purchased losses from future gains, if the time value of money is positive, losses can be adjusted by the appropriate time value. See Part III.C.

<sup>122</sup> The fact that rate schedules may change over time does not undermine the conclusion in the text. Sold losses would still enjoy the time-relevant top marginal tax rate.



than in a graduated, manner. In our example, the higher bracket (40 percent) always applies first, and the next bracket (20 percent) is reached only in the case of larger losses or smaller gains. This example shows not only that the tax schedule is decreasing but also that no unique decreasing schedule applies to losses. The schedule depends on the amount of relevant gains. As shown in the example, the applicable tax schedule can be anything from a single bracket of 40 percent to a single bracket of 20 percent to some combination of the two.

Furthermore, the applicable tax-rate schedule under a loss-offset regime can also exhibit cyclical behavior. If losses are sufficiently large or if periodic gains are sufficiently small, offsetting is performed over more than a single gain period. In this case the tax-rate schedule becomes cyclical. Consider again the simple two-bracket schedule: a 20 percent tax rate for the first \$1,000 and a 40 percent tax rate thereafter. Assume also a uniform periodic gain of \$2,000 in subsequent years. If accumulated losses are larger than \$2,000, the applicable tax rate becomes cyclical: the first \$1,000 in losses is subject to a 40 percent tax rate, and then the next \$1,000 faces a 20 percent tax rate and exhausts periodic gains. The next \$1,000 in losses is transferred to the next relevant tax period and again is subject to a 40 percent tax rate, followed by the next \$1,000, which is subject to a 20 percent tax rate, and so on.

The applicable cyclical tax schedule depends on both the accumulated losses and the amount of periodic gains in relevant tax periods.<sup>123</sup> In our example, if periodic gains are higher or lower, or if they vary over time, the tax schedule of any given accumulated losses will change. In other words, different taxpayers with the same amount and timing of losses will be subject to different tax-rate schedules and entitled to unequal tax benefits.

Consider, for example, the seven tax rates in effect in the United States for fiscal year 2014: 10 percent, 15 percent, 25 percent, 28 percent, 33 percent, 35 percent, and 39.6 percent.<sup>124</sup> Assume also a sufficiently large accumulated loss in the current

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<sup>123</sup> The tax-rate schedule can become increasing, but in a rather limited manner and under limited circumstances. For instance, consider the two-bracket tax schedule in the text. Assume a taxpayer with a \$1,000 gain in the first offset period and a \$3,000 gain in the second. If periodic losses are greater than \$1,000 and do not exceed \$3,000, the first \$1,000 is subject to a 20 percent tax rate and the remaining losses are subject to a higher tax rate of 40 percent.

<sup>124</sup> Rev Proc 2013-35; 2013-47 IRB 537, 538–39.

year. If future income is steady at the level of the third bracket, losses will be deducted first at 25 percent until that bracket is exhausted, then at 15 percent, and then at 10 percent. Any additional losses will be entitled to deduction a year later, at a 25 percent rate, then at 15 percent, 10 percent, and so on. If future income is steady at the high level of the seventh bracket, losses will be deducted in order at 39.6 percent, 35 percent, 33 percent, 28 percent, 25 percent, 15 percent, and 10 percent, with any remaining losses receiving the same rates again a year later.

In sum, the loss-offset mechanism creates interperiodic dependence, which, in turn, produces a seemingly capricious tax schedule for losses. The resulting tax schedule is either decreasing or cyclical, and it is not unique or predetermined. Infinite schedule patterns can apply to losses, depending on accumulated losses and the amount of gains in the relevant tax periods.

Further, it is interesting to think of the “relevant” tax periods. Common loss-offset rules do not allow taxpayers to choose how and when to offset their losses. These rules attempt to control taxpayers’ choices—one may say, manipulations—by enacting a set of predetermined, largely arbitrary rules for ordering offsets. Typically, in any specific tax period, taxpayers must fully utilize gains in an ordered manner. For example, IRC § 172 allows offsetting losses against past gains by fully utilizing gains in the immediately preceding two years (in order) and allowing a forward deduction of excess losses only against future gains in a similar chronologically ordered manner.<sup>125</sup>

But these rules are not indispensable. A loss-offset regime can be designed with other limitations on deductibility or no limitation at all. In particular, any limitations on taxpayer choices can be removed to allow taxpayers to choose the periods of gains against which to offset their losses. This is not necessarily an undesirable outcome.<sup>126</sup> Given such a choice, taxpayers are likely to choose periods of high income and, hence, high marginal tax rates. If their income is sufficiently volatile over tax periods, taxpayers can always achieve a high tax rate simply by waiting. The expected consequence of such a nonrestrictive rule is that,

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<sup>125</sup> See IRC § 172. See also text accompanying notes 30–32.

<sup>126</sup> Since the analysis is positive, we do not make normative claims about the desirable design of tax mechanisms. But the reader can easily notice the lessened strain on taxpayers’ incentives to change their behavior under the no-limitation-loss-offset mechanism described in the text. That is, relaxing limitations on loss offset may relieve inefficiency. For a further discussion of incentives, see Part IV.B.

in most cases, taxpayers will enjoy the highest nominal marginal tax rate for their losses. If their income is sufficiently volatile, the expected tax rate applicable to losses will be a flat rate equal to the top marginal rate for gains. The result tends to be similar to the common outcome under the transferability mechanism.<sup>127</sup>

In conclusion, our positive analysis of the graduated-tax-rate schedule shows that all three mechanisms described in this Article can easily be made equivalent by design, given any tax schedule. There is no inherent limitation under any of the mechanisms to apply a specific rate schedule for losses: flat, graduated, or other. A loss-transferability regime always provides a tax benefit through market transactions: by offsetting gains of profitable taxpayers, only the applicable tax rate is predetermined and hence, so is the loss market price. Similarly, a loss-offset regime always requires past or future taxpayer gains to deduct losses, but the applicable tax rate for such deductions is preset and unrelated to the rate at which profits are taxed. Applying an identical, exogenous, socially desirable tax schedule to all three mechanisms would neutralize any nonequivalent effect of a graduated-tax-rate system.<sup>128</sup>

Moreover, one may argue that accepting an exogenous rate structure for losses changes the character or the distinctiveness of each mechanism, although not its definition as adopted in this Article. For example, redesigning the loss-offset mechanism with a preset tax schedule for losses may strip this mechanism of its core purpose: offsetting personal gains. Restructuring around differences in tax mechanisms—that is, adopting an exogenously defined tax schedule—may change the loss-offset mechanism's conventional characteristic. Accordingly, the analysis uncovers the endogenous tax schedules of loss-transferability and loss-offset regimes, as commonly understood. We have demonstrated that a conventional loss-transferability regime applies a flat-rate schedule to losses equal to the top marginal rate. We have further shown that the commonly adopted loss-offset regime implies a

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<sup>127</sup> The obvious difference between the loss-offset and loss-transferability regimes is that, under the former, it takes more time on average for a losing taxpayer to create gains. With no proper adjustment to time value, applicable *effective* tax rates are different between the regimes. See notes 151–57 and accompanying text.

<sup>128</sup> Actually, any one of the mechanisms may adopt an exogenous rate structure that imitates the endogenous rate structure of the loss-offset mechanism. The design is much more complicated but theoretically possible. This issue seems uninteresting, but it goes to show that any difference among the mechanisms is caused by choice or design.

nonunique and seemingly capricious tax-rate schedule, which takes the form of a decreasing or cyclical rate schedule.

F. Nonequivalent Mechanisms: Positive Time Value of Money, Finite Periods of Economic Activity, and Graduated Tax Rates

In reality, the time value of money is positive, income-producing activity is not endless, and business gains are subject to graduated tax rates. Thus, all three assumptions must be relaxed.<sup>129</sup> We have shown that any divergence between the three tax mechanisms, due to these three fundamental characteristics, can be eliminated by design. The potential deferral of tax benefits under loss-transferability and loss-offset regimes can be neutralized through appropriate adjustments to the time value of losses, as suggested in Part III.C. Issues related to the termination of economic activity can be resolved by supplementing a loss-offset or a loss-transferability regime with a refund upon the termination of economic activity, as suggested in Part III.D. Tax-rate schedules, whether graduated or not, can be exogenously applied to all three tax mechanisms. If it is possible to design all three tax mechanisms equivalently for any of the three fundamental features, they can be so designed for all of them.

The first important conclusion of this analysis is that, ignoring implementation costs, it is all about legal design. This conclusion may be interpreted in two ways. One is that the choice of a legal mechanism for treating tax losses does not produce a mechanism-specific tax result. There are no inherent tax consequences to specific mechanisms, and any mechanism can be designed to accomplish the same tax outcome. The second, related interpretation is that varying designs in tax law drive different tax outcomes. This conclusion is important for normative analysis, which we discuss in Part IV. In particular, if different mechanisms are designed in an equivalent manner, normative issues of equity or efficiency are irrelevant.

More realistically, however, such legal mechanisms are not designed equivalently. Assuming no equivalence-restoring corrections, relaxing all three assumptions poses no great difficulty. Any expected effects due to interactions between the three fundamental

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<sup>129</sup> We intentionally ignore complexity issues in the positive analyses of this Part and return to those issues in the normative discussion in Part IV.

features are most likely quantitative rather than qualitative. For example, the problem of finite periods of economic activity is unrelated to either the time value of money or tax-rate graduation. Whether the time value is zero or positive, and whatever graduated tax schedule is applicable, the possibility that the economic activity of a taxpayer is terminated raises the same apparent problem for the loss-offset and loss-transferability regimes. A graduated tax structure and positive time value do interact, but only to the extent of a change in the tax value of the postponed loss offset or a postponed sale of losses, which are quantitative (rather than qualitative) differences.

Overall, in this Part, we have refrained from making a normative recommendation for mechanism design. Our positive analysis is intended to encourage a focus on the real policy issues when considering a legal mechanism for the treatment of tax losses: namely, considering the effect of the time value of tax losses, treating losses on economic-activity termination, and applying a desirable tax-rate schedule. These are normative choices that society must make, and any tax mechanism can accomplish any normative objective that may be held. One should not be misled by the common application of tax regimes but instead should consider the normatively desirable design of tax rules.

#### IV. NORMATIVE IMPLICATIONS

In this Part, we discuss several normative implications of our positive analysis. Although we recommend no specific tax design, our positive analysis emphasizes a few important normative choices. Below, we show the normative implications of equivalent and nonequivalent tax regimes for efficiency, distributive justice (that is, equity), and complexity.

##### A. Equivalent Tax Regimes

The positive analysis in the preceding Part demonstrated that differences among the various loss-treatment mechanisms can be neutralized by design. The three tax mechanisms can be designed equivalently. This analytical exercise was not intended to endorse equivalent tax designs. We do not suggest, for example, that a loss-offset regime should be designed equivalently to a loss-refundability regime or vice versa. Rather, the purpose of the exercise was to focus attention on the fundamental characteristics that cause divergence among the tax regimes: the time value of money, finite economic activity, and the applicable tax-rate

schedule. These fundamental characteristics have important normative implications. They epitomize the central normative choices embedded in the various loss-treatment regimes. Thus, a typical design of any loss-treatment regime implicitly makes normative choices along these fundamental characteristics. For example, a typical loss-offset regime generates a particular, seemingly capricious, tax-rate schedule. Such a design is not necessary or inevitable but represents an implicit normative choice.

The equivalent-tax-design exercise sheds light on additional aspects of the tax treatment of losses. An equivalent design, by construction, produces no efficiency or equity differences. Economic results are identical both for taxpayers and for the government across equivalent regimes and produce exactly the same incentives and distributive results. The only remaining normative difference is complexity. In other words, although the mechanisms can become equivalent, the cost of their implementation differs because of procedures inherent to the choice of mechanism. The procedures under a loss-offset regime are structurally different from those required under another loss-treatment regime. For example, carryback rules under a loss-offset regime are equivalent in all three fundamental characteristics (in *ex post* terms) to a tax-refundability regime for a taxpayer who accumulated sufficient gains, but the procedures are nevertheless different. Whereas under a tax-refundability regime, evidence is required only with regard to the loss period, under a loss-offset regime, additional evidence is necessary about preceding periods. Importantly, the tax procedures are the result of society's choice of a loss-treatment regime. Tax design can be used to apply society's normative choices with respect to efficiency and equity to any of the loss-treatment mechanisms, but the ability to circumvent complexity issues by means of design decisions is limited.

Together, these two insights suggest that society can make any normative choice regarding efficiency and distribution using any tax mechanism by appropriately designing the fundamental characteristics of that mechanism. The resulting relative complexity of the ensuing tax mechanisms should dictate tax

choice.<sup>130</sup> This is an algorithmically simple prescription for loss-treatment design.<sup>131</sup>

This leads us to briefly discuss the relative complexity of the three tax mechanisms. A loss-offset regime, by definition,<sup>132</sup> creates interdependence between tax periods, which has several costly procedural implications. Tax returns of past losses or gains are carried forward and are subject to scrutiny at least twice. Any adjustment in the value of postponed losses may require not only properly inflating the value of losses being carried forward but also offsetting transactions by taxpayers and government.<sup>133</sup> Furthermore, to provide tax benefits for losses upon termination of economic activity, one must identify a taxpayer's last period of economic activity, which is not a simple task.<sup>134</sup> Finally, under a graduated-tax-rate schedule, losing taxpayers may still gain from transferring losses to other profitable taxpayers. Therefore, supplementary restrictions on loss transfers are required, which further complicate the application of the loss-offset mechanism and increase both administrative and noncompliance costs.<sup>135</sup>

A loss-transferability regime is not necessarily simpler. By definition, a loss-transferability mechanism necessitates a market transaction with a third party, which joins the traditional taxpayer-IRS relationship.<sup>136</sup> First, the IRS would approve a taxpayer's losses, after which a loss-sale transaction could be carried out between the losing taxpayer and a profitable third party. Then, the third party could claim the deduction of purchased losses on its tax returns. Thus, a loss-transferability regime requires two additional transactions: one in the market and the other between a third party and the tax authority. Market transactions in tax losses, like any market transaction, can

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<sup>130</sup> We should note that we ignore political difficulties here, which are obviously not normative in nature but may constrain policy choices and design in reality. See, for example, notes 69–70 (discussing the political difficulties involved in the adoption of the ITC and safe-harbor rules).

<sup>131</sup> Obviously, this prescription does not relieve society of balancing between complexity and accuracy (that is, efficiency and equity), but this issue is orthogonal to the choice of a mechanism and, hence, is ignored in the text.

<sup>132</sup> See Part II.A.2.

<sup>133</sup> See Parts III.B, III.C.

<sup>134</sup> If one believes that losses should be entitled to no tax benefits upon termination of economic activity, the tax-refundability and loss-transferability regimes, rather than the loss-offset mechanism, require identification of the last period of activity.

<sup>135</sup> See note 47.

<sup>136</sup> See Part II.A.3.

be costly. The buyer could verify, for example, the existence of losses, the nature of those losses for tax purposes (for example, whether they are capital or ordinary), and that the losses have not already been sold to other parties. Claiming purchased losses from the IRS would not be simple. The IRS would verify that the losing taxpayer approved the sale (for example, by checking the market-transaction contract), the amount of transferred losses, and the lack of conflicting transactions.<sup>137</sup>

A tax-refundability regime seems to be the simplest option.<sup>138</sup> It requires information about only the current loss period—which is already communicated to the IRS—and a money transfer. But note that under a graduated-tax-rate schedule, a losing taxpayer may be better off transferring losses to other taxpayers than receiving a refund. It depends on the exogenously applied rate schedule, which may provide a lower tax value to losing taxpayers than is potentially achievable by other taxpayers. For example, assume an exogenously applied symmetric tax-rate schedule for losses, in which tax benefits increase marginally with losses, as advocated by Campisano and Romano.<sup>139</sup> In such a case, it is to the advantage of losing taxpayers to aggregate losses, which taxpayers can accomplish in the typical ways, such as through mergers. Tax avoidance may similarly complicate a refundability regime.<sup>140</sup>

## B. Nonequivalent Tax Regimes

In reality, there is no reason to expect an equivalent design of various loss-treatment regimes. The equivalence analysis reveals that the nonequivalent design of loss-treatment mechanisms is not a result of inherent attributes but instead reflects policy choices. Therefore, a normative discussion concerning the choices embedded in nonequivalent regimes is in order. The analysis should be free from any bias due to the existing or

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<sup>137</sup> Selling losses through the sale of a business seems similarly complex. See Warren and Auerbach, 95 *Harv L Rev* at 1777–78 (cited in note 69) (discussing the complexity of sale-leaseback transactions, as opposed to pure transferability).

<sup>138</sup> The relative complexity of a loss-refundability mechanism should not be associated with arguments against refundable credits that revolve around the potential complexity of making credits refundable. Refundable credits are indeed more complicated than nonrefundable credits. See Batchelder, Goldberg, and Orszag, 59 *Stan L Rev* at 69 (cited in note 49) (revisiting common objections concerning complexity of refundable credits).

<sup>139</sup> See notes 117–19 and accompanying text.

<sup>140</sup> See note 136.



common design of tax mechanisms. Unless founded in normative reasoning, and hence a desirable policy choice, any tax rule can and should be redesigned. We need, then, a better understanding of the normative effects of the fundamental characteristics of the different tax mechanisms. This Section first considers the time value of money and a taxpayer's termination of economic activity. It then considers the desirable tax schedule for losses.

1. Time value of money and termination of economic activity.

The normative implications of the timing issue are generally understood in the literature. First, it is considered inequitable to postpone losses without appropriate compensation for time value. In other words, it is considered socially undesirable to redistribute losses between taxpayers according to the timing of their losses and gains rather than according to their total taxable income over time.<sup>141</sup> Second, postponing losses clearly distorts behavior over time.<sup>142</sup> This issue is also discussed in the income-averaging literature.<sup>143</sup>

A similar discussion pertains to the issue of the finite time of economic activity.<sup>144</sup> Denying tax benefits for losses upon termination of economic activity is considered both inequitable and distortive. On an equity account, it would be perceived unjust to levy a different tax burden on identical (aggregated) income merely because of the discontinuation of economic activity. Arguably, the time span of business is a distributionally irrelevant characteristic. Two identical taxpayers, earning equal aggregated income over the same time span, should not incur different

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<sup>141</sup> See, for example, Mintz, 103 Q J Econ at 231 (cited in note 7).

<sup>142</sup> See, for example, Auerbach, 53 Rev Econ Stud at 214–16 (cited in note 7); Auerbach and Poterba, *Tax-Loss Carryforwards and Corporate Tax Incentives* at 319–24 (cited in note 98) (describing impacts on intertemporal-investment incentives); Altshuler and Auerbach, 105 Q J Econ at 75–81 (cited in note 7) (extending Auerbach and Poterba's analysis); Devereux, Keen, and Schiantarelli, 53 J Pub Econ at 409–14 (cited in note 7) (suggesting that interactions between tax policy and corporate-investment decisions may be complicated by endogeneity); Daniel Dreßler and Michael Overesch, *Investment Impact of Tax Loss Treatment—Empirical Insights from a Panel of Multinationals*, 20 Intl Tax & Pub Fin 513, 516–19 (2013).

<sup>143</sup> See notes 99–102 and accompanying text.

<sup>144</sup> Actually, the issue of termination of economic activity can be perceived as a limiting case of the time-value-of-money issue. Postponing tax benefits reduces their value, and, at the limit—that is, infinite deferral—their value zeros out.

tax burdens only because of the timing of losses or the future prospects of their businesses.

From the point of view of efficiency, denying tax benefits from losses upon termination of economic activity and postponing losses in nominal values are equivalent to an ex ante increase in the tax on activities that produce volatile income and, therefore, a disincentive to engage in such activities. Taxpayers are expected to change their behavior to minimize the possibility of accumulated losses in the last period of taxable activity (or any other period, if losses are postponed in nominal value). As a result, taxpayers will choose less-risky activities (particularly in the case of new businesses) or change their investment mix in order to reduce the probability of accumulated losses and ensuing bankruptcy.<sup>145</sup> Alternatively, taxpayers may change their business or its financial structure (for example, by altering whether it is pass-through or non-pass-through, or structured through equity or debt financing), as this affects the probability that losses in any period could bring about the termination of economic activity. Taxpayers will tend to spread their activity over a few businesses, merge into conglomerates,<sup>146</sup> or devise transactions that facilitate shifting losses to other taxpayers.<sup>147</sup> Furthermore, given large losses that normally result in cessation of economic activity, taxpayers face an ex post incentive to carry on business only in order to potentially capture a tax benefit because the accumulated losses shield future gains from taxation

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<sup>145</sup> It is generally considered undesirable to tax risk, although risk is actually taxed due to graduated tax schedules. But graduation is considered desirable on distributional grounds. See note 7.

<sup>146</sup> For a survey of tax rules allowing for consolidated returns, see generally Antony Ting, *The Taxation of Corporate Groups under Consolidation: An International Comparison* (Cambridge 2013).

<sup>147</sup> See, for example, Campisano and Romano, 76 *Nw U L Rev* at 730–32 (cited in note 6) (suggesting a few organizational choices that may raise the tax value of losses); Warren and Auerbach, 95 *Harv L Rev* at 1758–61 (cited in note 69) (describing the incentive of start-up companies and companies carrying a loss to merge in order to utilize tax credits and deductions); Terrence R. Chorvat, *Continuity of Business Requirements for N.O.L.s in Bankruptcy: The Economic Effects of § 1.269-3(d)*, 42 *Clev St L Rev* 61, 86–90 (1994) (arguing that restrictions on the use of losses in bankruptcy are inefficient); Joseph Bankman and Michael L. Schler, *Tax Planning under the Flat Tax*, in Henry J. Aaron, Leonard E. Burman, and C. Eugene Steuerle, eds, *Taxing Capital Income* 245, 254–71 (Urban Institute 2007) (describing various schemes that losing taxpayers could devise in order to cash in their tax losses under a consumption tax); Daniel Shaviro, *Simplifying Assumptions: How Might the Politics of Consumption Tax Reform Affect (Impair) the End Product?*, in John W. Diamond and George R. Zodrow, eds, *Fundamental Tax Reform: Issues, Choices, and Implications* 75, 107–09 (MIT 2008) (same).

and hence, increase future after-tax returns.<sup>148</sup> Equity arguments are similar in content.<sup>149</sup> Given any business choices, as described here, the tax treatment differs across taxpayers who make different choices, and it is, therefore, inequitable. For example, the value of the tax treatment of losing taxpayers is different based on whether they own a large, diversified, and established business, or a small, specialized, and new one.<sup>150</sup>

The inequity and inefficiency effects of the time value of money and the termination of economic activity are real, but their importance must be carefully considered. Although potentially important for new businesses, the economic significance of the incidence of tax-benefit denial in general is questionable. Under a loss-transferability regime, tax benefits for accumulated losses would be denied only if there were no sufficient gains in the economy—a rare phenomenon, even in recessions.<sup>151</sup> Under a loss-offset regime, tax benefits are denied only in the case of sufficiently low accumulated gains in past periods (given carryback rules) or in the case of slow accumulation of future gains. These possibilities are likely to depend on economic business cycles. Economic contraction periods are generally short: in the last half century, contraction periods in the United States have declined to roughly one year on average.<sup>152</sup> A loss-offset regime that allows

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<sup>148</sup> The analysis of efficiency reemphasizes the intrinsic differences among the mechanisms. Loss-offset rules establish dependency, for tax purposes, between a taxpayer's current losses and past or future gains, and hence, her decisions in any period may be contingent on decisions and outcomes in other (past and future) tax periods. A loss-offset mechanism creates interperiod dependency in taxpayers' choices. Similarly, a loss-transferability regime ties the tax value of losses to economic cycles, and taxpayers' decisions are contingent on the expectancy of such business cycles. A tax-refundability mechanism severs the link between current losses and other economic variables (that is, gains) and accordingly makes cross-period decisionmaking independent.

<sup>149</sup> For a general discussion of the argument concerning the correspondence between inefficiency and inequity, see generally Boris I. Bittker, *Equity, Efficiency, and Income Tax Theory: Do Misallocations Drive Out Inequities?*, 16 San Diego L Rev 735 (1979).

<sup>150</sup> See Campisano and Romano, 76 Nw U L Rev at 719–21 (cited in note 6) (discussing these inequities).

<sup>151</sup> See note 93 and accompanying text. For data on corporate losses in the United States, see Altshuler, et al, 23 Tax Pol & Econ at 79–94 (cited in note 1).

<sup>152</sup> See National Bureau of Economic Research, *US Business Cycle Expansions and Contractions* (Sept 20, 2010), online at <http://www.nber.org/cycles.html> (visited Nov 3, 2014). This figure might be somewhat misleading, because (a) it measures business cycles for the economy as a whole, whereas cycles might differ for certain industries, and (b) it measures only peak-to-trough duration, while we also should expect some losses on the trough-to-peak portion of cycles. Business cycles for the Eurozone are similar in length. See Centre for Economic Policy Research, *Euro Area Business Cycle Dating*

for two or three years of backward deduction of losses greatly increases the probability that losses are entitled to an immediate tax benefit, and this probability is naturally higher under a loss-transferability regime.

However, even if tax gains and losses are positively related to business cycles in aggregated numbers, they are not perfectly correlated, and losses persist in the economy during expansion periods.<sup>153</sup> Furthermore, the effect of business cycles on individual businesses varies. Recent studies have shown that accumulated corporate losses are not easily deducted over time and may prove persistent.<sup>154</sup> Additionally, a considerable portion of losses that are carried forward are excluded for tax purposes owing to the termination of economic activity.<sup>155</sup>

The economic effect of postponing loss deduction without adjustment to the time value of money depends, of course, on the actual time value of money. As explained above, such postponed losses represent a loan to the government, and therefore, the relevant time value is the interest on Treasury bills or short-term government bonds. These interest rates vary over time, but in the United States they are commonly quite low: 1.56 percent on average over the last ten years.<sup>156</sup>

Therefore, the effects of the time value of money and of finite economic activity are negligible under a loss-transferability regime and become more significant under a loss-offset regime. But given short contraction periods, low interest rates on government bonds, and certain carryback possibilities, the time value of money should not pose a significant problem for ex ante incentives.<sup>157</sup> In any case, as shown above, the loss-offset regime

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*Committee* (2013), online at <http://www.cepr.org/content/euro-area-business-cycle-dating-committee> (visited Nov 3, 2014).

<sup>153</sup> See OECD, *Corporate Loss Utilisation* at 16–19 (cited in note 44) (presenting evidence of a positive, though imperfect, correlation between business activity and GDP).

<sup>154</sup> See, for example, Auerbach and Poterba, *Tax-Loss Carryforwards and Corporate Tax Incentives* at 311–19 (cited in note 98); Cooper and Knittel, 59 *Natl Tax J* at 652–54 (cited in note 26); Michael G. Cooper and Matthew J. Knittel, *The Implications of Tax Asymmetry for U.S. Corporations*, 63 *Natl Tax J* 33, 35 (2010).

<sup>155</sup> See Cooper and Knittel, 59 *Natl Tax J* at 661–62 (cited in note 26) (estimating the share of unclaimed tax losses due to termination of economic activity); Cooper and Knittel, 63 *Natl Tax J* at 40–41 (cited in note 154) (same).

<sup>156</sup> Aswath Damodaran, *Annual Returns on Stock, T.Bonds and T.Bills: 1928–Current* (NYU Stern Jan 5, 2014), online at [http://pages.stern.nyu.edu/~adamodar/New\\_Home\\_Page/datafile/histretSP.html](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html) (visited Nov 3, 2014).

<sup>157</sup> See Ben Zion Barlev and Haim Levy, *Loss Carryback and Carryover Provision: Effectiveness and Economic Implications*, 28 *Natl Tax J* 173, 174–81 (1975) (showing, through simulations of discounted values of carryback and carryforward losses, that loss

can be easily remedied by adjusting losses to the time value of money and providing refunds upon termination of economic activity. In policy-design terms, the time value of money poses an insignificant normative concern in the choice of loss-treatment regimes.

Thus, the issues of time value and finite economic activity are not likely to cause significant differences among the three mechanisms. This conclusion redirects our tax-analysis efforts away from the typical focus on these two fundamental characteristics and toward the third: the choice of a tax-rate schedule. The normative analysis of various loss-treatment mechanisms and of their design should focus on the derived tax schedules—that is, the endogenous tax schedule that emanates from each mechanism. Any choice of mechanism and design entails an integral tax schedule, which has normative implications.

Therefore, the argument we advance is that, contrary to what transpires in the legal literature, the principal difference among loss-treatment mechanisms is the commonly ignored feature of the *applied tax schedule*. The normative choice of tax schedule should be a paramount consideration in designing loss-treatment rules. Indeed, scholars' primary normative efforts should be devoted to determining the socially desirable tax-rate schedule for losses.

## 2. The desirable tax schedule for losses.

Below, we offer a few initial thoughts on the choice of a desirable tax schedule for losses. First, as pointed out above, if the gains were subject to a flat tax rate, the trivial choice for losses would be the same flat rate.<sup>158</sup> Otherwise, the tax rate changes (becomes bracketed) as income changes from negative (losses) to positive (gains). Income-tax systems typically apply a graduated tax schedule to gains based on considerations of equity.<sup>159</sup> However, a desirable tax schedule for losses is not as straightforward, and, curiously, equity considerations are never applied to losses. As noted, Campisano and Romano, for example, recommend a symmetric graduated rate for gains and losses—that is,

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offset is negligibly different from tax refundability in ex ante terms). But see Cooper and Knittel, 63 Natl Tax J at 55, 58 (cited in note 154) (calculating a more significant difference between loss-offset and refundability mechanisms).

<sup>158</sup> See Part III.B.

<sup>159</sup> See Part III.A.3.

the same marginal rate applies to gains and losses in absolute terms—without justifying their choice.<sup>160</sup>

Efficiency and equity considerations do not provide the answers that we seek. No graduated-tax-rate schedule for losses avoids distorting choices *ex ante*, and therefore, every schedule generates inefficiency. Furthermore, graduated rate schedules can create perverse distortions that encourage undesirable transactions rather than beneficial behavior.

Consider a high-risk investment that is expected to yield a gain of \$2,000 with a probability of 2/3 or a loss of \$4,000 with a probability of 1/3. The expected gain is zero, and, therefore, a risk-averse individual is better off not investing in this venture (and a risk-neutral individual is indifferent). Now, let us impose a graduated tax rate of 20 percent up to \$1,000 and of 40 percent on additional gains and assume a symmetric schedule for losses (20 percent up to \$1,000 loss and 40 percent on additional losses). With the same probabilities, the after-tax return becomes \$1,400 or -\$2,600, respectively, and thus yields a positive expected after-tax return of \$66. Now, certain risk-averse taxpayers may invest in this venture.<sup>161</sup>

It is easy to see that certain pretax (expected) loss transactions become after-tax (expected) gain transactions, by simply increasing the loss side slightly or decreasing the gain side marginally in the above example. Short of a zero tax rate, there is no generally applicable tax-rate schedule for losses that solves this problem of perverse incentives.

Furthermore, the economic literature on tax asymmetry has investigated the effects on efficiency of deviating from tax refundability.<sup>162</sup> Deviations embedded in typical loss-offset mechanisms may affect risk taking and investment decisions. But this literature is confined largely to analysis of a flat tax rate<sup>163</sup> and

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<sup>160</sup> See Campisano and Romano, 76 Nw U L Rev at 713–15 (cited in note 6).

<sup>161</sup> We ignore portfolio adjustments due to taxes. See Weisbach, 58 Tax L Rev at 12–19 (cited in note 8). Note that no simple adjustment is possible under graduated-tax-rate schedules. See Alvin C. Warren Jr, *Financial Contract Innovation and Income Tax Policy*, 107 Harv L Rev 460, 481–82 & n 89 (1993); Weisbach, 58 Tax L Rev at 38–41 (cited in note 8); Lawrence Zelenak, *The Sometimes-Taxation of the Returns to Risk-Bearing under a Progressive Income Tax*, 59 SMU L Rev 879, 882–84 (2006).

<sup>162</sup> See note 7 and accompanying text.

<sup>163</sup> See, for example, Campisano and Romano, 76 Nw U L Rev at 722–30 (cited in note 6). Their efficiency analysis, which replicated the work of Professor Joseph Stiglitz, also assumes a proportional tax rate. See Stiglitz, 83 Q J Econ at 270–74 (cited in note 7).

offers no insight into the tax-rate structure of losses under a graduated-tax-rate system.<sup>164</sup>

Distributive considerations provide no clear guidance either. Applying them in the analysis of a tax-rate schedule for gains is already a difficult task and yields unclear guidelines. These guidelines become even fuzzier when applied to losses.<sup>165</sup>

Economic stabilization also figures into the discussion of tax-loss treatment. Economists agree that fiscal policy should be countercyclical,<sup>166</sup> which arguably means that taxes should be countercyclical as well. To the extent that aggregate gains and losses in the economy are correlated with business cycles, providing tax benefits to losses is countercyclical and therefore socially desirable as a stabilizing measure.<sup>167</sup> A touted social benefit of the loss-offset mechanism is that it moderates the variability of government revenue.<sup>168</sup> A refundability regime requires that the government make payments to many losing taxpayers during recessionary periods, which makes tax revenues volatile. This is an odd argument because it supports procyclical tax treatment. In any case, none of these arguments implies a particular tax-rate schedule for losses.

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<sup>164</sup> Only a few economic studies consider the effect of graduated income tax on risk taking, but none seems to be helpful. Two studies dodge the potential problems of a graduated rate schedule by assuming a constant marginal tax rate for gains and losses with a demogrant (which generates progressivity). See Syed M. Ahsan, *Progression and Risk-Taking*, 26 Oxford Econ Papers 318, 319 (1974); F.A. Cowell, *Some Notes on Progression and Risk-Taking*, 42 *Economica* 313, 313 (1975). Another study assumes that losses are subject to a decreasing tax-rate schedule and hence reaches the conclusion that risk taking is taxed. See Bamberg and Richter, 44 *J Econ* at 94–100 (cited in note 118). Lastly, another study assumes that losses are not entitled to tax benefits. See Louis Eeckhoudt, Christian Gollier, and Harris Schlesinger, *The No-Loss Offset Provision and the Attitude towards Risk of a Risk-Neutral Firm*, 65 *J Pub Econ* 207, 208 (1997).

<sup>165</sup> But see Campisano and Romano, 76 *Nw U L Rev* at 718 (cited in note 6) (“Only a system in which the government shares in both gains and losses, which accords with a common sense notion of fairness, eliminates the possibility of inequitable treatment.”).

<sup>166</sup> See, for example, Brian Galle and Jonathan Klick, *Recessions and the Social Safety Net: The Alternative Minimum Tax as a Countercyclical Fiscal Stabilizer*, 63 *Stan L Rev* 187, 190 (2010) (“[T]he standard goal of macroeconomic policy in general is to be ‘countercyclical,’ stabilizing the economy by moderating both booms and busts.”).

<sup>167</sup> See Alan J. Auerbach and Daniel Feenberg, *The Significance of Federal Taxes as Automatic Stabilizers*, 14 *J Econ Persp* 37, 44–51 (Summer 2000). For recent examples in legal scholarship, see Galle and Klick, 63 *Stan L Rev* at 193 (cited in note 166); Yair Listokin, *Equity, Efficiency, and Stability: The Importance of Macroeconomics for Evaluating Income Tax Policy*, 29 *Yale J Reg* 45, 73–75 (2012).

<sup>168</sup> See Cooper and Knittel, 59 *Natl Tax J* at 654 (cited in note 26).

Another suggested normative framework for the treatment of tax losses is the government-taxpayer-partnership model.<sup>169</sup> Arguably, the government already assumes the forced position of a partner with taxpayers, taking its partnership-like portion of the taxpayers' profits through taxes. Therefore, the government should assume its partnership share of the losses as well. But this is a questionable framework. First, the government-taxpayer relationship does not fully fit partnership relations, particularly since this relationship is forced rather than consensual. Second, in a real partnership, partners may agree on the allocation of gains and losses as they please. Lastly, even if the government is a partner that must share in the losses, there is no inherent prescription in a partnership framework for the size of that share. Particularly, what tax-rate structure for losses allocates the "correct" share of losses to the government? We see no clear and nonarbitrary way of answering this question.

Another recurring argument to justify the use of the loss-offset mechanism is that tax refunds for losses would encourage fraud.<sup>170</sup> Taxpayers, so the argument goes, will attempt to produce losses, legally or illegally.<sup>171</sup> A loss-offset regime that—relative to tax refundability—penalizes losses constrains these socially undesirable incentives. This argument is unconvincing. Increased tax benefits for losses indeed encourage fraud, but this is no different from any other tax benefit for low income, deductions, exemptions, or credits. If losses should be penalized

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<sup>169</sup> See, for example, Aidinoff, 55 *Taxes* at 888 (cited in note 34); Eustice and Portney, 22 *San Diego L Rev* at 142 (cited in note 36) ("Most businesses feel as if the taxation of their income is equivalent to having the government as a partner. Thus, the government must share in both good and bad times."); Gregg D. Polsky and Brant J. Hellwig, *Examining the Tax Advantage of Founders' Stock*, 97 *Iowa L Rev* 1085, 1117 (2012). See also Joseph Bankman and Thomas Griffith, *Is the Debate between an Income Tax and a Consumption Tax a Debate about Risk? Does It Matter?*, 47 *Tax L Rev* 377, 394–95 (1992) (connecting loss refundability to government-taxpayer partnership).

<sup>170</sup> See, for example, Campisano and Romano, 76 *Nw U L Rev* at 737–40 (cited in note 6); Auerbach, 53 *Rev Econ Stud* at 220 (cited in note 7); Cooper and Knittel, 59 *Natl Tax J* at 654 (cited in note 26); Poterba, *Taxation, Risk Taking, and Household Portfolio Behavior* at 1123 (cited in note 7):

The practical justification for limiting the losses that investors may claim is that without such limits, firms or individuals could undertake projects that generate private benefits but taxable losses, and thereby collect government subsidies for what are effectively private consumption activities. Loss-offset provisions make such transactions more difficult, but at the cost of raising the effective tax burden on legitimate projects that face some risk of generating losses.

<sup>171</sup> See Campisano and Romano, 76 *Nw U L Rev* at 737–40 (cited in note 6).



to discourage fraud, so should expenses and exemptions. Decreasing tax benefits based on expenses or exemptions—for example, by allowing a deduction of less than the full amount—would likely discourage fraud in the form of reporting excessive expenses or exemptions. Both types of penalties are unwanted. Overall, these arguments do not help identify a desirable tax-rate schedule.

An alternative course of analysis could potentially be based on the analogy between losses and expenses.<sup>172</sup> If losses represent excessive periodic expenses, one may argue for a similar, or consistent, tax treatment of losses and expenses. That is, a similar tax-rate schedule should apply for both losses and expenses. Periodic expenses are subject to a decreasing tax-rate schedule, but the rate schedule is not unique and is contingent on the economic consequences in any specific tax period. Lastly, the long-standing averaging rationale may offer another potential route for analysis, which we plan to explore further in future research.

Given the absence of clear normative guidance for the tax rate of losses, our positive analysis is constructive. First, a tax-refundability regime serves as a good baseline for analysis. In particular, it is the only mechanism that requires policymakers to make explicit choices about a desirable tax-rate schedule for losses. The other two mechanisms develop the tax schedule internally. Second, the analysis uncovers the endogenous tax schedules of loss-offset and loss-transferability regimes. Especially, a loss-offset mechanism applies what appears to be a peculiar tax-rate schedule to losses. This implied tax-rate schedule is not a unique schedule, its tax rates may decrease, and they may become cyclical. It seems like nothing that we expected intuitively, and hence, it further highlights the normative question concerning the desirable tax-rate schedule for losses. Third, the applied tax-rate schedule for losses depends on the entire graduated tax schedule (in one way or another), but it depends only on the highest marginal tax rate under a loss-transferability regime and becomes completely independent under a tax-refundability option. These facts may have to be considered when evaluating potential reforms in tax rates or applying different rate schedules for various kinds of taxed activities.

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<sup>172</sup> See Part I.B.

## CONCLUSION

How should losses be treated for tax purposes? Is an offset, transferability, or refundability regime the preferred instrument? Observations of existing legal systems provide a rather definitive answer: losses should be treated through a loss-offset mechanism. Furthermore, income-tax systems adopt a variety of restrictions on loss transferability, eliminating all doubt as to its undesirability. Academics, by contrast, are adamant in their support of tax-refundability treatment for losses.<sup>173</sup> This Article is not intended to answer the question of which treatment of tax losses is socially desirable, nor does it argue for the superiority of any of the mechanisms. Rather, it aims to reveal the essence of the choice of a tax-treatment mechanism. It argues that the choice of tax mechanism is far less normative than perceived in the economic and legal literatures and shows that, except for implementation costs, any normative preference can be implemented through any of the tax mechanisms with an appropriate design.

This Article delineates the fundamental characteristics of tax mechanisms and demonstrates how these characteristics operate in each tax mechanism. These characteristics figure differently in existing or commonly understood tax mechanisms, and, hence, these tax mechanisms appear distinct. But they are not. The characteristics can be easily redesigned in each tax mechanism. Thus, we have argued that the common analysis of different tax mechanisms is flawed. The choice of the tax mechanism to govern the tax treatment for losses should not be based on a typical design of the existing tax mechanism, since the typical design implicitly embeds policy choices. Rather, the choice should follow a simple algorithm: First, normative choices should be made concerning the tax treatment of losses. Second, the least-costly mechanism to implement those normative choices should be considered.<sup>174</sup>

The positive analysis of tax regimes uncovers implicit normative choices—endogenous to each of the tax mechanisms—and reveals a neglected normative choice: What tax-rate schedule should be applied to losses? Economists largely ignore this question when it comes to losses because they assume a proportional

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<sup>173</sup> See note 49 and accompanying text.

<sup>174</sup> Yet note that a certain trade-off between complexity and other normative criteria should be considered in the normative analysis.

income tax. Legal scholars seem unaware of the normative question at all, or else choose not to address it. Our positive analysis brings this normative choice to center stage. This Article also reveals the tax-rate schedule for losses that is endogenous to each of the typical mechanisms. In particular, the typical loss-offset mechanism exhibits a peculiar and unintuitive decreasing or cyclical tax-rate schedule for losses. Moreover, the implicit tax schedule is not unique but varies across taxpayers and time. We do not argue that a loss-offset mechanism is necessarily inferior because of its embedded tax-rate schedule, since the tax-rate schedule can be redesigned. Rather, the positive analysis redirects the normative spotlight to the question of a desirable tax-rate schedule for losses. Another important result of the refocus on rate schedule is that, contrary to all previous analyses of tax losses, a tax-refundability mechanism also generates tax-avoidance activity and, hence, inefficiency and complexity.

Although this Article is not normative, we use its positive analysis and results to set the stage for a normative analysis of the design issues raised here. We believe that the framework presented in this Article is both interesting and beneficial for future normative discussions of the tax treatment of losses.