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Employer Losses and Deferred Compensation

DAVID I. WALKER*

INTRODUCTION

Companies and their employees may, to a large degree, choose whether to structure pay as cash or other currently includable and deductible compensation or as deferred compensation, including equity-based pay, which will be included in income and deducted in the future. It is well understood that taxes affect the attractiveness of deferred compensation relative to current compensation and that deferred compensation is relatively more attractive when employee tax rates are expected to be lower in the future than today, when employer tax rates are expected to be higher in the future, and when an employer can earn a greater after-tax rate of return on any compensation that is deferred.¹

In recent years, well over half of U.S. public companies have reported having a net operating loss (NOL) carryforward,² reflecting deductions (including prior-year NOLs) in excess of gross income. If significant, these NOLs reduce an employer's effective marginal tax rate (MTR)³ and could make deferred compensation relatively more attractive, in ways explained in the Article.

However, empirical studies that utilize variations in employer NOL positions in search of evidence that taxation affects the choice between current and deferred compensation have met with only limited

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¹ Myron S. Scholes et al., *Taxes and Business Strategy: A Planning Approach* 183 (2d ed. 2002); Myron S. Scholes & Mark A. Wolfson, *Taxes and Employee Compensation Planning*, 64 *Taxes* 824, 824 (1986).

² Shane Heitzman & Rebecca Lester, *Tax Loss Measurement* 29 (2020) (finding for a sample of large firms that Compustat coding indicated an NOL for 67.4% of firm years between 2010 and 2015, but that hand-collected financial statement data revealed NOLs in 88.9% of firm years), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3553527.

³ The effective marginal tax rate is defined as the present value of additional taxes paid on an additional dollar of income earned today. See Scholes et al., note 1, at 158. I follow the accounting and finance literature in denoting the effective marginal tax rate as "MTR."

success.⁴ As Professor Graham puts it, “[o]verall, there is only modest evidence that taxes are a driving factor affecting corporate or employee compensation decisions.”⁵ Moreover, in a recent survey of corporate tax executives conducted by Graham and a group of coauthors, only 10.6% of respondents reported that MTRs were the primary tax rates used in making compensation decisions, while 44.8% of respondents reported that the primary rate was the statutory tax rate (STR), which presumably would not take into account the impact of NOLs.⁶

These studies raise several questions. Are firms failing to consider joint tax minimization in the design of compensation programs? If so, is that failure a result of ignorance or laziness, or might it be rational? Alternatively, are researchers failing to detect tax sensitivity in compensation arrangements due to poor experimental design or the use of poor instruments?

This Article does not aim to fully resolve these questions. Its goal is to advance our analytic understanding of the challenges that companies and researchers face in incorporating employer NOL positions into their compensation design analyses. The Article’s novel strategy is to bifurcate and unpack the two distinct ways in which NOLs may affect employer taxes and improve (generally) deferred compensation economics. First, NOLs may increase an employer’s after-tax rate of return on deferred sums (the “rate of return effect”). Second, NOLs often increase the value of employer deductions at deferred compensation payout relative to grant (the “deduction effect”).⁷ I show that these two effects may work in tandem to boost the attractiveness of deferred compensation when an employer has a significant NOL position, but that they may not.

What matters here is not so much the absolute size of an NOL but the length of time that an employer expects to be in an NOL position. The deduction effect predicts that a lengthier NOL position will make deferred compensation more attractive. But there is a temporal limit. In mathematical terms, the deduction effect is not monotonic. Specifically, if an employer remains in an NOL position beyond the date of compensation payout, the increase in value produced by the deduc-

⁴ See Part III.

⁵ John R. Graham, *Taxes and Corporate Finance: A Review*, 16 *Rev. Fin. Studies* 1075, 1114 (2003).

⁶ John R. Graham et al., *Tax Rates and Corporate Decision-Making*, 30 *Rev. Fin. Studies* 3128, 3141 (2017). Of respondents listing STRs as their primary tax rates for compensation decisions, 57% selected U.S. STRs, while 43% selected jurisdiction-specific STRs. *Id.*

⁷ Scholes et al., note 1, at 184 (“Because deferred compensation is favored if the employer’s tax rate is expected to increase in the future, deferral may be especially appropriate when a firm in an NOL carryforward position cannot effectively use current tax deductions.”); see also Scholes & Wolfson, note 1, at 825.

tion effect, as of the time of grant, will begin to decline.⁸ The rate of return effect has importantly different properties. Like the deduction effect, the rate of return effect predicts that a lengthier NOL position will make deferred compensation more attractive (because the employer can shelter investment gains with NOLs). But here there is no temporal limit; in mathematical terms the rate of return effect *is* monotonic. There is, however, a different sort of complication. Specifically, in some cases employers invest deferred funds in such a way (e.g., investments in the employer's equity) that the tax on investment returns is less affected, or even unaffected, by the presence of NOLs.⁹

In short, while conventional wisdom holds that employer NOLs boost the economic attractiveness of deferred compensation, this Article's primary contribution is to show analytically why this is not always the case. This analytic contribution has two important implications in practice.

First, it may not be irrational for firms to ignore grant date NOLs in making some deferred compensation decisions. Given the complexity of the relationship between NOLs and the economics of deferred compensation as well as unpredictable payoffs, it would not be surprising to find managers making decisions based on simple heuristics, such as statutory rates, rather than upon full-blown expected values incorporating the impact of NOLs.¹⁰

Second, even if firms are sensitive to taxation in making compensation decisions, it is not clear that the research methods that have been deployed to test this sensitivity would detect it. Researchers often use NOL dummy variables, sometimes combined with a lack of profits, as proxies for low MTRs.¹¹ These may (or may not) be good proxies for grant date MTR, but they are unlikely to be effective as proxies for the tax advantage of deferred compensation, which is not always monotonically related to grant date MTR. More sophisticated research techniques employ simulations of MTR, both at grant and payout, which, in theory, is an improvement. However, different simulations produce dramatically different estimated MTRs for the same firms in the same years.¹² Moreover, a recent paper suggests that the input data used in some of these simulations is more error-riddled

⁸ See Part II.C.

⁹ See Part II.D.

¹⁰ I assume that the willingness to grapple with the complexity of NOLs with respect to compensation decisions will turn in part on the magnitude of the potential gains. Cf. Graham et al., note 6, at 3130 (suggesting that reliance on STRs over MTRs may reflect "efficient" use of heuristics when the differences between MTRs and STRs are relatively small).

¹¹ See Part III.B.

¹² See Part III.D.

than previously suspected.¹³ It appears that we are a long way from being able to confidently test the relationship between employer tax rates and the use of deferred compensation.

The remainder of this Article is organized as follows. Part I provides background on the use and basic economics of deferred compensation. Part II, the heart of the Article, unpacks the relationship between NOLs, MTRs, and the economics of both pure deferral and counterparty deferral, e.g., deferred compensation arrangements. This Part bifurcates the impact of NOLs into non-mutually exclusive deduction and rate of return effects, as described above, and considers the implications for equity and other deferred compensation arrangements. This Part also presents two alternative explanations for the relatively modest use of deferred compensation by companies with losses—payment risk and an excessive focus on Generally Accepted Accounting Principles (GAAP) earnings relative to after-tax cash flows. Part III explores empirical research on the effect of taxes on deferred compensation and suggests that commonly used proxies for company MTRs may not adequately capture the impact of losses on deferred compensation economics. Part IV briefly considers the impact of statutory rate changes on the economics and use of deferred compensation. Part V concludes.

I. BACKGROUND ON THE USE AND ECONOMICS OF DEFERRED COMPENSATION

A. *The Deferred Compensation Picture*

Deferred compensation is compensation relating to current services that is payable, and taxable, in a future year or years. Deferred compensation may serve as an explicit or implicit substitute for current compensation, but in all cases the employer presumably has more funds available to use or invest, or less need to borrow, between the point of deferral and the point of future payout than it would have had if compensation had been paid currently. A considerable fraction of executive and rank-and-file compensation paid by U.S. corporations is deferred in this sense.

Let's begin at the top. A recent survey by the Hay Group found that the average compensation package of the CEOs of 300 large companies consisted of 14% salary, 22% bonus/annual incentive, 16% options, 16% restricted stock, and 32% performance awards.¹⁴ The options, restricted stock, and performance awards are all equity-based deferred compensation. Gains on options are included in income and

¹³ Heitzman & Lester, note 2, at 29.

¹⁴ Hay Group, Executive Compensation 2013: Data, Trends and Strategies.

deductible by the employer when the options are exercised and the underlying shares can be sold,¹⁵ typically five or six years following grant, equating to five or six years of deferral.¹⁶ Absent a § 83(b) election, restricted stock is included in income and deducted when the stock vests and becomes transferrable, typically within five years of grant.¹⁷ Performance award plans are quite heterogeneous, but most plans provide for payouts, in shares or cash, based on company performance over a three-year period, and taxation occurs at payout, providing for three years of deferral.¹⁸ In sum, the deferral associated with equity-based pay typically ranges from about three to about six years.

Salary and annual bonus, making up in aggregate about one-third of average CEO pay, are taxable in the year earned unless the executives participate in a nonqualified deferred compensation (NQDC) program that allows them to defer all or a portion of these amounts, plus any earnings on these amounts, until a future date, often until retirement.¹⁹ Assuming all rules are met, NQDC amounts are included and deducted at payout, providing for deferral over various, fact-specific

¹⁵ IRC § 83(h) (deduction allowed for the taxable year in which service provider included option value in income); Reg. § 1.83-7(a) (options lacking a readily ascertainable fair market value at the time of grant taxable at exercise). This tax treatment applies to nonqualified options, which make up the vast majority of options, particularly for senior executives. Incentive stock options are taxed differently. See Jeffrey R. Austin et al., *The Choice of Incentive Stock Options vs. Nonqualified Options: A Marginal Tax Rate Perspective*, 20 J. Am. Tax'n Ass'n 1 (1998). Unless otherwise indicated, I will assume throughout this Article that options are nonqualified.

¹⁶ Although options typically can be exercised as late as ten years following grant, exercise of nonqualified options within a year or two of vesting is much more common. See, e.g., J. Carr Bettis et al., *Exercise Behavior, Valuation, and the Incentive Effects of Employee Stock Options*, 76 J. Fin. Econ. 445, 446-47 (2005) (finding for a sample of 140,000 option exercises by executives at almost 4000 firms between 1996 and 2002 that, on average, options were exercised a little over two years following vesting and more than four years prior to expiration); Jennifer N. Carpenter, *The Exercise and Valuation of Executive Stock Options*, 48 J. Fin. Econ. 127, 138-39 (1998) (finding for a sample of forty firms (mainly large manufacturers) that executive stock options granted between 1983 and 1984 were, on average, exercised after 5.8 years).

¹⁷ IRC § 83(a). If a § 83(b) election is made, restricted stock is included in income at fair market value at grant and the stock is then held as a capital asset. The tax paid cannot be recovered if the stock fails to vest, and § 83(b) elections by employees of companies with publicly traded stock are rare. See David I. Walker, *Is Equity Compensation Tax Advantaged?*, 84 B.U. L. Rev. 695, 707 (2004) (citing interview evidence).

¹⁸ Compensation consultant FW Cook reported in 2017 that 90% of performance awards granted to executives at the 250 largest S&P 500 companies vested in three years. FW Cook, 2017 Top 250 Report 12 (2017).

¹⁹ See David I. Walker, *The Practice and Tax Consequences of Nonqualified Deferred Compensation*, 75 Wash. & Lee L. Rev. 2065, 2080 (2018).

periods.²⁰ Typically, however, deferral periods associated with NQDC are longer than those associated with equity-based pay.²¹

To complete the picture, CEOs and other senior executives may also participate in tax-qualified deferred compensation arrangements, such as 401(k)s, that allow them to set aside and invest some current compensation on explicitly tax-preferred terms.²² However, the dollar caps on these plans are so low as to render them essentially irrelevant for senior executives.²³

The compensation menu is similar for low-level executives and rank-and-file employees, although as one moves down the ranks, salary and annual bonuses tend to gain in importance and equity-based pay tends to decline. The opportunity to participate in NQDC programs typically kicks in at the senior vice president level or once compensation reaches six figures.²⁴ Given smaller pay packages at these levels, tax-qualified savings plans become relatively more important.

This Article will not address tax-qualified savings plans. Given the explicit tax subsidies, these are low-hanging fruit. Companies that can afford to incur the administrative costs should find it in their interest to make these plans available. I will use the term “deferred compensation” in this Article to refer to both equity-based pay and NQDC, but not to qualified plans.

B. The Basic Economics of Deferred Compensation

Although frequently overlooked or neglected,²⁵ the economics of deferred compensation are well understood. As Professors Scholes and Wolfson demonstrated, deferred compensation is jointly preferred by employers and employees over current compensation if and only if:

²⁰ See *id.* at 2080-82 (discussing the potential application of the common law constructive receipt, cash equivalence, and economic benefit doctrines, as well as IRC § 409A, to deferred compensation arrangements and the requirements for achieving deferral of taxation).

²¹ Although earlier payouts are becoming more common, termination of employment and death remain the two most common triggers for NQDC distributions. See the Newport Grp., *Executive Benefits: A Survey of Current Trends* 33 (2014). Meanwhile, the average deferral period associated with equity pay continues to shorten as firms replace stock options with performance share awards that typically are paid out after three years. See Part II.D.2.

²² See Walker, note 19, at 2075-77.

²³ See *id.*

²⁴ The Newport Grp., note 21, at 18-19.

²⁵ Daniel I. Halperin & Alvin C. Warren Jr., *Understanding Income Tax Deferral*, 67 *Tax L. Rev.* 317, 317 (2014) (providing examples of errors in deferred compensation analysis).

$$(1) \frac{(1 - t_{EEd})(1 + r_{ER})^d}{(1 - t_{EE0})(1 + r_{EE})^d} > \frac{(1 - t_{ERd})}{(1 - t_{ER0})}$$

where t_{EE} is the employee's marginal tax rate in the year of grant (0) or at deferred compensation payout (d), t_{ER} represents the employer's MTRs, and r_{ER} and r_{EE} are the after-tax rates of return available to the employer and the employee.²⁶ All else being equal, deferred compensation is tax preferred over current compensation when employees face a lower tax rate at payout than they face at grant, when the employer faces a higher tax rate at payout than it faces at grant, and/or when the employer can earn a greater after-tax rate of return on deferred amounts than employees could earn on their own.²⁷

Scholes and Wolfson derived this inequality in the context of NQDC arrangements, but although it is slightly less obvious, the same analysis applies to equity compensation. Employees who receive unvested stock or options or the promise of future payouts in cash or equity based on their company's stock price have deferred both the enjoyment and the taxation of their compensation, and their employer has additional funds that it may invest between the grant of the equity-based compensation and payout. The economics are the same.²⁸

As Professors Halperin and Warren explain, the deferral associated with deferred compensation, one of a class of arrangements they call "counterparty deferral," is different in kind from the "pure deferral" associated with, say, expensing an amount that ordinarily would be capitalized.²⁹ Expensing results in the deferral of income inclusion relative to economic accrual.³⁰ Deferred compensation defers recogni-

²⁶ Scholes et al., note 1, at 183; Scholes & Wolfson, note 1, at 826. This inequality is derived by holding the employer indifferent between cash and deferred compensation and determining the outcomes for the employee. In brief, \$1 of current salary would be taxed to the employee at the employee's current tax rate and the after-tax amount could be invested at the employee's after-tax rate of return, providing an after-tax amount after d years of $\$1 * (1 - t_{EE0}) * (1 + r_{EE})^d$. The employer would be indifferent between paying \$1 currently and setting aside \$1 less the tax benefit of a current deduction. That amount would increase at the employer's after-tax rate of return. Because the employer would deduct the amount paid to the employee at time d , the employer would be indifferent if it grossed up the payment by the employer's tax rate at time d . The employee would pay tax at her time d tax rate, leaving her with an after-tax amount at time d of: $\$1 * [(1 - t_{ER0}) * (1 + r_{ER})^d / (1 - t_{ERd})] * (1 - t_{EEd})$. Setting the two expressions equal and rearranging terms provides the indifference point described in the inequality in the text. An equivalent result would be had by holding the employee indifferent and determining employer outcomes.

²⁷ Scholes et al., note 1, at 183; Scholes & Wolfson, note 1, at 826.

²⁸ See Walker, note 17, at 708-09. Equivalence depends on an assumption that the employee would be able to invest in the same securities, employer stock or options on employee stock or essentially equivalent securities, outside of the company's equity compensation plan. This may not be true for employees of nonpublic companies.

²⁹ See Halperin & Warren, note 25, at 317.

³⁰ *Id.*

tion for one party (here, the investment return on deferred amounts ultimately enjoyed by an employee) by shifting the income to a second party (the employer) in the interim.³¹ As they show, if employers and employees face consistent MTRs at the points of deferral and payout, any benefit from deferred compensation “is due entirely to the difference between the employer’s and employee’s after-tax rate of return on income earned by investing the deferred amount.”³² Importantly, this result does not depend on the employer’s consistent MTR being the same as the employee’s consistent MTR.

II. NOLs, MTRs, AND THE ADVANTAGE OF DEFERRAL

MTRs change over time with changes in statutory rates and other factors. Some research on the sensitivity of compensation design to tax has exploited such longitudinal variations in rates.³³ The variation in MTRs among companies at a given time, which is referred to as cross-sectional variation, is largely a function of NOLs.³⁴ This is particularly true in the United States today given the elimination under the 2017 Act of graduation in the corporate income tax rate schedule.³⁵ Most research on the relationship between taxation and compensation has attempted to exploit cross-sectional variation. This Article addresses that literature, and this Part considers the relationship between employer NOLs, MTRs, and the tax advantage of deferred compensation. In order to highlight the particular characteristics of deferred compensation, and counterparty deferral more generally, I begin by analyzing the relationship between NOLs, MTRs, and the economics of pure deferral.

A. *NOL Duration and MTRs*

Suppose a company is in a loss position (i.e., has NOLs) and is considering entering into a transaction yielding either pure or counterparty deferral. We will assume for now that the company operates in a single jurisdiction. That company may be in an NOL position

³¹ Id. at 324.

³² Id. at 328. This result follows directly from Inequality 1. If $t_{EE0} = t_{EEd}$ and $t_{ER0} = t_{ERd}$, then Inequality 1 reduces to $(1 + r_{ER})^d / (1 + r_{EE})^d > 1$ and deferred compensation is preferred when an employer’s after-tax rate of return exceeds that of an employee. Halperin and Warren suggest that the term *shifting* might be a better term for counterparty deferral arrangements such as deferred compensation, but for the fact that the term *deferral* has been used so extensively in the literature.

³³ See Part IV for a brief discussion.

³⁴ There are certainly other factors, particularly for multinational companies. See Part II.D.1.

³⁵ Pub. L. No. 115-97, §13001, 131 Stat. 2096 (2017) (applying a uniform tax rate of 21% to corporate taxable income).

for a single year, for several years, or for many years before its NOLs are consumed, if they ever are. Of course, the company may move back and forth between NOL years and years without NOLs, but for simplicity I will assume for now some number of years in an NOL position followed by consistent profitability, which is the pattern typically associated with start-up companies, and I will define “NOL duration” as the number of years in which such a company is in a loss position prior to consuming all NOLs and returning to a net tax paying position.³⁶ The presence of NOLs reduces the company’s MTR for the year in which the decision is to be made.

Consider a company with a single-year NOL. Incremental deductions or income items (that are insufficient to fully offset the NOL) have no impact on the company’s tax bill for that year, but that does not mean that the company faces a zero MTR. The company’s MTR depends on the duration of its NOLs. If the company has an NOL for a single year (Year 1) and pays tax at the STR in the following year (Year 2), incremental deductions or income incurred in Year 1 will affect the company’s tax bill in Year 2. The Year 1 impact in present value terms is simply the amount of the income or deduction, multiplied by the STR in Year 2, discounted back to Year 1.³⁷ Suppose, for example, that a company incurs a \$100 deduction in Year 1 in which it has an NOL. That deduction increases the NOL by \$100. In Year 2 the company pays tax after deducting accumulated NOLs at the STR of, say, 30%. The Year 1 deduction reduces the company’s tax bill by \$30 in Year 2. Discounting this reduction back to Year 1 at 7% yields a Year 1 present value of $\$30 \times 0.9346 = \28.04 .³⁸

³⁶ See Victor Fleischer, *The Rational Exuberance of Structuring Venture Capital Start-ups*, 57 *Tax L. Rev.* 137, 145-46 (2003) (explaining various features of the tax code that tend to result in start-up firms generating large tax losses in their early years); Gregg Polsky, *Explaining Choice-of-Entity Decisions by Silicon Valley Start-Ups*, 70 *Hastings L.J.* 409, 418 (2019) (explaining that Silicon Valley start-ups (unlike Main Street small businesses) are generally expected to generate large tax losses in their early years and to experience a relatively long period before reaching profitability). I also assume that compensation deductions and income from deferred amounts are sufficiently small relative to an employer’s other income and deductions that deferred compensation decisions do not affect whether an employer is in an NOL position in any year.

³⁷ See Scholes & Wolfson, note 1, at 830.

³⁸ I have adopted default assumptions of a 30% employer STR and a 10% pretax interest rate. At this stage, for simplicity, I have also assumed a 7% after-tax interest/discount rate. A 7% after-tax discount rate is consistent with these other assumptions in the absence of NOLs and is roughly accurate in cases of relatively short NOL duration. As Professor John Graham notes, however, the relationship between after-tax discount rates and MTRs in the presence of NOLs is more complex. John R. Graham, *Debt and the Marginal Tax Rate*, 41 *J. Fin. Econ.* 41, 47 (1996). The precise after-tax discount rate in the presence of NOLs is somewhat greater than 7% under these other assumptions. In Part II.C., I will introduce NOL adjusted discount factors for more precise calculations. Also, in some

Given that MTR is defined as the present value of additional taxes paid/saved on an additional dollar of income/deduction today, this equates to an MTR of $\$28.04/\$100 = 28.04\%$ (at a 7% after-tax discount rate). More generally, the MTR arising from an NOL is equal to the statutory rate in the year in which the income or deduction item first affects cash taxes discounted by the appropriate interest rate. The longer the NOL duration, the greater the discount, and the lower the Year 1 MTR.³⁹

Prior to the passage of the 2017 Act, U.S. federal tax NOLs could be carried forward for no more than twenty years.⁴⁰ After that point, an unused NOL would expire. Effectively, the discount rate for NOLs with duration in excess of twenty years fell to zero. Under the 2017 Act there is no limit on the number of years that an NOL may be carried forward.⁴¹ If a company manages to remain in business while incurring twenty-five or thirty years of losses, those NOLs would be available in future years if the firm turned the corner.

One caveat. The MTRs faced by a company are not simply a factor of NOLs. STRs may change between the year of deferral and the year of reckoning. For simplicity, however, I will assume that STRs are consistent over time and that MTRs are only affected by NOLs.⁴²

B. Impact of NOL Duration on the Advantage of Pure Deferral

Consider the paradigm case of an opportunity to expense an amount that ordinarily would be capitalized. Suppose that a \$100 deduction would have been allowed in ten years had the item been capitalized. At an STR of 30% and a 7% after-tax discount rate, the

cases, results will also be reported under more conservative assumptions of a 20% STR and 5% pretax interest rate.

³⁹ Formally, $MTR = \frac{\$1 \cdot STR}{(1+r)^n}$, where r is the after-tax interest rate and n is the NOL

duration. Scholes et al., note 1, at 158. The after-tax interest rate r is equal to the pretax rate (i) multiplied by $(1 - STR)$.

⁴⁰ IRC § 172(b) (before amendment in 2017). The twenty-year carryforward limit was adopted in 1997. Prior to 1997, NOLs could be carried forward no more than five years. See Lewis T. Barr, Net Operating Losses and Other Tax Attributes—Sections 381, 382, 383, 384, and 269, 780-4th Tax Mgmt. Portfolio (BNA) § 1A(4).

⁴¹ IRC § 172(b). However, under the 2017 Act, NOLs may only be used to offset 80% of taxable income, which will tend to extend NOL durations. IRC § 172(a).

⁴² This assumption seems reasonable given the historical consistency of the corporate STR over time and the difficulty of predicting changes in the corporate STR. Prior to the enactment of the 2017 Act, the maximum corporate STR had been set at 35% for a quarter century. Unless an employer has good reason to project a higher or lower STR in the future, one would expect the current STR to be used for planning purposes.

present value of that deduction would be \$15.25.⁴³ If there are no NOLs and the party's MTR equals the STR, expensing increases the present value of the deduction to \$30, a \$14.75 improvement, or 14.75% of the amount deducted. More generally, in the absence of NOLs, expensing increases the present value of the deduction by

$$(2) \quad (\$X * STR) - (\$X * STR * DF),$$

where DF is the appropriate after-tax discount factor for the number of years preceding deduction following capitalization.⁴⁴

Now suppose that the taxpayer faces an NOL in Year 1 but consumes all NOLs and returns to net profitability in Year 2. The taxpayer will not be able to take advantage of expensing until the second year, reducing the present value of the expensing opportunity and the overall benefit of expensing or deferral, which now becomes

$$(3) \quad (\$X * STR * DF_1) - (\$X * STR * DF_{10}),$$

where DF_1 is the discount factor for a single year and DF_{10} is the discount factor for the ten-year period prior to deduction following capitalization.⁴⁵ At an STR of 30% and a 7% after-tax discount rate, the single-year NOL would reduce the value of deferral from 14.75% of the amount expensed to 12.79%.⁴⁶ The benefit of expensing continues to decline as NOL duration approaches the length of the deferral period. If NOL duration equals or exceeds the period of deferral, expensing no longer provides any economic benefit. To see this, suppose that a start-up company was in an NOL position for twelve years and began paying tax in Year 13. That taxpayer would receive the benefit in the same year (Year 13) of an amount expensed in Year 1 or deducted following capitalization in Year 10.

Several points are worth noting here. First, as exemplified in Figure 1, a single-year NOL has a relatively modest impact on the benefit of expensing; but the benefit of expensing is quickly eroded with a more

⁴³ The discount factor is equal to the reciprocal of $(1 + i(1 - STR))^d$, where i is the pretax interest rate and d the number of years of deferral, here $\frac{1}{(1 + 1(1 - 0.3))^{10}}$, which equals 0.5083. Thus, the present value of the deduction in 10 years is $\$100 * 0.3 * 0.5083 = \15.25 .

⁴⁴ See Theodore S. Sims, *Income Taxation and Asset Valuation (II): The Value of Preferential Taxation*, 71 *Tax L. Rev.* 53, 80 (2017) (presenting an equivalent equation for the benefit of deferral).

⁴⁵ See *id.* at 80 n.76 (presenting a more general version of this equation). As discussed in note 38, in the presence of NOLs the after-tax discount rate is somewhat greater than the corresponding after-tax rate in the absence of NOLs. I continue to ignore that complication in this Section.

⁴⁶ A one-year NOL reduces the present value of expensing to $30\% * 0.9346 = 28.04\%$, which is 12.79 percentage points better than the 15.25% rate under capitalization.

extended NOL duration. Second, while one might generally assume that expensing is valuable in any case in which a taxpayer faces a positive MTR, this is not necessarily the case if a taxpayer's MTR is reduced as a result of NOLs. To see this, compare two taxpayers. The first faces a current 15% STR, has no reason to anticipate a change in STR, and has no NOLs. If this taxpayer can expense a \$100 expenditure that otherwise would be capitalized and deducted ten years hence, she will save \$8.37 in taxes at present value.⁴⁷ The second taxpayer faces a consistent 30% STR but anticipates being in an NOL position for ten years. Her current MTR is also about 15%.⁴⁸ However, for this taxpayer an opportunity to expense an amount that otherwise would be capitalized and deducted ten years hence would provide no benefit as the deduction would occur at the same point (Year 11) under either scenario. In other words, when it comes to the relationship between current MTR and the advantage of expensing, it matters whether the MTR is reduced by NOLs or is purely a function of the STR.

FIGURE 1

Source: Author calculations, based on assumptions of 30% STR, 10% pretax interest rate, and 7% after-tax discount rate. Details provided in the Appendix.

⁴⁷ $(\$100 \times 0.15) - (\$100 \times 0.15 \times 0.4423)$, where 0.4423 is the after-tax discount factor for ten years at a 15% STR and a 10% pretax interest rate.

⁴⁸ More precisely, this taxpayer's MTR at the point of expensing or capitalization is $0.3 / (1 + 0.07)^{10} = 15.25\%$. See note 39.

C. Impact of NOL Duration on Deferred Compensation

The impact of NOLs on the joint economics of deferred compensation (and other examples of counterparty deferral) is more complex.⁴⁹ Consider a typical NQDC arrangement in which employees elect to defer a portion of their current compensation in exchange for their employer's promise to deliver that compensation in the future plus some agreed return. In the case of current cash compensation, of course, the employee would be taxed at the time of receipt and the employer would be entitled to an equivalent deduction. If all NQDC requirements are met, however, employees in our hypothetical will be taxed on their entire receipt at payout and their employer would be entitled to an equivalent deduction at that time.⁵⁰ In between deferral and payout the employer holds extra funds and invests them as it sees fit—in the business, in securities that form the basis for the return promised to the employee, or whatever it chooses.

The circumstances under which deferred compensation will be jointly tax advantaged relative to current compensation are described in Inequality 1 above. Employer NOLs can impact the economics of deferred compensation in two separate, but non-mutually exclusive ways—by increasing the after-tax rates of return available to the employer and by reducing the after-tax value of employer deductions at the point of deferral relative to payout. I will begin with the latter.

1. The Deduction Effect

I will refer to the impact of employer NOLs on the relative value of employer deductions at the points of deferral and payout as the deduction effect.⁵¹ As before, I assume that an employer is in an NOL position at the time of deferral and consider the impact of NOL duration on the attractiveness of deferred compensation.⁵² For now, I also

⁴⁹ Counterparty deferral refers to situations in which one party enjoys deferral of income recognition for a period of years by shifting the income to a second party in the interim. See notes 29-32 and accompanying text.

⁵⁰ See note 19.

⁵¹ To reiterate, I am assuming that all deferred compensation is deductible by employers at payout, if there is a payout. Options may expire out of the money, in which case there is no employee inclusion and no employer deduction. However, options have a positive expected payout. In exchange for and in the event of favorable employee taxation, incentive stock options (ISOs) do not provide an employer deduction at any time. As noted above, my focus is on the more common examples of deferred compensation in which there is symmetry between employee and employer taxation. I exclude ISOs from my analysis unless otherwise indicated. For a brief discussion of ISOs, see note 95.

⁵² Note again that I am assuming some number of years in an NOL position followed by a number of years without an NOL, i.e., the start-up model. Conceivably, a recipient of deferred compensation could be in an NOL position, but the focus of this Article is on the impact of employer NOLs on deferred compensation economics and practices. Moreover, I

assume that the employer's after-tax rate of return on deferred amounts is not affected by NOLs.⁵³ This assumption allows me to isolate the deduction effect, and it is not a wholly unrealistic assumption in the context of NQDC/equity compensation arrangements in which the freed up funds may be invested in the employer's own stock or in corporate owned life insurance (COLI).⁵⁴

As Inequality 1 indicates, all things being equal, deferred compensation is more attractive relative to current compensation when the employer's MTR is greater at payout than at the point of deferral. NOLs can, of course, affect the employer's MTR at both points. Employer NOLs leading to a reduced MTR at the point of *deferral* favor NQDC/equity pay because the value of the deduction for nondeferred compensation will be reduced. The longer the duration of NOLs and the lower the employer's MTR at the point of deferral, the greater the advantage of deferred compensation, all things being equal.

But all things are not always equal, because NOLs that persist long enough will also reduce MTR at the point of NQDC or equity *payout*, thereby reducing the employer's tax benefit and the joint value of counterparty deferral. As a result, and as shown in Figure 2, the overall relationship between NOL duration and the deduction effect of deferred compensation is not monotonic. As in the case of pure deferral, a single-year NOL has only a modest (in this case, modestly positive) impact on the economics of deferred compensation. The deduction effect is greatest in cases in which NOL duration matches the period of compensation deferral. In such a case, MTR at the point of deferral is significantly reduced, favoring deferral, but MTR at payout is unaffected. If NOL duration extends beyond the deferral period, MTR at payout is reduced, thus reducing the joint value of deferred compensation. Given the diminishing present value significance of cash flows far out in the future, the marginal impact of additional NOL years on the value of the deduction at payout (closer in time and larger) more than offsets the marginal impact on the value of the deduction at the point of deferral (further in time and smaller), and the advantage of NQDC begins trending downward once NOL duration exceeds the deferral period. Ultimately, infinite NOLs would

would think it unusual for executives or other high-level employees, whose incomes consist largely of compensation and investment returns, to be in an NOL position.

⁵³ I also assume that the compensation deduction (and in the next Subsection, the return on deferred amounts) are sufficiently small relative to the employer's other income and deductions that the decision to pay current or deferred compensation does not affect whether the employer is in an NOL position in any year.

⁵⁴ As discussed in Part II.D.1, in cases in which an employer invests deferred amounts in its own stock or in COLI products, an employer may face no tax on investment returns irrespective of any NOL position.

result in a zero MTR at the point of deferral and payout, and the timing of employer deductions, in isolation, would have no impact on the economics of deferred compensation.⁵⁵

As portrayed in Figure 2, the potential impact of the deduction effect is, unsurprisingly, a function of the deferral period. It is also a function of the employer's statutory rate and the pretax interest rate.⁵⁶

⁵⁵ Another way to see this is to first imagine that an employer has no NOLs, such that its MTR at grant and payout are equal to the STR, which is assumed to be consistent. In such a case, the right-hand side of Inequality 1 is unity and the deduction effect is nonexistent. Next imagine that the employer has NOLs that reduce MTR at grant but not at payout. In this case, the right-hand side of Inequality 1 is less than 1, increasing the attractiveness of deferred compensation. Finally, imagine an employer with infinite NOLs such that its MTR at grant and payout is zero. The right-hand side of Inequality 1 returns to unity and the deduction effect disappears. Ignoring the impact on after-tax rates of return, deferred compensation is equally attractive in the absence of employer NOLs and in the case of infinite NOLs.

⁵⁶ This graph reflects the improvement in deferred compensation economics given various NOL durations. As demonstrated in the Appendix and following the methodology of Scholes & Wolfson, note 1, and Scholes et al., note 1, the improvement in joint economics associated with the deduction effect is $\left[\frac{1-STR*DF_C}{1-STR*DF_D} \right] - 1$; where, for any given NOL duration, DF_C is the discount factor for the number of years until a current deduction would first be useful and DF_D is the discount factor for the number of years following payout before a deferred deduction would first be useful. Here I introduce NOL-adjusted discount rates that are somewhat smaller than the corresponding after-tax discount rates. For example, assuming an STR of 30%, a pretax interest rate of 10%, and fifteen-year NOL duration, DF_C is 0.3102 and DF_D is 0.7006, versus NOL unaffected discount factors of 0.362 and 0.713, respectively. As a result, under these assumptions a fifteen-year NOL position would increase the attractiveness of deferred compensation by $[(1-0.3*0.3102)/(1-0.3*0.7006)]-1 = 14.8\%$.

The deduction effect is quite sensitive to STR and interest rate assumptions. For example, assuming an employer STR of 20%, a pretax interest rate of 5%, and a ten-year deferral period, a ten-year NOL duration would result in an 8.1% improvement in deferred compensation economics arising from this channel, versus the 21% improvement associated with my default assumptions.

FIGURE 2

Source: Author calculations, based on assumptions of a 30% STR, 10% pretax interest rate, and 7% after-tax discount rate. Details provided in the Appendix.

2. *The Rate of Return Effect*

The second way that employer NOLs can affect the economics of deferred compensation is by increasing the after-tax rates of return available to the employer on the deferred funds during the period of deferral. Recall that deferred compensation is more advantageous when an employer can earn a greater after-tax rate of return on deferred sums than employees could earn on their own. And employer NOLs increase an employer's after-tax rates of return. The impact of NOLs on after-tax rates of return will be greatest when, absent NOLs, returns are taxed at the STR. This will not always be the case, and exceptions are discussed in Section D below, but the examples provided in Figure 3 assume a baseline STR of 30% on investment returns, as well as a pretax rate of return of 10%. As demonstrated, the improvement in deferred compensation economics arising from the rate of return effect increases monotonically with NOL duration. The impact of just a year or two of NOLs is quite small, even trivial, but a longer period of NOL years can result in a substantial increase in joint tax advantage, particularly for longer periods of deferral. An infinite stream of NOLs would render an employer effectively tax exempt with respect to investment returns on deferred funds.⁵⁷

⁵⁷ Under my default assumptions, an infinite stream of NOLs would result in improvement in counterparty deferral economics of approximately 32% for ten-year deferral, 15%

FIGURE 3

Source: Author calculations, assuming 30% STR, 10% pretax interest rate, and 7% after-tax interest rate.⁵⁸ Details provided in the Appendix.

3. Combined NOL Effects

In cases in which both the deduction effect and the rate of return effect apply, the effects combine to increase the attractiveness of deferred compensation. This would be the case, for example, for an NQDC plan sponsor that invested deferred funds in taxable bonds. The overall improvement in deferred compensation economics reaches a peak at the point at which NOL duration matches the period of deferral. Beyond this point, reductions in the deduction effect and increases in the rate of return effect exactly offset, and the combined impact of NOLs on the joint advantage of deferred compensation is constant. An example of the separate and combined effects, based on ten years of deferral, a 30% statutory employer tax rate, and a 10% pretax interest rate is presented in Figure 4.⁵⁹

for five-year deferral, and 9% for three-year deferral. For ten-year deferral, for example, under my assumptions, deferred funds would grow by 1.07^{10} in the absence of NOLs. With infinite NOLs, deferred funds would grow by 1.1^{10} , a 32% improvement.

⁵⁸ As in the case of the deduction effect, the impact of NOLs on the rate of return effect is quite sensitive to these assumptions. For example, assuming an employer STR of 20%, a pretax interest rate of 5%, and a ten-year deferral period, a ten-year NOL duration would result in less than a 2% improvement in deferred compensation economics arising from an increased after-tax rate of return versus a 9% improvement associated with my default assumptions.

⁵⁹ As demonstrated in the Appendix, the combined impact of the two effects for cases in which NOL duration equals or exceeds the deferral period results in value to the employee

FIGURE 4

Source: Author calculations, assuming ten years of compensation deferral, 30% STR, 10% pretax interest rate, and 7% after-tax interest rate. Details provided in the Appendix.

4. Sensitivity to Tax and Interest Rates

The impact of NOLs on the joint tax advantage of deferred compensation is sensitive to statutory corporate tax rates and to pretax rates of return on deferred amounts. Reductions in either STR or pretax return reduce the positive impact of NOLs on the deferred compensation advantage. Moreover, while a 30% STR and a 10% interest rate are convenient and perhaps reasonable assumptions over the long term, both tax and interest rates are lower than these levels today.⁶⁰ To provide an idea of the sensitivity of joint tax advantage to

at Year d equal to $(1 + i)^d * (1 - t_{EE})$, where i is the pretax interest rate, d is the period of deferral, and t_{EE} is the employee's tax rate. To understand why the combined benefit of the two effects is unaffected by NOL duration that extends beyond the deferral period, imagine that an employer anticipating an NOL period that extends beyond a deferral period sets aside and invests \$1 that would otherwise be paid as current compensation. If paid currently, the deduction would yield an NOL of \$1. Suppose after ten years of investment the gross amount is paid to the employee, yielding a deduction of $\$1 + r$, where r is the pretax return over the ten-year period, and income over the period of r , for a net NOL of \$1. In Year 10, the compensation has produced an NOL of \$1 under either scenario and the employer is indifferent. Whether that NOL is consumed in Year 10, 11, 12, or later has no bearing on the attractiveness of deferred versus current compensation, which is solely determined by the improvement in the employee's position. I thank Professor Gregg Polsky for highlighting this alternative analytic approach.

⁶⁰ The Tax Foundation puts the post-2017 Act population weighted average combined U.S. state and federal statutory corporate tax rate at 25.7%. Kyle Pomerleau, Tax Found.,

these assumptions, Figure 5 replicates the analysis presented in Figure 4, substituting a 20% STR and a 5% pretax rate of return. Under these assumptions, the maximum improvement in joint tax advantage of deferred compensation is one-third as large in the combined effect scenario as under my default assumptions.

Source: Author calculations, assuming ten years of compensation deferral, 20% STR, and 5% pretax interest rate. Details provided in the Appendix.

*D. Implications for Deferred Compensation Arrangements
(and Complications)*

This section considers the implications of the foregoing for NOL firms designing or negotiating compensation arrangements, as well as some further complications. I begin with some general observations and then consider issues specific to equity-based pay and to NQDC.

1. In General

The rate of return effect depicted in Figures 3 through 5 is based on an assumption that, absent NOLs, the employer pays tax at the statutory rate on the returns on the funds that are freed up between the points of deferral and payout. But in many cases employer after-tax

The United States' Corporate Income Tax Rate Is Now More in Line with Those Levied by Other Major Nations (Feb. 12, 2018), <https://taxfoundation.org/us-corporate-income-tax-more-competitive/>.

rates of return on deferred funds are unaffected by NOLs. For example, deferred funds may be invested in the employer's own stock through tender offers or open market purchases, in which case gains or losses on those holdings are not taxed.⁶¹ In this scenario, an NOL position would not affect the firm's after-tax rate of return on the deferred funds as the tax has already been reduced to zero.⁶²

As another example of a situation in which employer rates of return are unaffected by NOLs, consider a deferred compensation plan sponsor that invests deferred funds in COLI.⁶³ If operated in accordance with § 101(j), COLI death benefits (and hence deferred compensation returns) are untaxed and, again, the presence of NOLs would have no impact on employer after-tax rates of return.⁶⁴

In other cases, an employer's pre-NOL MTR on deferred amounts will not be zero but will be less than the STR. Given the dividends received deduction, the pre-NOL MTR on dividends corporations receive from portfolio companies is already reduced by half.⁶⁵ As a result, the impact of NOLs on an employer's after-tax return on dividends would be half that depicted in Figures 3 through 5.

Thus, one can readily imagine scenarios in which NOLs would affect the value of current and/or deferred deductions for compensation but not rates of return on deferred amounts (or affect the latter to a lesser degree). However, it is difficult to think of a scenario in which the opposite would be true—in which NOLs would affect after-tax rates of return but not the relative value of current and deferred deductions—at least within a single jurisdiction. So, while isolating the rate of return effect may be helpful for exposition, it does not reflect a single-jurisdiction real-world scenario. Such scenarios are likely represented by the deduction effect alone and the two effects combined.

For a multinational company, however, the jurisdiction where compensation deductions are taken and investment gains are taxed could

⁶¹ IRC § 1032. To my knowledge, this gambit was first recognized by Professor Halperin. Daniel I. Halperin, *Interest in Disguise: Taxing the "Time Value of Money,"* 95 *Yale L.J.* 506, 540 (1986).

⁶² This is not to suggest that this and other investment decisions are exogenous. As described below, investment of deferred amounts in own-company stock is more commonly associated with equity compensation programs than with NQDC. See Part II.D.2-3.

⁶³ Surveys of NQDC plan sponsors suggest that COLI use is quite common in this context. See, e.g., MullinTBG, 2014 Executive Benefits Survey, Summary of Results 9 (2015) (54% of surveyed companies that reported informally funding NQDC obligations reported some use of COLI); Newport Grp., note 21, at 53 (73% of informal funders reported some use of COLI). See generally Walker, note 19, at 2104-09.

⁶⁴ See Walker, note 19, at 2105-07.

⁶⁵ IRC § 243 (allowing a deduction of 50% of dividends received from portfolio companies, i.e., companies in which a taxpayer owns less than 20% of the stock by vote and value). Under prior law, 70% of portfolio company dividends were deductible. IRC § 243 (before amendment in 2017).

well differ, and a multinational could have NOLs in either or both jurisdictions. In such a scenario, any of the three patterns depicted in Figures 4 or 5 represents a feasible outcome.

It is worth emphasizing that the impact of NOLs on the relative value of grant and payout-date employer deductions—the deduction effect—is highly sensitive to the relationship between the period of deferral and NOL duration.⁶⁶ In cases in which NOLs also affect employer rates of return, underestimation of NOL duration would have no impact on the overall economics of deferred compensation, but in cases in which the economics turn solely on the deduction effect, underestimation of NOL duration could have a significant impact. Consider, for example, a company that anticipates being in an NOL position for ten years and that sponsors NQDC with expected deferral of ten years. Under the assumptions of a 30% STR and 10% pretax interest rate, if a company's NOL duration actually extends to fifteen years, the company will have overestimated the impact of NOLs on NQDC economics by 36% if NOLs do not affect the company's rates of return on the investment of deferred funds.⁶⁷

To be sure, in none of the cases presented above does an employer NOL position at the point of deferral result in deferred compensation economics that are *poorer* than those pertaining in the absence of NOLs. In other words, NOLs may be more or less beneficial, but they always improve the economics of deferred compensation. The impact may be complex and unpredictable, but it is always positive. While these points are correct, they are in part artifacts of my setup. I have assumed a series of NOL years followed by profit years. Imagine instead a case in which an employer is in an NOL position at the time of deferral. A year or two later the employer returns to a profit position and deducts any NOLs. Prior to payout, however, the employer returns to an NOL position and remains there indefinitely. In this scenario, losses could well have a negative impact on the economics of deferred compensation, as the employer's grant year MTR and rates of return would be only modestly affected by the grant year NOL, while its payout year MTR would be significantly diminished by the later string of NOL years. While this pattern of losses may be uncommon, it is clear that the conventional wisdom that being in a loss position in the year of a potential deferral makes deferred compensation more attractive economically is an oversimplification. This claim is not necessarily true for companies that move in and out of loss positions.

⁶⁶ This follows from the nonmonotonic relationship between NOL duration and the improvement in deferred compensation economics arising from the deduction effect.

⁶⁷ See Figure 4. At a 20% STR and 5% pretax interest rate, the overestimation would be 21%. See Figure 5.

Having highlighted these general points, I now turn to a more detailed exploration of the impact of employer NOLs on equity-based pay and NQDC.

2. *Equity-Based Compensation*

The most important and noticeable change in equity-based pay over the past two decades has been the declining use of stock options and offsetting increased use of performance share awards.⁶⁸ In 1990 options accounted for more than 60% of the total ex ante value of compensation granted to the median S&P 500 senior executive. In 2013 options accounted for less than 20%, while performance awards accounted for over 30%.⁶⁹ This transformation has had a significant impact on deferral periods. While options are typically exercisable for ten years, and typically exercised within five or six years, performance awards typically cover a three-year period.⁷⁰ To the extent that performance share awards have displaced options, the deferral period associated with equity pay has been reduced by about half.

To be sure, start-ups remain somewhat more likely than mature public companies to issue options, and start-ups are more likely to be in an NOL position, but NOLs are by no means limited to start-ups.⁷¹ In any event, the equity-based pay in the typical modern executive pay packages does not involve extensive deferral, which limits the potential impact of NOLs on each of the elements that contribute to the economic benefit of counterparty deferral.

In addition, many companies that utilize equity-based pay regularly repurchase shares on the market to manage dilution.⁷² These buybacks can result in a zero tax rate on investment returns, with or without NOLs.⁷³ In these cases, NOLs impact the advantage of defer-

⁶⁸ See David I. Walker, *The Way We Pay Now: Understanding and Evaluating Performance-Based Executive Pay*, 1 J. Law, Fin. & Acct. 395 (2016).

⁶⁹ *Id.* at 405-06. The adoption of performance shares and other performance-based pay instruments has been encouraged by the proxy advisers, principally Institutional Shareholder Services (ISS). Institutional S'holder Servs., United States Proxy Voting Guidelines 40-49 (Dec. 6, 2018) (outlining problematic executive pay practices including pay insufficiently connected with company performance).

⁷⁰ See note 18.

⁷¹ Recall the evidence, presented above, of NOLs in 67% to 89% of firm years in a sample of large firms between 2010 and 2015. Heitzman & Lester, note 2, at 29.

⁷² See, e.g., Richard Teitelbaum, *Share Buybacks May Be Bad—Just Not for the Reasons You Think*, Institutional Investor (March 7, 2019) (reporting that share buybacks by S&P 500 companies reached a record \$798 billion in 2018, accounting for more than 70% of the aggregate earnings of the companies in the index).

⁷³ As noted above, companies are not taxed on gains or losses on their own shares per IRC § 1032. See accompanying text at note 61. In theory, repurchasing company shares eliminates taxation on equity compensation investment returns only if shares are repurchased at the time of an equity grant, not at payout. The key question under this approach

ral only through the deduction effect. Suppose, for example, that a stock grant vests in three years, that the statutory employer tax rate is 30%, that the pretax interest rate is 10%, and that the employer repurchases its own shares at the time of grant, eliminating the rate of return effect. The deduction effect alone would improve the economics of this equity pay, but at most by about 8%, as shown in Figure 2. And even this large a gain would be achieved only if NOL duration happened to match the deferral period. A single-year NOL would only improve the economics of the deferral by about 3% and, less obviously, but perhaps more importantly, a ten-year stretch of NOL years would result in an improvement of only about 4% in the benefit of deferral.

So should we expect companies to take NOLs into account in designing or negotiating equity pay arrangements? I assume that willingness to grapple with the complexity of NOLs with respect to compensation decisions will turn in part on the magnitude of the potential gain. In some cases, the potential gain may be significant; in other cases, less so.

For a company in the position described immediately above—making hedged grants of three-year stock awards—the impact of an NOL position at grant on the overall economics of the deal is small and uncertain. One would not be surprised to find such a firm falling back on the simple STR heuristic in making these decisions.

The impact of NOLs would be greater for a cash-poor start-up company that was considering issuing options and planned to use freed up funds in the business instead of buying back shares. Options often remain outstanding for five years, increasing the payoff to deferral somewhat, and absent hedging, both the deduction and rate of return effects would be in play. At my default tax and interest rates, the potential payoffs as seen in Figure 6 might be sufficient to induce the start-up to hire a consultant to do the math and help the firm think through the various scenarios. Query, however, whether the driving force would be adequate at current tax and interest rates.

is how freed up funds are invested between the point of deferral (grant) and payout. Moreover, there is evidence that stock buybacks are more closely associated with equity compensation payouts than with grants. See Ilona Babenko, *Share Repurchases and Pay-Performance Sensitivity of Employee Compensation Contracts*, 66 J. Fin. 117, 118 (2009) (finding a positive relationship between share repurchase and stock option exercise); Alok Bhargava, *Executive Compensation, Share Repurchases and Investment Expenditures: Econometric Evidence from US Firms*, 40 Rev. Quant. Fin. Acct. 403, 405 (2013) (finding share repurchase to be associated with option exercise but not grant). Nonetheless, stock repurchase programs have become so large and popular in recent years that it seems reasonable to assume that a significant fraction of funds freed up through equity issuance in lieu of cash is going into company stock, thus largely eliminating taxation on investment returns associated with equity compensation.

Source: Author calculations, assuming five years of compensation deferral, 30% STR, and 10% pretax interest rate. Details provided in the Appendix.

3. *NQDC*

NQDC typically involves longer periods of deferral, relative to equity-based pay, which magnifies the potential impact of NOLs on the economics of deferral. This factor alone suggests that companies should more frequently take NOL positions into account in designing and negotiating NQDC arrangements.⁷⁴

As in the case of equity-based pay arrangements, some NQDC plan sponsors will manage their investments in such a way as to reduce or eliminate tax on investment returns, which, of course, limits or eliminates the impact of NOLs on these returns. The main ways that NQDC plan sponsors do so are by investing deferred funds in their own stock (relatively rare), investing in COLI products (quite common), and purchasing dividend paying stocks entitling them to the dividends received deduction (also common).⁷⁵

⁷⁴ Firms can, for example, encourage NQDC participation through expansion or augmentation of company matching programs. See Robert A. Miller, *Nonqualified Deferred Compensation Plans*, in *Executive Compensation* 211, 215-16 (Yale D. Tauber & Donald R. Levy eds., 2002).

⁷⁵ Most NQDC plans allow participants to select investment choices that determine their promised payouts and many NQDC plan sponsors hedge the notional holdings in participant accounts by purchasing identical securities with deferred amounts. Companies do this primarily for accounting reasons—not for tax. As a result, plan sponsors would tend to hold own-company stock when participants have selected to “invest” in company stock (rare) or other stocks or bonds that make up participant notional investment portfolios

However, the use of these strategies is unlikely to be random. For example, COLI products are typically purchased specifically to minimize tax burdens associated with plan sponsors' NQDC investment portfolios. A firm that is in an NOL position, and expects to remain so for some time, would be unlikely to purchase a COLI product to manage its investments. It could manage those investments and its hedging activities through much cheaper, nominally taxable accounts.⁷⁶

It is also true that while the NOL impact on longer-term deferrals is greater, the firm's NOL position will probably be less predictable over that period. Nonetheless, the prize is potentially substantial. Assuming that both the deduction effect and rate of return effect are in play, in the case of my stylized example of ten-year deferral at a 30% STR and a 10% pretax interest rate, NOLs could increase the joint value of NQDC by more than 30% if NOL duration matches or exceeds the deferral period. To be sure, the NOL boost falls to about 10% under more conservative (20% STR; 5% pretax interest rate) assumptions, but one could still imagine companies taking these sorts of improvements into account in deferred compensation planning, despite the attractiveness of the simple STR heuristic.

4. Other Factors Influencing the Attractiveness of Deferred Compensation at Loss Firms

In some cases, the complexity and unpredictability of the impact of losses on the economics of deferred compensation may cause these arrangements to be somewhat less attractive for loss companies than might be envisioned at first blush. This is not to suggest, however, that uncertain economic benefits are the only obstacles to loss companies embracing these arrangements. One can think of at least two additional factors that might discourage loss firms and their employees from taking advantage of the opportunity to minimize their joint tax obligations through deferred compensation.

One factor is risk of nonpayment. Some loss firms may be financially solid start-ups that have not yet turned the tide to net profitability. Other loss firms may be on a shakier footing financially. Employees of the latter may be loath to accept the promise of an equity-based payout in three to five years in lieu of current cash or to voluntarily defer current compensation in exchange for an unsecured promise to deliver funds in the future.

(more common). COLI can be used as a tax-efficient platform to hold these securities and manage these hedging activities. See generally Walker, note 19.

⁷⁶ COLI products tend to be relatively expensive. The insurance companies that market these products extract a portion of the buyer's tax savings. Where there is little or no tax to be saved, it makes little sense to purchase COLI. *Id.* at 2106-07.

A second reason that loss firms might fail to fully exploit deferred compensation opportunities might be an excessive focus on financial accounting relative to after-tax cash flows. NOLs that a company expects to fully deduct in the future have no impact on book deductions for deferred compensation.⁷⁷ Prior to the passage of the 2017 Act, NOLs expired after twenty years, and it would not have been reasonable to assume full deductibility of NOLs in all cases.⁷⁸ In these cases, companies were required to make valuation adjustments for their deferred tax assets, which would have had some impact on book deductions for deferred compensation in the presence of NOLs.⁷⁹ Nonetheless, a company that focused solely or excessively on GAAP earnings would tend to ignore NOLs or discount their impact significantly in evaluating the attractiveness of deferred compensation.

Focusing on GAAP earnings instead of after-tax cash flows in making incremental decisions is inconsistent with basic corporate finance theory, but it is apparently quite common. In a recent survey of corporate tax executives by Professors Graham, Hanlon, Shevlin, and Shroff, 44.8% of respondents reported that they relied primarily on STRs in making compensation decisions, while only 10.6% reported relying chiefly on MTRs.⁸⁰ Of course, MTRs should be used in making incremental decisions, such as those regarding compensation mix, and the authors suggest that in some cases reliance on statutory rates may be a simplifying heuristic given the difficulty of determining marginal rates under complex circumstances. But GAAP earnings are based on statutory rates, so another possibility is that these firms focus primarily on maximizing GAAP earnings rather than maximizing after-tax cash flows.

III. EMPIRICAL RESEARCH ON THE ROLE OF TAXATION IN COMPENSATION DESIGN

There is a large finance and accounting literature that investigates the relationship between company tax status and the use of equity and other deferred compensation. This literature has come in two waves. The first wave followed the explosion in stock option use in the 1990s as researchers sought to determine the extent to which companies respond to taxes in deciding whether to use equity pay and how to de-

⁷⁷ R. Lee Nunn, Financial Accounting and NQDC, in *Taxation and Funding of Nonqualified Deferred Compensation* 295 (Maria J. Aspinwall & Michael G. Goldstein eds., 2d ed. 2012).

⁷⁸ See, e.g., Polsky, note 36, at 111 (noting that the time to profitability for start-ups is “expected to be long, often much longer than [the] investment horizon of investors”).

⁷⁹ Presumably, NOLs will not result in valuation adjustments going forward, since NOL carryforwards no longer expire.

⁸⁰ Graham et al., note 6, at 3141.

sign that pay. A second wave followed the 2008 financial crisis and was focused primarily on the relationship between deferred compensation held by executives and risk-taking incentives, but many studies included controls for company tax status. This Part considers what these studies tell us about the impact of NOLs and MTRs on deferred compensation use as well as the prospects for identifying that impact through existing and improved empirical methods.⁸¹

A. *Do Researchers Understand the Tax Implications of Deferred Compensation?*

As a starting point, it is worth asking whether accounting and finance researchers fully understand the tax implications of these complex deferred compensation arrangements. In this case, I believe the answer is “yes and no” or “yes, to a limited extent.” As Professors Shackelford and Shevlin suggest, “an appreciation of the nuances of the tax law stands as a substantial barrier for entry for many accounting researchers.”⁸²

Scholes and Wolfson promulgated a framework of analysis for the role of tax in corporate finance decisions in their 1992 textbook *Taxation and Business Strategy*.⁸³ Their “all parties, all taxes, and all costs” framework is basically self-explanatory; it requires researchers to identify and understand each of the parties, taxes, and costs involved in financing decisions. Scholes and Wolfson clearly laid out the “all parties, all taxes, and all costs” economics of deferred compensation relative to current compensation in their 1992 book, and the analysis has been included in later editions as well.⁸⁴ Most published research in this area embraces that framework.

That is to say that researchers investigating cross-sectional variation in the use of equity or other deferred compensation recognize that variations in corporate tax rates may be an explanatory factor.⁸⁵ While

⁸¹ Note that this Part is not intended to provide an exhaustive survey of the finance and accounting literature on the role of taxation in deferred compensation. For such a review, see, e.g., Douglas A. Shackelford & Terry Shevlin, *Empirical Tax Research in Accounting*, 31 J. Acct. & Econ. 321 (2001).

⁸² *Id.* at 324.

⁸³ Myron S. Scholes & Mark A. Wolfson, *Taxes and Business Strategy: A Planning Approach* (1st ed. 1992).

⁸⁴ See, e.g., Scholes et al., note 1.

⁸⁵ Consistent with the “all parties” framework, researchers also recognize that employee tax rates affect the economics of deferred compensation. Longitudinal studies take employee tax rates into account but cross-sectional variations in employee rates are unobservable and are not considered in analyses of this nature. Moreover, it is probably reasonable to assume that most executives pay tax on equity and deferred compensation at the highest marginal rates. Longitudinal analysis of deferred compensation practices is briefly considered in Part IV.

some researchers seem to recognize that employer tax rates can affect the rate of return on deferred funds,⁸⁶ most appear to focus on Scholes and Wolfson's observation that deferred compensation tends to be advantaged when the employer's tax rate is expected to be higher at payout than at the time of deferral.⁸⁷ To some extent, this is a "no harm, no foul" type situation, because, as we have seen, NOLs at the time of deferral tend to improve employer after-tax rates of return on deferred funds as well as the relative value of their deduction for deferred compensation. On the other hand, I see no recognition in this literature that the impact of NOLs on deferred compensation economics depends in any way on how employers handle deferred amounts, e.g., hedging equity grants or investing in COLI products to manage NQDC accounts.

B. Proxies for Employer Tax Status

Because employer marginal tax rates are not directly observable, researchers employ various proxies for those rates. One of the simplest and most commonly used proxies is an indicator or "dummy" variable reflecting the existence, or not, of an NOL for a given company in a given year. The existence of an NOL is associated with a company having a low MTR for that year; while the absence is associated with a company having a high MTR. Companies report NOL positions in their financial statements and these disclosed NOLs are reported in the Compustat database.⁸⁸

Some researchers, following the suggestion of Professor Plesko, add some nuance to this approach by adopting a binary dummy variable that is intended to identify firms with particularly low or high MTRs. Under Plesko's approach, a firm is designated as having a low MTR in a year if, in each of the preceding three years, it reports an NOL and negative taxable income. A firm is designated as having a high MTR if it has no NOLs and positive taxable income in each of the three pre-

⁸⁶ See, e.g., Brian J. Hall & Jeffrey B. Liebman, *The Taxation of Executive Compensation*, 14 *Tax Pol'y & Econ.* 1, 14-17 (2000).

⁸⁷ See, e.g., John E. Core & Wayne R. Guay, *Stock Option Plans for Non-Executive Employees*, 61 *J. Fin. Econ.* 253, 260 (2001). Although Scholes et al. are quite clear in their book that the joint advantage of deferred compensation is a function of current and future employee tax rates, current and future employer tax rates, and the relative after-tax rates of return that can be earned by the two parties, and they highlight the fact that employer NOLs can boost the attractiveness of deferred compensation, they explicitly make this connection only in the context of an employer's current and future tax rates. See, e.g., Scholes et al., note 1, at 184.

⁸⁸ Not without error. See Shackelford & Shevlin, note 81, at 366; Heitzman & Lester, note 2, at 29.

ceding years. In other cases, a company is considered to have neither a high nor a low MTR.⁸⁹

A more sophisticated approach is to create a simulation that forecasts a firm's future taxable income and factors NOLs into predicted taxes and marginal tax rates. Some researchers have employed simulations to estimate current year MTRs, while a still more sophisticated approach, adopted by few, is to estimate MTRs both for the current year, the year of the possible deferral, and for the year of payout.⁹⁰

Shackelford and Shevlin argue that as a general research strategy simulated employer MTRs should be preferred to the use of NOL dummy variables, including Plesko's binary NOL/taxable income dummies.⁹¹ And the foregoing analysis suggests that the existence of an NOL is a particularly poor proxy for the attractiveness of deferred compensation, which depends on the employer's MTR at grant and at payout, and which can bear a nonmonotonic relationship to NOL duration. Presumably, the idea behind classifying firms with three years of NOLs and three years of negative taxable income as low MTR firms is to identify firms with particularly low current year MTRs. This might be a sensible approach for cases in which the relationship between MTR and cost or benefit is monotonic, but, as we have seen, if a firm's MTRs do not impact its after-tax rate of return on deferred funds, the tax advantage of deferred compensation begins to decline if NOL duration exceeds the deferral period.

To my knowledge researchers investigating the impact of taxes on deferred compensation have not employed either NOL duration or dummy variables for the existence of NOLs at the time of payout as alternatives or supplements to current year/grant date dummies. To be sure, payout date data reflect *ex post* observations and questions might arise regarding endogeneity, but this would still seem to represent an improvement over the use of current year NOL dummies alone. Of course, the use of an NOL payout dummy would require researchers to estimate the period of deferral.

In any event, given the complex relationship between the tax advantage of deferred compensation and NOL duration/grant date MTR, the use of simulations to estimate grant date and payout MTRs would seem to be particularly valuable. Presumably, simulations could also

⁸⁹ George A. Plesko, *An Evaluation of Alternative Measures of Corporate Tax Rates*, 35 J. Acct. & Econ. 201 (2003). Plesko finds that this binary variable is closely correlated with more sophisticated estimations of MTR, but Shackelford and Shevlin criticize this approach. Shackelford & Shevlin, note 81, at 365-66.

⁹⁰ See, e.g., Austin et al., note 15, at 2 (1998) (estimating stock option exercise dates and company MTRs at the time of estimated exercise).

⁹¹ Shackelford & Shevlin, note 81, at 367-68.

be used to estimate employer after-tax rates of return on various investments.

C. Specific Tax Proxies and Results of Empirical Investigations into the Role of Taxation in Compensation Design

1. Equity Compensation Studies

While some of the earliest analyses of the determinants of equity compensation used employer NOL dummies, later studies utilized MTR simulations. Neither approach, however, has resulted in consistent findings of statistically significant associations between employer MTR and reliance upon or design of equity pay.

As examples of the former approach, Professor David Yermack used a simple NOL dummy variable as a proxy for employer tax status in his 1995 analysis of the determinants of CEO stock option awards, and he failed to find a statistically significant relationship.⁹² In their 2001 analysis of the determinants of options granted to nonexecutives, Professors Core and Guay used the Plesko dummies, combining multiyear NOLs and negative taxable income into proxies for low and high MTRs. They found that high MTR companies were less likely to make use of options, but the relationship between low MTR firms and option use was not statistically significant.⁹³ Core and Guay's 2001 study is also an example of the use of simulations to estimate MTRs. Core and Guay reported that they repeated their analysis using Professor Graham's simulated MTRs, and found similar results.⁹⁴

Unfortunately, many of the equity compensation studies are complicated by the fact that companies can issue either or both of two types of options—nonqualified options (NQOs), which result in the kind of counterparty deferral that is the focus of this Article, and ISOs, which provide preferential tax treatment to employee recipients but at the cost of employer deductions.⁹⁵ Employers receive no deduction at any time with respect to ISOs that qualify for favorable employee tax treatment.⁹⁶ For example, Professors Bryan, Hwang, and Lilien also employed Graham's simulation in their 2000 study of the

⁹² David Yermack, *Do Corporations Award CEO Stock Options Effectively?*, 39 J. Fin. Econ. 237 (1995).

⁹³ Core & Guay, note 87, at 275.

⁹⁴ *Id.*

⁹⁵ IRC § 422 specifies the conditions for ISO treatment. If the requirements of IRC § 422 are met, including post-exercise stock holding requirements, employees exercising ISOs are not taxed until they sell the underlying shares and at that time they are taxed at the capital gains rate on their entire gain, rather than at the ordinary income rate. IRC § 421(a).

⁹⁶ IRC § 421(a).

determinants of CEO equity-based pay.⁹⁷ While they found that high MTR companies were less likely to use options (as predicted),⁹⁸ it was unclear if this result was driven by the complete loss of deductions associated with ISOs. They found no statistically significant relationship between employer MTR and grants of restricted stock, which provides a more straightforward test of the impact of NOLs on deferred compensation.⁹⁹

Similarly, Professors Austin, Gaver, and Gaver used a simulation procedure developed by Professor Shevlin in analyzing company decisions to grant ISOs or NQOs.¹⁰⁰ Austin, Gaver, and Gaver used the simulation to estimate the exercise date of the options and the MTR at that time. What they found, however, was that firms tended to issue ISOs *despite* a combined tax disadvantage.¹⁰¹ Summing up the evidence regarding company choices between ISOs and NQOs, Shackelford and Shevlin concluded, “if we were forced to make a judgment on the current state of knowledge, we would interpret the evidence as consistent with taxes not being an important determinant.”¹⁰²

As this small sample of studies suggests, some researchers investigating the determinants and design of equity pay have employed MTR simulations as suggested in the literature. Despite this, results have been mixed. It does not appear that cross-sectional variation in MTR is a large factor in equity pay use or design. There could be several reasons for this. The ISO/NQO decision might be driven by executive preferences dominating corporate costs or, relatedly, a desire to camouflage compensation.¹⁰³ As I’ve suggested above, however, it may be the case that MTR variations simply are not that significant in the context of relatively short-term equity pay arrangements, particularly hedged grants of equity. Of course, it could also be the case that proxies for and simulations of corporate MTRs have not been up to the task.

⁹⁷ Stephen Bryan et al., CEO Stock-Based Compensation: An Empirical Analysis of Incentive-Intensity, Relative Mix, and Economic Determinants, 73 J. Bus. 661, 670 (2000).

⁹⁸ Id. at 663.

⁹⁹ Id. at 686.

¹⁰⁰ Austin et al., note 90, at 2.

¹⁰¹ Id. at 3.

¹⁰² Shackelford & Shevlin, note 81, at 331.

¹⁰³ Although employers generally sacrifice their deduction for compensation conferred through ISOs, employees generally benefit from ISO tax treatment if the shares increase in value and the capital gains rate is less than the rate on ordinary income. Scholes et al., note 1, at 193. This benefit is likely to be overlooked by outside observers in assessing overall compensation.

2. *Nonqualified Deferred Compensation/Inside Debt Studies*

A number of studies of nonequity deferred compensation were published in the wake of the 2007-2008 financial crisis. The idea behind most of these studies is that NQDC represents “inside debt” in the company that might help align executive incentives with those of debt holders and act as a check on the sort of risk-taking incentives that shareholders might prefer and that would be incentivized by stock options. As in the case of equity pay studies, researchers in this area generally understand that employer MTR could help explain cross-sectional variation in the use of inside debt. Indeed, the tax analysis is essentially the same as in the earlier wave of equity pay studies. Researchers working in this area have employed NOL proxies and have not employed simulated MTRs. Perhaps unsurprisingly, these studies have not found statistically significant relationships between tax status and the prevalence of deferred compensation.

For example, Professors Sundaram and Yermack used an NOL dummy as a proxy for tax status in their 2007 analysis of the determinants of CEO nonqualified executive pension levels. The NOL dummy was not statistically significant in any of their regressions and even carried an inconsistent sign.¹⁰⁴ Professor Cen similarly employed an NOL dummy in his 2011 study of the determinants of CEO inside debt, a variable that generally was not statistically significant.¹⁰⁵ In a 2010 paper, Professor Gerakos investigated the trade-off that is made between CEO pay and nonqualified pension benefits.¹⁰⁶ He recognized that low MTR firms should be more likely to favor deferred compensation, but he found that companies providing pensions are significantly *less* likely to have NOLs for the three prior years.¹⁰⁷ In a 2012 paper, Professors Williams (formerly Alces) and Galle investigated cross-sectional variation in the fraction of compensation that takes the form of inside debt.¹⁰⁸ They included lags of firm tax status in their regressions, again using NOLs as proxies for low MTRs. They explained that they did not expect to find a statistically significant association since the bulk of compensation consists of equity and inside debt, both of which represent deferred compensation, the benefit of

¹⁰⁴ Rangarajan K. Sundaram & David L. Yermack, Pay Me Later: Inside Debt and Its Role in Managerial Compensation, 62 J. Fin. 1551, 1574 (2007).

¹⁰⁵ Wei Cen, The Determinants of CEO Inside Debt and Its Components 48-51 (Jan. 18, 2011) (Ph.D. Dissertation, Cornell University School of Applied Economics and Management), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1716306.

¹⁰⁶ Joseph Gerakos, Chief Executive Officers and the Pay-Pension Tradeoff, 9 J. Pension Econ. & Fin. 303 (2010).

¹⁰⁷ *Id.* at 316.

¹⁰⁸ Kelli A. Alces & Brian D. Galle, The False Promise of Risk-Reducing Incentive Pay: Evidence from Executive Pensions and Deferred Compensation, 38 J. Corp. L. 53 (2012).

which may increase with reduced employer MTRs.¹⁰⁹ And, indeed, they did not find the tax proxy to be a significant control variable.¹¹⁰ Like the other studies noted here, however, they did not employ simulated MTRs.

D. The Empirical Road Ahead

It is disappointing that the inside debt studies employed only low power NOL dummy variables in testing whether employer tax status helps explain cross-sectional variation in the use of deferred compensation. It is difficult to know from these studies whether companies ignore or disregard their particular tax positions in making deferred compensation decisions or whether researchers just aren't picking up any tax effects. It is particularly disappointing because, as I've argued above, the potential impact of employer tax status is likely to be greater for nonequity deferred compensation than for equity pay given the differences in typical deferral periods and likely hedging patterns.¹¹¹ But that is by no means a slam dunk, so it would be useful to have empirical testing of this claim. As suggested above, firms with large NOL positions may be on shakier financial footing than other firms, causing employees to think twice about entering into lengthy unsecured deferred compensation arrangements.¹¹² It is difficult to predict the relationship, but it is also worth more rigorous investigation.

Ideally, researchers investigating the role of employer tax status in deferred compensation arrangements would simulate employer MTRs at the time of deferral and at the time of payout, as estimates of both are needed to determine the deduction effect. A composite of the two could be used to determine the rate of return effect. Apparently, estimation of MTR at payout has only rarely been attempted in the literature thus far.¹¹³ Of course, doing so would require an estimation of the period of deferral. In the case of restricted stock or performance shares with fixed terms, this would be straightforward. In the case of option plans, one would need to estimate years to exercise. And in the

¹⁰⁹ Id. at 96-97. While Williams and Galle are right that employer tax status could affect the use of equity pay as well as of nonequity deferred compensation, I would expect the impact of low employer MTRs to be greater for nonequity deferred compensation given its generally longer time frame and the greater likelihood that equity grants would be hedged.

¹¹⁰ Id.

¹¹¹ Part II.D.2-3.

¹¹² Part II.D.4.

¹¹³ See, e.g., Austin et al., note 90 (investigating the role of taxes in selecting between ISOs and NQOs and using Shevlin's procedure to estimate firm MTRs at the time of estimated option exercise).

case of NQDC, one would need to estimate years to payout, which is somewhat more difficult but not unmanageable.¹¹⁴

So is this the ideal solution—just use simulated MTRs? Actually, a number of concerns would remain. First, two sets of researchers have developed simulations of corporate MTRs employing differing starting points¹¹⁵ and taking into account various factors, including not just NOLs but also the alternative minimum tax, etc., and the results vary—not by a little—but by a lot. The following figure plots estimates of MTRs for the Execucomp group of companies for 2012 derived from simulations designed by John Graham (on the y-axis) against estimates derived by simulations of Professors Blouin, Core, and Guay (on the x-axis). The correlation coefficient is only 0.28, but visual inspection alone suggests that these estimations are far from consistent.¹¹⁶

¹¹⁴ The Compustat Execucomp database provides the ages of the “top five” executives of S&P 1500 companies. For this population, estimating years until retirement would be feasible and would seem to provide a reasonable estimate of deferral period. The Compustat Execucomp database is accessible through the Wharton Research Data Service, <https://wrds-web.wharton.upenn.edu/wrds/>.

¹¹⁵ Professor Graham provides simulated MTRs on his website: <https://faculty.fuqua.duke.edu/~jgraham/>. His estimation approach is described in John R. Graham, *Debt and the Marginal Tax Rate*, 41 *J. Fin. Econ.* 41 (1996). MTRs derived through simulations by Professors Blouin, Core, and Guay are available in Compustat. The Blouin, Core, and Guay approach is described in Jennifer Blouin et al., *Have the Tax Benefits of Debt Been Overestimated?*, 98 *J. Fin. Econ.* 195 (2010). Graham’s simulation begins with Compustat reported NOLs, while the Blouin, Core, and Guay simulation starts with historical estimates of taxable income.

¹¹⁶ Note that these estimated MTRs represent MTRs after deductions for interest, which are generally thought to be the appropriate rates to use for incremental decisions regarding, e.g., the structure of executive pay packages. Graham and Blouin, Core, and Guay also simulate pre-interest deduction MTRs. See note 115. The correlation between the two for the 2012 Execucomp population of firms is somewhat better at 0.58. Author’s calculations utilizing the Microsoft Excel “CORREL” function.

FIGURE 7

Source: Graham, note 115; Blouin, Core, and Guay, note 115.

A second concern is that the data used to drive these simulations may not be very good. It has long been understood that Compustat's NOL data is less than perfect, but in a recent paper, Professors Heitzman and Lester report that Compustat's NOL data failed to pick up 24% of firms with NOLs identified through hand collection of financial statement data.¹¹⁷ Using their hand-collected data, they found that NOL benefits were positively, and statistically significantly, associated with corporate cash holdings, consistent with theory.¹¹⁸ All of which at least raises the question of whether poor MTR proxies or estimates have stymied the search for evidence that employer MTRs affect deferred compensation arrangements.

Third, and finally, what are we to make of the survey evidence provided by John Graham and his colleagues in which only 10.6% of tax managers reported that their firms used MTRs in making compensation decisions versus almost 45% that reported using either U.S.- or jurisdiction-specific STRs?¹¹⁹ Does this data confirm the notion that the complexity, nonmonotonicity, and, in some situations, limited impact of NOLs on equity and deferred compensation discourage firms

¹¹⁷ Heitzman & Lester, note 2, at 29.

¹¹⁸ Shane Heitzman & Rebecca Lester, *Net Operating Loss Carryforwards and Corporate Savings Policies* 4 (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=31850. 18. Corporations face a trade-off between the liquidity benefits of holding cash and the cost of a second layer of tax on investment returns, but companies with NOLs tend to face a lower tax cost and would be expected to hold more cash. *Id.* at 1.

¹¹⁹ Graham et al., note 6.

from even making the effort to incorporate NOLs into their compensation decision-making? Does it suggest that looking for relationships between MTRs and the use of equity and deferred compensation is futile? Perhaps, but this is survey data, and one can never be sure how respondents interpreted the questions. As the authors note, respondents at firms that base decisions on the STR but take into account NOLs might have selected the STR option in responding to the survey.¹²⁰ However, for those anticipating highly rational, firm-specific cost-/benefit-based compensation decisions, this data must be discouraging.

IV. LONGITUDINAL EFFECTS

Thus far this Article has focused on cross-sectional variations in employer MTRs and deferred compensation. But statutory tax rates change from time to time, as the United States has recently experienced in unprecedented fashion. By cutting the corporate tax rate to 21% while leaving individual rates essentially unchanged, the 2017 Act increased the attractiveness of equity and other deferred compensation, at least for some companies and employees. It did so by boosting employer after-tax returns on some deferred funds relative to the after-tax returns that employees can achieve on their own. All things being equal, the rate cut should result in increased use of deferred compensation and increased periods of deferral. Is this likely to happen?

There is some evidence that tax rate changes have led to differences in deferred compensation use over time—longitudinal differences—as compared to the cross-sectional differences that researchers have focused on in the studies discussed above. For example, Professors Hite and Long found evidence of a switch in emphasis from tax-qualified to non-tax-qualified stock options in the wake of reductions in individual tax rates in 1969 that caused nonqualified stock options to be relatively more attractive.¹²¹ And there are reasons to think that companies would be more likely to respond to secular changes in statutory tax rates than to firm-specific variations. For one thing, almost half of tax managers report relying on STRs in making compensation decisions.¹²² For another, companies appear to exhibit herd behavior in designing compensation policies. If some firms were to return to longer duration stock options in lieu of shorter-term performance

¹²⁰ *Id.*

¹²¹ Gailen L. Hite & Michael S. Long, Taxes and Executive Stock Options, 4 *J. Acct. & Econ.* 3 (1982).

¹²² Graham et al., note 6.

share plans, for instance, it is conceivable that others would follow and a trend would be set.

But there are also reasons for skepticism. The reduction in the corporate rate, if lasting, impacts only rates of return. In the absence of NOLs, there is no deduction effect if the new corporate rate remains consistent going forward. Interest rates are low to begin with, and in many cases the rate cuts will not affect employer after-tax returns on deferred sums because employers have hedged equity grants or have purchased COLI products to manage NQDC balances.¹²³ To be sure, if companies predict that the rate cut will be short lived and that corporate rates are likely to increase substantially prior to a deferred compensation payout, the deduction effect would improve the expected payoffs from deferred compensation. It is, as they say, an empirical question.

V. CONCLUSION

In this Article, I have attempted to advance understanding of the impact of employer NOLs and MTRs on the benefits of deferred compensation by bifurcating and unpacking two effects that I've termed the deduction effect and the rate of return effect. I have shown that these two effects may work in tandem to boost the attractiveness of deferred compensation when an employer is in a large NOL position, but they may not. In some cases, employers deploy deferred funds in such a way that after-tax rates of return are unaffected by NOLs. For multinationals, the taxation of the two effects may even occur in different jurisdictions. I have also shown that the relationship between NOL duration and the relative value of employer deductions at payout and grant—the deduction effect—is nonmonotonic, with the benefit peaking when the period of deferral matches NOL duration and quickly declining thereafter.

In sum, the relationship between employer NOLs and the attractiveness of deferred compensation is complex and in some cases the payoffs may be limited or nonexistent. Turning to the empirical literature, which is only sampled in this Article, there is little evidence that cross-sectional variation in the use of equity and nonequity deferred compensation is driven by employer NOLs. Moreover, four times as many tax managers report using STRs in their decision-making regarding compensation as report using MTRs.¹²⁴ Employing an STR heuristic and essentially ignoring NOLs in compensation decision-

¹²³ See Part II.D.

¹²⁴ Graham et al., note 6.

making could be a rational response given the complexity and, at times, limited payoffs that have been described.

Or, perhaps, researchers are failing to find statistically significant relationships between employer tax status and the use of deferred compensation because of the weakness or misuse of NOL proxies or MTR estimations. NOL dummy variable proxies are unlikely to be up to this complex task, and simulated MTR estimations suffer from poor input data. The latter problem can likely be fixed, but researchers also need to understand the importance of including estimates of employer MTRs at payout as well as at grant in their analyses in order to fully capture the economics of deferred compensation.

As a final point, I should emphasize that while I have focused on deferred compensation in this Article, the analysis is generalizable to counterparty deferral more broadly. Outside of the deferred compensation universe, it may be more common to find cases in which the deferral party (the analog to the employee deferring compensation) is in an NOL position, in which case deferral party NOLs would make deferral less attractive, not more attractive, and the deduction effect and rate of return effect could be in tension rather than working in tandem. Almost certainly, context-specific factors will impact the deduction and/or rate of return effects, much as employer hedging can negate the rate of return effect in the deferred compensation context. Researchers will need to be sensitive to these context-specific factors.

APPENDIX

1. Deduction Effect

Approach is to hold employer (ER) whole after tax and measure improvement in employee's (EE) after-tax position. In the absence of NOLs, ER is indifferent between paying current compensation of 1 and setting aside deferred compensation of $(1-STR)$, where STR is the ER's statutory tax rate. Between the points of deferral and payout after d years, deferred funds grow by $(1 + i(1-STR))^d$. At deferred compensation payout, ER deducts the payment that it can then gross up by $1/(1-STR)$ and EE pays tax at her ordinary income rate, leaving EE after tax:

$$(1) \quad [(1-STR) * (1 + i(1-STR))^d / (1-STR)] * (1-t_{EE}).$$

Note that if employer and employee tax rates are the same and either party can invest at pretax rate i , deferred compensation provides no benefit over current compensation. An employee receiving current compensation of 1 would have $(1-t_{EE})$ to invest after tax, which amount would grow by $(1 + i(1-t_{EE}))^d$ after d years. Assume, for example, that $STR = t_{EE} = 30\%$, $i = 10\%$. One dollar of current or deferred compensation yields \$1.38 after tax in ten years in either scenario.

Assuming that ER NOLs have no affect on investment rates of return, introducing NOLs results in the following modifications to (1):

$$(2) \quad \left[(1-STR * DF_C) * \frac{(1+i(1-STR))^d}{1-STR*DF_D} \right] * (1 - t_{EE}).$$

where, for any given NOL duration (n), DF_C is the discount factor for the number of years until a current deduction would first be useful and DF_D is the discount factor for the number of years following payout before a deferred deduction would first be useful. For example, for ten-year deferral and a five-year expected NOL duration, DF_C would be the appropriate discount factor for five years and DF_D would be the appropriate discount factor for zero years, (i.e., 1); for ten-year deferral and a fifteen-year expected NOL duration, DF_C would be the appropriate discount factor for fifteen years and DF_D would be the appropriate factor for five years.

Absent NOLs, standard discount factors would apply, and DF_C would be $\frac{1}{(1+i(1-STR))^n}$ and DF_D would be $\frac{1}{(1+i(1-STR))^{n-d}}$. However, in the presence of NOLs, discount factors must be adjusted to reflect the fact

that tax is deferred until NOLs are consumed after n years. Thus DF_C becomes $\frac{1}{(1+i)^n - ((1+i)^n - 1) * STR}$, and DF_D becomes $\frac{1}{(1+i)^{n-d} - ((1+i)^{n-d} - 1) * STR}$ for all cases in which the quantity $(n - d)$ is positive; otherwise $(n - d)$ is set equal to zero and DF_D is equal to 1.

The impact of NOLs on the joint economics of deferred compensation as a result of the deduction effect is $((2)-(1))/(1)$, which simplifies to

$$(3) \quad \left[\frac{1-STR*DF_C}{1-STR*DF_D} \right] - 1.$$

Examples: $STR = t_{EE} = 0.3$; $i = 0.1$; $d = 10$ years. After ten years, EE receives after tax deferred compensation times:

$$\text{Baseline (no NOLs): } \left[(1 - 0.3) * \frac{(1+0.1(1-0.3))^{10}}{1-0.3} \right] * (1 - 0.3) = \mathbf{1.377}$$

Five-year NOL:

$$\left[(1 - 0.3 * 0.7006) * \frac{(1+0.1(1-0.3))^{10}}{1-0.3} \right] * (1 - 0.3) = \mathbf{1.554}$$

- 12.83% increase over baseline
- $DF_C = \frac{1}{(1+0.1)^5 - ((1+0.1)^5 - 1) * 0.3} = 0.7006$
- $DF_D = 1$

Fifteen-year NOL:

$$\left[(1 - 0.3 * 0.3102) * \frac{(1+0.1(1-0.3))^{10}}{1-0.3*0.7006} \right] * (1 - 0.3) = \mathbf{1.581}$$

- 14.83% increase over baseline
- $DF_C = \frac{1}{(1+0.1)^{15} - ((1+0.1)^{15} - 1) * 0.3} = 0.3102$
- $DF_D = \frac{1}{(1+0.1)^5 - ((1+0.1)^5 - 1) * 0.3} = 0.7006$

2. Rate of Return Effect

I assumed above that employer returns on deferred amounts were unaffected by NOLs in order to isolate the employer deduction effect of NOLs. I now focus on the impact of NOLs on employer returns on deferred sums, continuing within the Scholes and Wolfson framework and again measuring the impact at deferred compensation payout.

Absent NOLs, deferred funds at payout (d) grow by:

$$(4) \quad (1 + i(1 - STR))^d.$$

For NOL duration (n) less than deferral period (d), value at end of deferral period is:

$$(5) \quad \left[\left((1+i)^{n-1} \right) * \left(1 + i(1-STR) \right) - \left((1+i)^{n-1} - 1 \right) * STR \right] * \left(1 + i * (1-STR) \right)^{d-n}.$$

The first term $[(1+i)^{n-1}]$ represents tax-free investment growth for $n-1$ years. The second term $[1+i(1-STR)]$ represents the normal after-tax return for the first year in which ER is no longer in a loss position. The third term $[(1+i)^{n-1}-1] * STR$ reflects the taxation of previously untaxed growth through Year $n-1$. The fourth term $[(1+i * (1-STR))^{d-n}]$ reflects annual after-tax investment growth for the remainder of the deferral period.

For NOL duration (n) greater than or equal to deferral period (d), value at end of deferral period is:

$$(6) \quad (1+i)^d - ((1+i)^d - 1) * STR * DF,$$

where DF is the appropriate discount factor for $n-d+1$ years. As above, because NOLs persist beyond the deferral period until Year n , it would be inappropriate to employ standard after-tax discount rates in this scenario, and instead I again define DF here as

$$\frac{1}{(1+i)^{n-d} - ((1+i)^{n-d} - 1) * STR}.$$

The impact of NOLs on the joint economics of deferred compensation as a result of the rate of return effect is $((5) \text{ or } (6)) - (4)/(4)$.

Examples: $STR = t_{EE} = 0.3$; $i = 0.1$; $d = 10$ years. After ten years, deferred amount is increased after tax by:

Baseline (no NOLs): $(1 + 0.1(1 - 0.3))^{10} = \mathbf{1.967}$. Note that this is the investment return assumed in all cases isolating the deduction effect.

Five-year NOL: $(((1 + .1)^4) * (1 + 0.1(1 - 0.3)) - (((1 + 0.1)^4) - 1) * 0.3) * (1 + 0.1 * (1 - 0.3))^5 = \mathbf{2.002}$

- 2.6% increase over baseline

Fifteen-year NOL: $(1 + 0.1)^{10} - ((1 + 0.1)^{10} - 1) * 0.3 * 0.7006 = \mathbf{2.259}$

- 14.8% increase over baseline

- $DF = \frac{1}{(1+0.1)^5 - ((1+0.1)^5 - 1) * 0.3} = 0.7006$

3. Combined Effect

This is essentially the same as the deduction effect analysis, but now I include NOL impacts on ER after-tax rate of return as well as NOL impacts on the relative value of current and deferred employer deductions for compensation paid. As before, the approach is to hold ER whole and measure improvement in EE position at the end of deferral period (d).

As per expression (1) above, absent NOLs, EE has at d :

$$(7) \quad \left[(1 - STR) * \frac{(1+i(1-STR))^d}{1-STR} \right] * (1-t_{EE}).$$

With NOLs, we discount the value of current and deferred deductions, as appropriate, and we add the rate of return effect. As demonstrated above, the rate of return effect will depend on whether NOL duration is less than the deferral period (expression 5) or not (expression 6). To simplify matters, let Z capture the investment growth of deferred funds, taking into account ER NOLs and NOL duration relative to the deferral period. Substituting into expression (2) yields:

$$(8) \quad \left[(1 - STR * DF_C) * \frac{Z}{1-STR*DF_D} \right] * (1-t_{EE}).$$

As before, for any given NOL duration (n), DF_C is the NOL adjusted discount factor for the number of years until a current deduction would first be useful and DF_D is the NOL adjusted discount factor for the number of years after payout before a deferred deduction would first be useful.

The impact of NOLs on the joint economics of deferred compensation as a result of the deduction effect is $((8)-(7))/(7)$, which simplifies to:

$$(9) \quad \frac{[(1-STR*DF_C)*\frac{Z}{1-STR*DF_D}-(1+i(1-STR))^d]}{(1+i(1-STR))^d}.$$

Examples: $STR = t_{EE} = 0.3$; $i = 0.1$; $d = 10$ years. Note that DF_C , DF_D , and Z are all drawn from the previous analyses. After ten years, EE receives after-tax deferred compensation times:

$$\text{Baseline (no NOLs): } \left[(1 - 0.3) * \frac{(1+0.1(1-0.3))^{10}}{1-0.3} \right] * (1 - 0.3) = \mathbf{1.377}$$

$$\text{Five-year NOL: } [(1 - 0.3 * 0.7006) * 2.002/(1 - 0.3)] * (1 - 0.3) = \mathbf{1.581}$$

- 14.83% increase over baseline

Fifteen-year NOL: $[(1 - 0.3 * 0.3102) * 2.259 / (1 - 0.3 * 0.7006)] * (1 - 0.3) = \mathbf{1.816}$

- 31.9% increase over baseline

4. Expanded Expression for Combined Effect $n \geq d$

When fully elaborated, expression (8) for $n \geq d$ is:

$$(10) \quad \frac{1 - \frac{STR}{(1+i)^n - ((1+i)^n - 1)STR}}{\frac{STR}{(1+i)^n - ((1+i)^n - 1)STR}} \times ((1+i)^d - ((1+i)^d - 1) \times \frac{STR}{(1+i)^n - ((1+i)^n - 1)STR}) \times (1 - t_{EE}).$$

As demonstrated in the footnote below, this expression simplifies to $(1+i)^d * (1 - t_{EE})$, which, of course, is a constant for any deferral period (d) and employee tax rate. In other words, as n increases beyond d , increases in the rate of return effect perfectly offset decreases in the deduction effect of NOLs and the value derived by the employee remains constant.¹²⁵

¹²⁵ Omitting for now the final term $(1 - t_{EE})$, expression (10) simplifies as follows:

$$\frac{1 - \frac{STR}{(1+i)^n - ((1+i)^n - 1)STR}}{\frac{STR}{(1+i)^n - ((1+i)^n - 1)STR}} \times ((1+i)^d - ((1+i)^d - 1) \times \frac{STR}{(1+i)^n - ((1+i)^n - 1)STR})$$

1. Let $x = (1+i)^d$, $y = (1+i)^n$, and $z = STR$. Since $(1+i)^n = (1+i)^d \times (1+i)^{n-d}$, we can rewrite expression (10) as:

$$\frac{1 - \frac{z}{xy - (xy-1)z}}{1 - \frac{z}{y - (y-1)z}} \times (x - (x-1) \times \frac{z}{y - (y-1)z})$$

2. The left-hand side of the expression simplifies as follows:

$$\begin{aligned} \frac{1 - \frac{z}{xy - (xy-1)z}}{1 - \frac{z}{y - (y-1)z}} &= \frac{\frac{xy - (xy-1)z}{xy - (xy-1)z} - \frac{z}{xy - (xy-1)z}}{\frac{y - (y-1)z}{y - (y-1)z} - \frac{z}{y - (y-1)z}} = \frac{\frac{xy - zxy}{xy - (xy-1)z}}{\frac{y - yz}{y - (y-1)z}} \\ &= \frac{xy - zxy}{xy - (xy-1)z} \times \frac{y - (y-1)z}{y - yz} = \frac{x(y - yz)(y - (y-1)z)}{(xy - z(xy-1))(y - yz)} = \frac{x(y - (y-1)z)}{(xy - z(xy-1))} \end{aligned}$$

3. The right-hand side of the expression simplifies as follows:

$$x - \frac{(x-1)z}{y - (y-1)z} = \frac{x(y - (y-1)z) - (x-1)z}{y - (y-1)z} = \frac{xy - xyz + z}{y - (y-1)z}$$

4. Recombining and simplifying yields:

$$\frac{x(y - (y-1)z)}{(xy - z(xy-1))} \times \frac{xy - xyz + z}{y - (y-1)z} = \frac{x(xy - xyz + z)}{(xy - z(xy-1))} = x$$

5. Bringing back the final term $(1 - t_{EE})$ and resubstituting $(1+i)^d$ for x , we have:

$$(1+i)^d \times (1 - t_{EE}).$$

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TAX LAW REVIEW

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