

**Accounting for Tax Benefits of Employee Stock Options and  
Implications for Research**

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Comments Welcome

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## **Accounting for Tax Benefits of Employee Stock Options and Implications for Research**

Abstract: This paper explains the accounting for and firm disclosures of the tax benefits of employee stock options. We identify important implications for empirical research studies and inferences regarding tax burdens, the estimation of taxable income and marginal tax rates, corporate tax shelter activity, and earnings management via the valuation allowance account. We find that firm disclosures are not always clear as to the amount of the corporate tax benefits from the exercise of stock options. In addition, in many cases, firms' reported effective tax rates are overstated as are estimates of marginal tax rates and tax burdens using financial statement disclosures. We provide suggestions on how to more accurately estimate tax rates and burdens.

## **Accounting for Tax Benefits of Employee Stock Options and Implications for Research**

### **INTRODUCTION**

A recent article in the *Wall Street Journal* entitled “Cisco, Microsoft Get Income-Tax Break On Gains From Employee Stock Options” reports that for its fiscal year ended July 29, 2000, Cisco received a tax benefit of nearly \$2.5 billion dollars from the exercise of employees’ stock options. As a result, the company paid little (and possibly no) federal income taxes while reporting \$2.67 billion in profits.<sup>1</sup> Cisco obtained the tax benefits from a provision in the tax code that allows firms an income tax deduction equal to the gain recognized by employees on the exercise of their nonqualified options. This tax deduction is generally well understood as are the rules for accounting for employee stock options (ESOs) provided in Statement of Financial Accounting Standards No. 123 *Accounting for Stock-Based Compensation* (hereafter FAS 123) (although both are briefly reviewed below). However, what is not as well understood is the *accounting* for the *income tax benefits* of ESOs.

This paper explains the accounting for and disclosure of the income tax benefits of stock options and discusses the implications of these disclosures for academic researchers and financial statement users. The accounting for ESO tax benefits has direct implications for a number of issues which financial statement users, including academics, policy makers, and the financial press, wish to analyze. For example, the current treatment of stock option compensation tax benefits has implications for financial statement analysis and research that assumes the reported current portion of tax expense equals the actual current period tax burden. Also affected are marginal tax rate estimation and non-debt shield studies, studies using book-tax differences as a proxy for earnings quality, and studies using the deferred tax asset valuation allowance account as a tool for earnings management. Finally participants in the current debate on corporate tax shelters also need to be aware of the accounting for these tax benefits.

We illustrate the issues by examining note disclosures drawn from the NASDAQ 100 firms, selected because these firms are expected to be big beneficiaries of stock option deductions. We present estimates of the firms’ estimated tax burdens calculated after taking the

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<sup>1</sup> See Buckman (10/10/2000, B8) in the *Wall Street Journal*. See also Pender (10/10/2000) in the *San Francisco Chronicle*, Marshall (10/10/2000) in the *San Jose Mercury News*, and Loomis (12/18/2000, 44) in *Fortune* for a similar discussion.

deduction for stock options into account and compare these to the firms' unadjusted tax burdens. We show that while the mean unadjusted tax burden for the firms with the necessary data is 37.08% for 1999, the mean adjusted tax burden is only 19.2%. An easy fix for the overstatement might appear to simply deduct the ESO tax benefit from the reported current tax expense to derive the correct tax burden on current-period taxable income. However, because of the accounting for income taxes by loss firms, the period in which the ESO tax benefit is realized (the cash savings) can differ from the period when recognized (as a credit to additional paid-in capital). Further, in firms that have net operating loss carryforwards, both recognition and realization of the tax savings can occur in a period later than the period in which the ESO tax deduction is first taken on the tax return. As we explain below, the calculation for loss firms requires an estimate of the ESO tax deduction for the period, which can be derived from the stock option note disclosures.

In summary, we find that the accounting treatment for the tax benefits of stock options causes reported effective tax rates and estimates of marginal tax rates and tax burdens to be overstated. This study contributes to the literature by explaining the accounting for the tax benefits of stock options, describing the problems this accounting may cause for researchers and for financial statement users, and providing some suggestions to better estimate tax rates and burdens.

The remainder of the paper is organized as follows. The next section provides a brief background on stock options. We then discuss the accounting treatment for the tax benefits of ESOs and some potential solutions. We then examine the implications for research and analysis of financial statements and provide some descriptive data for a subset of NASDAQ 100 firms with available data. We close with a summary of the key findings of our paper.

## **BACKGROUND**

FAS 123 encourages firms to recognize compensation expense for the fair value of ESOs measured at the grant date, but allows firms to elect to continue accounting for ESOs under Accounting Principles Board Opinion No. 25 *Accounting for Stock Issued to Employees* (hereafter APB 25). Under APB 25, compensation expense is measured using "intrinsic value" – the difference between the stock price and exercise price of the option – on the day the option is granted. Because most firms grant options with an exercise price equal to the stock price on the grant date, intrinsic value and thus compensation expense is zero. If firms elect to continue to

apply APB 25, they are required to disclose in the notes the effects of fair value accounting of ESOs on reported earnings and earnings per share. Almost all firms elect to apply APB 25 accounting with note disclosure, thus, the recognized ESO compensation expense is zero for most firms.<sup>2</sup>

Nonqualified stock options (NQOs) give rise to a tax deduction to the granting firm equal to the amount of ordinary income recognized by the employee on the exercise date. The ESO tax deduction equals the intrinsic value of the options on the exercise date.<sup>3</sup> Thus for NQOs, the firm obtains a tax deduction in the year of the exercise but, because of electing APB 25 treatment, the firm does not recognize any compensation expense for financial reporting purposes. Prima facie, this difference in treatment meets the definition of what are traditionally referred to as permanent differences. “A permanent difference is created when an income element – a revenue, gain, expense, or loss – enters the computation of taxable income or pretax accounting income, but never enters into the computation of the other.” (Dyckman, Dukes, and Davis (1998, p.972)).<sup>4</sup>

Tax benefits of employee stock options are not treated as permanent differences. Instead APB 25, paragraphs 16 and 17, requires the benefits be accounted for as adjustments to additional paid-in capital. Specifically, when the firm takes the tax deduction, the amount of the tax savings is credited to additional paid-in capital with a debit to the income taxes payable liability account. Thus the current portion of the total tax expense/provision reported in firms’ financial statements overstates the actual taxes due on the firms’ current period taxable income (hereafter referred to as the current tax burden or actual tax liability) by the amount of the ESO

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<sup>2</sup> Bear Stearns reports that only 2 of the Fortune 500 companies recognize compensation expense for ESOs: Boeing and Winn Dixie. See McConnell, Pegg and Zion (2000).

<sup>3</sup>There are two types of ESOs distinguished by the tax code: statutory (or qualified options also known as incentive options, ISOs) and nonstatutory (or nonqualified options, NQOs). ISOs offer tax benefits to employees (deferral of the tax on the gain at the exercise date until the stock is sold with the gain taxed as a capital gain), but the granting firm obtains no tax deduction unless the employee undertakes a disqualifying disposition (by selling the stock within two years of grant or within one year of exercise). Throughout this paper, unless otherwise noted, when we discuss ESOs we are referring to nonqualified options. When we estimate ESO tax deductions from firm stock option disclosures on exercises we are assuming all exercises are of NQOs. It is our belief that while many firms have plans allowing the issue of both types of options, the tax code specifies limits on the amount of ISOs that can be issued to any one individual with the result that many firms issue mostly NQOs. For further discussion of NQOs, ISOS, disqualifying dispositions, and firm granting behavior, see Scholes et al. (2001, Chapter 8) and Austin et al. (1998).

<sup>4</sup> See Dyckman et al. (1998) for a list of common permanent differences.

tax benefit.<sup>5</sup> However, as discussed below when analyzing firm disclosures, 6 of the NASDAQ 100 firms break out the ESO tax benefit from the current U.S. tax expense and report it as other current tax expense. For these firms, the reported current U.S. tax expense does approximate the firm's actual U.S. tax liability and no adjustment is needed to current U.S. tax expense to estimate the firms current U.S. tax burden or U.S. taxable income.

### ACCOUNTING FOR THE TAX BENEFIT OF ESOs

We describe the accounting for ESO tax benefits under three broad scenarios: profitable firms, loss firms with no valuation allowance, and loss firms with a valuation allowance. For financial reporting purposes, the current portion of the total tax provision or total tax expense can be expressed as<sup>6</sup>

$$\text{Current tax expense} = (\text{pretax book income} - \text{temporary differences} - \text{permanent differences}) \times \text{statutory tax rate.} \quad (1)$$

If ESO tax benefits are not treated as a permanent difference in calculating current tax expense, then permanent differences are understated and current tax expense is overstated in equation (1). This overstatement of current tax expense as an estimate of the firm's actual tax liability as per its tax return is the crux of the issue of the accounting for the tax benefits of ESOs. The term inside the brackets approximates taxable income, and thus researchers often estimate taxable income from financial statement disclosures as

$$\text{Estimated taxable income} = \text{current tax expense} / \text{statutory tax rate.} \quad (2)$$

If ESO tax benefits are not treated as a permanent difference, current tax expense is overstated resulting in overstated estimates of taxable income.

Before discussing our examples, we distinguish between the following important concepts – ESO tax deduction, ESO recognition, and ESO realization. We use the term *ESO tax deduction* to refer to the dollar amount the firm deducts on its tax return in calculating taxable income (or loss) in the period in which the employee exercises his/her options. We use the term

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<sup>5</sup> Several other items also are charged to shareholders' equity. Paragraph 36 of FAS 109 provides a list (which includes ESO tax benefits). However, these items (mostly technical in nature) are not as widespread among corporate America nor as large a dollar item for most companies. Nevertheless, users of financial statements should be aware of their effects on current tax expense as an estimate of the current tax burden.

<sup>6</sup> Discontinued operations, extraordinary items, and accounting changes are reported net of tax and are included on the income statement reported below the tax provision. The total tax provision and current tax expense are based on income from continuing operations and thus exclude these items. Consistent with most research that uses current tax expense, we ignore these items in the remaining discussion recognizing that this treatment adds measurement error to financial statement based estimates of actual tax liability and taxable income to the extent these items are included in taxable income.

*ESO recognition* to refer to both the dollar amount and time period in which the firm recognizes the ESO tax benefit for financial reporting purposes – with a credit to shareholders’ equity. Finally, we use the term *ESO realization* to refer to the both the dollar amount and timing of the actual cash savings arising from the ESO tax deduction – this is the number reported on the Statement of Cash Flows. This line item is an adjustment that is necessary to obtain the cash outflow for corporate income taxes for the period because the ESO tax benefit is not recognized in the income statement (by a reduction in current tax expense).<sup>7</sup> As we explain below, for a firm with positive taxable income (positive both before and after the ESO tax deduction and no deductions for prior tax losses) ESO recognition and ESO realization are equal. Both occur in the year the employee exercises his options,<sup>8</sup> and are equal to the ESO tax deduction times the firm’s tax rate. For loss firms, both ESO recognition and ESO realization can occur in periods later than the period in which the ESO tax deduction is included on the firm’s tax return.

### **Positive Taxable Income**

When a firm has positive taxable income, the situation is fairly straightforward. Taxable income on the corporate tax return is calculated with a deduction for the intrinsic value of any options exercised during the year (ESO deduction). For financial reporting purposes, the stock option amount is not an expense under FAS 123 and, ceteris paribus, book income will be greater than taxable income. Because the stock option amount is not treated as a permanent difference, current tax expense is greater than the tax liability on the tax return. For example, suppose a firm has a pretax book income of \$12,000, a \$2,000 deduction for stock options exercised, and its statutory (and marginal for simplicity) tax rate is 35%. Further, assume that there are no other temporary or permanent differences. Its cash tax payment to the government would be \$3,500 for the year ( $(\$12,000 - \$2,000) \times .35$ ). Current tax expense for financial reporting purposes is calculated per equation (1) as  $(\$12,000 - \$0 - \$0) \times .35$  statutory tax rate or \$4,200. Therefore, the current tax expense on the financial statements is overstated (relative to the tax return tax liability) by the tax benefits of the stock options, in this case  $\$2,000 \times .35$  or \$700. The summarized journal entry, assuming for simplicity payment is made at date of calculation, would

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<sup>7</sup> Some firms include this adjustment in the operating cash flow section while others, e.g., Microsoft, up until its 9/18/2000 filing, included it in the financing section presumably because the ESO tax benefit is a credit to shareholders’ equity and FAS 95 states that issuing equity securities is a financing cash flow. However, the Emerging Issues Task Force in Issue No 00-15 requires the ESO tax benefit to be classified as an operating cash flow, effective for financial statements for periods ending after July 20, 2000.

debit current tax expense for \$4,200 and credit cash for the \$3,500 paid and credit shareholders' equity for the difference of \$700. The firm would report an effective tax rate of 35% in its financial statements and an estimate of taxable income from the current tax expense per equation (2) would be \$12,000 ( $\$4,200/.35$ ). If the ESO deduction were treated as a permanent difference, the current tax expense per equation (1) would be \$3,500 (calculated as  $\$12,000 - \$0 - \$2,000 = \$10,000 \times .35$ ) and the entry above would only have one credit to cash of \$3,500 and no direct impact on shareholders' equity. The effective tax rate shown in the financial statements would be 29% ( $\$3,500/\$12,000$ ) and the estimate of the taxable income using current tax expense would now be \$10,000 ( $\$3,500/.35$ ).

In this scenario, an adjustment to correct for the overstatement of current tax expense under APB 25 is straightforward. Simply subtract from reported current tax expense the amount shown in the firm's statement of shareholders' equity as the tax benefit of stock options. Using the example above, reported current tax expense is \$4,200 and the tax benefit of stock options in the statement of shareholders' equity is \$700. Subtracting the ESO tax benefits of \$700 yields \$3,500, the actual tax liability on the tax return, and the estimate of taxable income using this adjusted amount is the correct number \$10,000 ( $\$3,500/.35$ ). The main problem with this adjustment methodology is that firms may not disclose the tax benefit of stock options separately in the equity statement. In addition, for researchers examining a large sample this amount is not readily available from any machine-readable source such as Compustat or Compact Disclosure, but has to be hand collected from annual reports or 10Ks.

### **Firms with Tax Losses with No Valuation Allowance**

The situation is more complex when firms have tax losses. In order to keep the paper length reasonable and the discussion understandable, we do not analyze loss firms in detail but rather provide a general discussion of the associated problems.<sup>9</sup>

When the ESO deduction causes the tax net operating loss (that is, taxable income is positive before the ESO tax deduction) and no valuation allowance is established, current tax expense under APB 25 is positive but overstated as compared to the actual tax liability on the tax return. For example, in its fiscal 2000 annual report Microsoft reports pretax book income of

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<sup>8</sup> Or, in the case of a disqualifying disposition of an incentive stock option, the period in which the employee disqualifies the option and recognizes the gain as income.

<sup>9</sup> A numerical example is available from the authors and/or can be downloaded from the following web address:  
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\$14,275 million and a tax benefit from stock options of \$5,535 million. This tax benefit implies an ESO tax deduction of \$15,814 million ( $\$5,535/.35$ ). In this same report Microsoft reports current tax expense of \$5,279 million (and a reported effective tax rate of 34%), however, very little or no taxes likely were owed on the income for the year. With a positive current tax expense before the ESO tax deduction and no valuation allowance, we can estimate Microsoft's taxable income as the reported current tax expense less the ESO tax benefit grossed up by the statutory tax rate:  $(\$5,279 - \$5,535)/.35 = \$731$  million tax loss for fiscal year 2000. Thus, in this scenario where the ESO tax deduction causes the tax loss, we can adjust the positive current tax expense to derive a more accurate estimate of the firm's actual tax liability and taxable income (loss).

In the case where there is a tax loss before the ESO deduction and the ESO tax deduction makes the loss greater for tax purposes, current tax expense will now be zero (assuming no carryback opportunity). The amount recognized by a credit to shareholders' equity (ESO recognition) continues to equal the amount of the ESO tax deduction times the firm's tax rate.<sup>10</sup> However, simply subtracting the ESO tax benefit from the zero current tax expense will not result in a correct estimate of the firm's current tax burden nor of the tax loss. This error is not of great importance to researchers and analysts examining current tax burdens because most analyses screen out negative pretax book income firms thus excluding most tax loss firms. And even when tax loss firms are included in the sample, they are coded with a zero current tax burden if the current tax expense is negative. The adjustment error is of more concern for researchers and analysts wishing to estimate the full amount of the firms' tax losses (for marginal tax rate estimation or for assessing earnings quality, as discussed further below). To derive an estimate of taxable income when taxable income is negative (that is, when reported current tax expense is zero), we suggest using equation (1) definition of taxable income (rather than equation (2) approach): pretax book income less temporary differences less permanent differences less estimated ESO tax deduction.

### **Firms with Tax Losses with Valuation Allowance**

When a valuation allowance is established against the deferred tax asset associated with the tax loss carryforward, an additional complexity arises because ESO recognition will not

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<sup>10</sup> And note that ESO realization will occur in a later period when the NOL carryforward is utilized. This difference between recognition and realization is not unique to an ESO generated NOL carryforward. All future deductible amounts that are booked as deferred tax assets (without a valuation allowance) share this timing difference.

equal the ESO deduction – the timing of recognition (credit to shareholders’ equity) is in a period later than the period in which the ESO tax deduction is initially taken. As a result, subtracting the shareholders’ equity amount of reported ESO tax benefit from the current tax expense does not in general work in finding the current tax burden and taxable income because firms that establish the valuation allowance on the loss do not credit shareholders’ equity until the valuation allowance is removed which could be years after the deduction was taken on the return. An example is provided by Lycos Inc. 1998 (10-K filing, tax note):

“Deferred tax assets and related valuation allowance of approximately \$10,519,000 relate to certain operating loss carryforwards resulting from the exercise of employee stock options, the tax benefit of which, when recognized, will be accounted for as a credit to additional paid-in capital rather than a reduction of income tax.”

A notable “worst case” in terms of attempting to adjust for the tax effects of the stock option exercises is if the valuation allowance is removed for financial reporting purposes before the net operating loss is used for tax purposes. In this case, there will be a credit to additional paid-in capital and a debit to the valuation allowance account but no effect on tax expense. Subtracting the shareholders’ equity amount from current tax expense therefore will cause current tax burden and taxable income to be underestimated. To estimate the current tax burden and firm’s taxable income, one needs the *actual ESO tax deduction for the period*, not the amount recognized for financial reporting purposes in the current period. A solution (for tax loss firms with a valuation allowance on the deferred tax asset) is to use the firm’s stock option note disclosures to estimate the ESO tax deduction.<sup>11</sup>

We illustrate the approach using Microsoft’s stock option disclosures. In its 2000 annual report, Microsoft reported that employees exercised N=198 million options, with a weighted average exercise price of X=\$9.54 (with a range of 56 cents to \$82.94). Estimating a stock price at which employees exercised is more problematic (possibilities are the average price for the year, the average of the monthly highs, etc). For purposes of illustration, we use the weighted average exercise price of new grants during the year (because Microsoft grants new options at-the-money, the exercise price is set equal to the stock price at the grant date). This gives an

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<sup>11</sup> An alternative approach is to gross up the change in the deferred tax asset (NOL component) associated with the unused ESO deduction. However, this information is not always disclosed and care needs to be exercised to avoid double counting if only a partial valuation allowance is placed on the NOL due to the ESO tax benefits. (An increase in the valuation allowance implies no ESO recognition of that amount and vice versa.)

estimate for the stock price of  $P_e = \$79.87$ . Thus the estimated ESO tax deduction for Microsoft is  $N(P_e - X) = 198$  million  $(\$79.87 - \$9.54) = \$13,925$  million with an estimated tax benefit (x.35) of \$4,874 million compared to the amount of \$5,535 million reported by Microsoft in its statement of shareholders' equity. Of course, this approach is only an estimate since we are using an estimate of the unknown stock prices on the employee exercise dates. Further, we are assuming that all the options are nonqualified options such that when exercised they give rise to a tax deduction for the firm. However, it provides a more reliable estimate of the ESO tax deduction for tax loss firms with valuation allowances than the amount, if any, recognized by the firm and disclosed in the shareholders' equity section of the balance sheet.

## **STUDIES AND ANALYSES AFFECTED BY THE ACCOUNTING FOR ESO TAX BENEFITS**

### **Tax Burden Studies**

One effect of the accounting treatment for employee stock option tax benefits is in studies where effective tax rates (ETRs) are estimated using financial statement data (since tax return data are rarely available). Numerous academic studies are subject to the problem that reported current tax expense overstates the firm's actual tax liability, although it should be noted that ESO tax benefits were likely smaller during the sample period for many of these studies.<sup>12</sup> See, for example, Gupta and Newberry (1997), Kern and Morris (1992), Porcano (1986), and Shevlin and Porter (1992), who all use either current tax expense or total tax expense in the numerator of the ETR measure.<sup>13</sup>

A recent *Wall Street Journal* article (WSJ 08/04/1999, A1), "How Companies Find Shelter From IRS," discusses the use of the Government Accounting Office's (GAO) calculation of effective tax rates. The GAO uses the current portion of tax expense divided by net income. The article states that although it is imperfect the GAO considers it "...the most accurate because it excludes taxes that the companies report to shareholders, but can put off paying for years,"

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<sup>12</sup> We do not mean to imply that the ESO tax benefit is the only problem in using financial statement data to assess corporate tax burdens. Other problems, which include the treatment of deferred taxes, of foreign and state and local taxes, and the omission of implicit taxes from most studies, are well discussed in the studies listed in the text. In addition, Omer, Molloy and Ziebart (1991), Callihan (1994), and Shackelford and Shevlin (2001) provide more discussion and review of the effective tax rate literature.

<sup>13</sup> Wilkie (1990) and Wilkie and Limberg (1993) provide an alternative measure of assessing tax burdens or tax subsidies to corporations. Wilkie defines a firm's tax subsidy as the difference between pretax book income multiplied by the top statutory tax rate and current tax expense. Recall that current tax expense is estimated as pretax book income less GAAP permanent differences and temporary differences. Because ESO tax benefits are not treated as permanent differences, current tax expense is overstated and thus the tax subsidy measure is understated.

meaning they do not include deferred taxes in their computation. However, their calculations do not adjust for ESO tax benefits. For example, the article states that GM owed only \$36 million in taxes to the IRS for 1998. However, the \$36 million was the current tax expense amount for 1998, which would not account for any ESO tax benefit. GM did not disclose the tax benefits from ESO plans but examination of their stock option note disclosures allows an estimate of ESO tax benefits of \$55 million (again assuming all ESOs exercised were NQOs) using the algorithm presented earlier. Thus it is possible that GM paid no federal taxes in 1998 yet the GAO would estimate taxes for GM of \$36 million.

Not all external users are unaware of this issue. In their October 2000 report on corporate tax burdens, the Citizens for Tax Justice (CTJ) explicitly subtracts the ESO tax benefit from the reported current tax expense to derive an estimate of firms' income tax burden in the current period (McIntyre 2000). The CTJ report includes only sample firms that have positive pretax profits (because the ETR is not well defined when the denominator is negative), reducing but not avoiding the problems associated with tax loss firms (because positive book profits do not always imply positive taxable income). Where the ESO tax benefit was not disclosed, the CTJ study estimates the benefit from the stock option note disclosures using the algorithm discussed earlier. The CTJ notes that 233 of their 250 firms received ESO tax benefits over the 1996-98 period (with Microsoft being the largest recipient). Total ESO tax benefits were estimated at \$25.8 billion, reducing the yearly-average effective tax rate by 2.3%, 3.4%, and 4.7% in each year 1996-1998 for the sample firms.

### **Marginal Tax Rate Calculations**

A popular approach for estimating corporate marginal tax rates is the simulation approach developed by Shevlin (1990) and extended by Graham (1996). The simulation estimation method begins by deriving an estimate of taxable income from financial statement data. Both Shevlin and Graham estimate taxable income as book income less grossed up deferred taxes.<sup>14</sup> This calculation does not take into account the deduction for stock option compensation and results in overstated estimates of taxable income and thus in some cases overstated estimates of

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<sup>14</sup> Both Shevlin (1990) and Graham (1996) estimate deferred taxes as the change in the balance sheet deferred tax account grossed up by the top statutory tax rate. This adjustment is discussed further in Omer et al. (1991). White, Sondhi and Fried (1997, p. 543) also suggest estimating taxable income as pretax book income less deferred tax expense grossed up by the statutory tax rate.

marginal tax rates.<sup>15</sup> Even in Microsoft's case, a large profitable firm, the net tax benefit of ESOs constituted 76% of the total tax provision in 1999 ( $\$3,107/\$4,106$  (in millions)) and 105% in 2000 ( $\$5,535/\$5,279$ ) implying a tax loss of \$731 million ( $(\$5,279-\$5,535)/.35$ ). For smaller much less profitable firms that issue a great number of stock options (for example start-up firms often depend on the use of options), the effects can be very large and could alter the estimation of these firms' marginal tax rates.

The literature on non-debt tax shields is related to the estimation of marginal tax rates. Early capital structure literature (examining the question how much debt should firms have in their capital structure) assumed all firms faced the top corporate statutory tax rate (Miller 1977). DeAngelo and Masulis (1980) relaxed this assumption by recognizing that interest expense on debt is not the only tax shield available to firms. There exist other non-debt tax shields. DeAngelo and Masulis develop a debt substitution hypothesis that predicts leverage (debt to equity ratio) will be lower for firms with alternative non-debt tax shields. Subsequent empirical tests of this hypothesis by, for example, Mackie-Mason (1990), Dhaliwal, Trezevant, and Wang (1992), and Trezevant (1992) all focus on the depreciation non-debt shield offered by investments in plant and equipment. However, in recent years, ESOs are a large non-debt tax shield for many start-up and high technology firms. Therefore we predict ESOs also act as a debt tax shield substitute: that is, leverage is likely to be lower, the greater the tax benefits of ESOs to the firm (recognizing that it is important to control for the tax exhaustion prediction of Mackie-Mason). Graham (2000) estimates the tax benefits of debt and concludes that firms are under-leveraged. However his analysis ignores the non-debt shield offered by ESOs and thus overstates the estimated foregone tax benefits of debt.

Again, Microsoft provides a simple illustration: a very profitable firm that has no long-term debt in its capital structure suggesting that it is not taking advantage of the tax shields offered by the interest deductions of debt. However, as previously noted, Microsoft is a heavy user of ESOs and its taxable income is much closer to zero than suggested by a simple examination of its reported earnings. That is, ESOs offer Microsoft a non-debt tax shield, and if this shield is not controlled for or included in tests of the DeAngelo and Masulis (1980) debt substitution hypothesis, the tests will be misspecified.

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<sup>15</sup> Note that estimating taxable income as book income adjusted for deferred taxes also ignores other permanent differences (and will overstate taxable income to the extent the ignored permanent differences decrease taxable income relative to book income).

## Earnings Management Using the Valuation Allowance

A firm with a deferred tax asset must evaluate each year if “based on the weight of available evidence, it is more likely than not (a likelihood of more than 50 percent) that some portion or all of the deferred tax assets will not be realized. The valuation allowance should be sufficient to reduce the deferred tax asset to the amount that is more likely than not to be realized.” (FAS 109, para 17(e)). As noted by Miller and Skinner (1998, p. 215) “Adjustments to the valuation allowance flow directly to income from continuing operations on an after-tax basis through the provision for deferred taxes (tax expense) and thus affect reported net income on a dollar-for-dollar basis.” Miller and Skinner (1998) discuss IBM as an example. In 1993, IBM more than doubled its valuation allowance from \$1.9 billion to \$5 billion, while deferred tax assets grew by about one-third from \$14 billion to \$19 billion. In 1995, IBM reported an earnings increase of about \$1.2 billion, of which \$683 million was the result of a reduction in the valuation allowance. Miller and Skinner (1998), and Visvanathan (1998), examine the changes in the valuation allowance as a tool for earnings management, after controlling for the underlying economic determinants of the account balance.<sup>16</sup> However, to the extent the deferred tax asset and valuation allowance are due to tax losses arising from ESO tax deductions, any reduction in the valuation allowance will *not* result in a dollar-for-dollar increase in earnings (from a lower deferred tax expense) but rather will result in the recognition of the ESO tax benefit by a credit to shareholders’ equity. These two studies did not find any evidence of earnings management, but their results might have been different if ESO tax benefits associated with valuation allowance changes were properly treated.

The following note disclosure required by FAS 109, para 48 illustrates this case:

Vitesse Semiconductor Corporation 1998: “The change in the valuation allowance for the year ended September 30, 1998 was \$17,047,000, of which \$14,124,000 reduced income tax expense for the year. The remaining \$2,923,000 was credited to additional paid-in capital which was the amount attributable to net operating losses created by the exercise of stock options previously unrecognized.”

There are several possible solutions to this problem for studies examining changes in the valuation allowance. The first is to include the disclosed (or estimated) magnitude of the ESO tax benefits as a control variable in the cross-sectional models that regress the change in the

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<sup>16</sup> Miller and Skinner (1998) also examine the level or balance in the valuation account. Visvanathan (1998) acknowledges that the change in the valuation allowance may not all flow directly to income tax expense (see his notes 1 and 2).

valuation allowance on variables proxying for firm's incentive to manage earnings and variables controlling for underlying determinants of the valuation allowance (see, Miller and Skinner, 1998 p. 230, Visvanathan 1998 p. 11). However ESO tax benefits are not the only adjustment to the valuation allowance that do not flow directly to the income statement (see paragraphs 30 and 36 of FAS 109 for other examples), and these other adjustments also need controls in a regression approach.

A second solution avoids the error arising from assuming the change in the valuation allowance all flows directly to a lower tax expense. Para 47 of FAS 109 requires firms to present a reconciliation of the difference between the statutory tax rate and the GAAP effective tax rate. Any adjustment to the valuation allowance that reduces tax expense is reported as a reconciling item. Bauman, Bauman, and Halsey (2000), in a recent working paper, adopt this approach in examining earnings management via the valuation allowance account. One conclusion from their study however is that the disclosures are often inadequate and difficult to interpret.

### **Earnings Quality and Conservatism**

Some authors suggest that the difference between pretax book income and taxable income provides the financial statement user with relevant information in assessing the quality of reported earnings. For example, Revsine, Collins, and Johnson (1998, p. 638) suggest the calculation of an earnings conservatism (EC) ratio as pretax book income/estimated taxable income where taxable income is estimated as current tax expense/statutory tax rate.<sup>17</sup> Joos, Pratt, and Young (1999) examine the hypothesis that as book-tax differences increase in absolute magnitude, the value relevance of earnings declines. They suggest the divergence reflects bias and/or noise in reported earnings. While they report evidence consistent with their predictions, they estimate taxable income as current tax expense divided by the top statutory tax rate, thus ignoring ESO tax benefits.

As we have previously noted, current tax expense overstates the current tax burden and hence taxable income (because of the accounting treatment of ESO tax benefits). Thus book-tax differences and the EC ratio are both understated. Of course, the user may wish to exclude the effects of the ESO tax deduction in assessing earnings quality, earnings conservatism, or tax aggressiveness but this needs to be the result of careful consideration rather than as a result of

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<sup>17</sup> Revsine, Collins, and Johnson (1998, p. 638) suggest dividing current tax expense by the firm's GAAP effective tax rate. However, in the revision of their text now in process they suggest dividing by the statutory tax rate.

oversight (Revsine, et al. p. 639, suggest that the analyst when interpreting the ratio consider permanent differences and evaluate whether they really represent aggressive financial reporting or simply good tax planning, for example, tax-exempt municipal interest).

### **Corporate Tax Shelters**

Congress and Treasury have become increasingly concerned with corporations reducing their tax bills through aggressive use of corporate tax shelters (see, U.S. Department of Treasury 1999). One piece of evidence used to support the growing use of tax shelters is the widening gap between corporate tax receipts and/or taxable income and reported profits (see, for example, Sullivan 1999). In some instances, these corporate tax receipts (and taxable income) are derived from tax data and so represent actual tax receipts. However, the reported profits are financial-statement based and do not reflect the ESO tax deduction available to firms (which reduces actual tax receipts but not reported profits). (Note that this is not a direct implication arising from the accounting for the ESO tax benefits but rather arises because of the accounting (nonrecognition in calculating reported earnings) for the compensation expense of ESOs.)

Yin (2000) attempts to estimate how much of the tax receipt gap is due to ESO tax benefits. Because taxable income is not observable, he calculates an adjusted ETR as current tax expense divided by pretax book income less the estimated ESO tax deduction (from stock option note disclosures using the algorithm presented earlier). He provides a simple example on p. 8 of his paper to argue that his adjustment will only slightly understate the true ETR, which would be obtained if we could calculate current tax burden/taxable income before the ESO deduction. However, Yin incorrectly assumes that the financial statement reported current tax expense number equals current taxes payable/burden based on taxable income. Thus his comparisons using this adjustment are flawed. Nevertheless, his basic point that some of the growing tax gap is likely due to ESO tax deductions rather than corporate tax shelter activity is a valid one.

Manzon and Plesko (2001) examine the spread between reported book income and estimated taxable income to shed light on corporate tax shelter activity. They estimate taxable income by grossing up reported current tax expense and correctly recognize that this estimate of taxable income is before the ESO deduction and thus the spread cannot be explained by the difference in treatment of ESOs between book and tax.

### **ILLUSTRATION OF THE PROBLEM AND SOLUTION FOR NASDAQ 100 FIRMS**

To illustrate the magnitude of the problem caused by the accounting for ESO tax benefits we present the results of two analyses here. First, we analyze firm disclosures and, second, we present effective tax rates both before and after adjustment for the ESO tax benefits, for the NASDAQ 100 firms for fiscal 1999.

### **Analysis of Disclosures**

Of the 100 firms, 63 firms report a tax benefit from stock options on the Statement of Shareholders' Equity. This number might seem surprisingly low given these firms represent the NASDAQ 100. However, this does not mean that the remaining 37 firms do not have stock options or these 63 firms are the only firms that will obtain tax benefits from options. For example, in its 1999 10-K, Immunex Corporation reports a pre-tax book income of \$56.8 million and a GAAP effective tax rate of 22.1% after the utilization of tax net operating losses. Its stock compensation note discloses that 2.89 million options were exercised during the year. However, the company does not disclose an amount related to the tax benefits of stock options on its Statement of Shareholders' Equity (nor on its cash flow statement). Consistent with our discussion earlier, the likely explanation is that the company is in a tax net operating loss situation. We find further information in the company's tax note, which states, "An additional \$98.3 million of NOL carryforwards were generated due to stock option deductions for tax purposes" (during 1999). In addition, the note states that "Our ability to generate sufficient future taxable income for tax purposes in order to realize the benefits of our net deferred tax assets is uncertain primarily as a result of future stock option deductions." In other words, primarily as a result of future stock option deductions, the company did not believe it would generate future taxable income and thus established a valuation allowance on the deferred tax assets related to the net operating losses. Therefore, the fact that only 63% of the NASDAQ 100 firms report a tax benefit related to the stock option deductions on the face of the financials is somewhat misleading. It is also possible that some of the firms issue only incentive stock options or that all of the firm's options were underwater (had a negative intrinsic value) during the year so there were no exercises (although these two alternative explanations are unlikely to be pervasive in the NASDAQ 100 in 1999).

Forty-three of the 100 firms mention ESO tax benefits on their Statement of Cash Flows. The difference in the number of firms that show the amount on the Statement of Shareholders' Equity but not on the Statement of Cash Flows (i.e. the 63 versus the 43 in our sample) is due to

two potential reasons. First, the amount may not be material enough to report separately in the company's cash flow statement. An example of this is Dell Computer Corporation, which reports a tax benefit of stock options number on the Statement of Shareholders' Equity in 1997 and 1998 of \$37 million and \$164 million, respectively, but does not include a separate line item on its Statement of Cash Flows. However, in the year 1999, when the amount apparently became material, the company added a line to the operating section of its Statement of Cash Flows for the tax benefits of stock options showing the amounts for 1997 and 1998 listed above, as well as \$444 million for 1999, the same amount shown in its Statement of Shareholders' Equity for that year.

Second, is the situation where some or all of the tax benefits *are* recognized (credited to additional paid-in capital) in the current year, but ESO realization occurs in a later year. The simplest example of this case is when the firm has a tax loss in the current period, that must be carried forward and no valuation allowance is provided on the deferred tax asset. In this case, the ESO tax benefit is recognized (with a credit to shareholders' equity) but not realized (no line item on the statement of cash flows) in the current period. A second example of this case is when a firm reduces the valuation allowance on the portion of the deferred tax asset arising from a prior tax loss due to the ESO tax deduction (ESO recognition this period) before the tax loss carryforward is utilized (giving rise to cash tax savings which will be reported on the statement of cash flows in a later period).

Further some firms show different positive amounts on the two statements. An example is found in the 1999 financial statements of Yahoo, Inc. Yahoo shows an amount credited to additional paid-in capital for the ESO tax benefits of \$122.6 million and also shows an amount on the Statement of Cash Flows of \$37.1 million – a \$85.5 million difference. In the same year, the gross deferred tax assets (primarily related to net operating losses) increased by \$720.4 million and the deferred tax liabilities decreased by \$2.5 million<sup>18</sup> for a total change in the deferred tax assets and liabilities, net, of \$722.9 million. The company also increased the valuation allowance by \$637.4 million. Therefore, the change in the valuation allowance is \$85.5 million less than the increase in deferred tax assets (net of deferred tax liabilities; \$722.8 - \$637.4) for the year. In other words, a valuation allowance was *not* established for \$85.5 million

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<sup>18</sup> This excludes the change associated with the unrealized gain on securities that does not affect the deferred tax expense.

of the increase in the deferred tax assets (net operating losses). Since no valuation allowance was established and the deferred tax asset is related to stock option deductions the credit is to additional paid-in capital rather than to deferred tax benefit. Therefore, although only \$37.1 of tax benefits were actually *realized* in 1999 for Yahoo, the amount *recognized* according to the accounting under APB 25 is the \$122.6 million.<sup>19</sup>

The above discussion suggests why the amount reported on the statement of cash flows cannot generally be subtracted from current tax expense to derive an estimate of taxable income for loss firms. If a firm has to carryforward the tax loss arising from an ESO deduction then there will no ESO number on the statement of cash flows incorrectly suggesting the absence of an ESO deduction.

### **Estimates of Effective Tax Rates**

Tables 1 and 2 present analyses to illustrate the magnitude of the problem for a subsample of NASDAQ 100 firms. As previously noted, effective tax rates as estimates of firms' tax burdens are only meaningful when the firm reports positive pretax book income. Because effective tax rates (ETRs) can be calculated based on firms' worldwide activities and on their U.S. operations we present ETRs for both worldwide and U.S. operations. We restrict the sample to a common set of firms that disclose U.S. pretax book income (47 of the NASDAQ 100 firms) that is positive (5 have negative U.S. pretax book income) for fiscal 1999. Of these 42 firms, 12 report NOL carryforwards on Compustat thus raising concern about the reliability of adjusting reported current tax expense using any reported ESO tax benefits. We search the tax note for each of these firms and use the reported ESO tax benefits if the NOL relates to foreign operations and/or acquired firms. For firms with U.S. tax NOLs we estimate the ESO tax deduction from the firm's stock option note disclosures (5 firms although 2 firms report zero ESO exercises). Of the 42 firms, 36 have ESO tax benefits.

Six of the NASDAQ 100 firms and 4 of the 42 firms analyzed here report the ESO tax benefit as other current tax expense separating it from the current U.S. tax expense in their tax footnote. That is, the reported U.S. current tax expense can be used without adjustment to estimate current U.S. tax burdens and U.S. taxable income because it already is reduced by the ESO tax benefits. However, the total reported effective tax rate, worldwide current tax rate, and

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<sup>19</sup> Note that this analysis is based on the public disclosure in the financial statements of Yahoo, Inc. and are therefore subject to some interpretation since the disclosure is not necessarily transparent as to all of the events that occurred.

worldwide estimated income are still overstated for these four firms and thus need to be adjusted for the ESO tax benefits. Users of financial statements must examine the tax footnote to determine if current U.S. tax expense must be adjusted. For Compustat users a simple check is to sum the separate components of the tax expense reported by Compustat (specifically current and deferred U.S., current and deferred foreign, and current and deferred state) and compare the sum to the total tax provision/expense (the income statement expense number reported by Compustat). If the sum is less than the total tax provision it is likely due to ESO tax benefits being separately reported as other current tax expense. The 4 firms in Table 2 that separately report are highlighted by an asterisk.

Table 1 reports some descriptive statistics for the 42 sample firms. The mean ESO tax benefit is \$153 million with a median of \$40 million. The mean (median) worldwide pretax book income is \$988 million (\$237 million). The mean (median) U.S. pretax book income is slightly smaller at \$726 million (\$176 million). For both worldwide and U.S. operations the mean and median current portion of tax expense is greater than the total tax expense implying that the average sample firm has negative deferred tax expense. The mean (median) ESO tax benefit is approximately 43 percent (49 percent) of worldwide current tax expense and 54 percent (78 percent) of U.S. current tax expense indicating that ESO tax benefits are important for these firms. We also estimate taxable income for these firms using the disclosed current tax expense and the current tax expense adjusted for the ESO tax benefit. The mean (median) adjusted worldwide taxable income is approximately 54 percent (51 percent) of the mean (median) taxable income estimated using the disclosed current tax expense. The corresponding percentages for US taxable income are 47 percent for the mean and 39 percent for the median. Finally, the table reports the ratio of pretax book income to estimated taxable income, the EC ratio, both adjusted and unadjusted for ESO tax benefits. Because the means are affected by outliers here, the median provides a more reliable picture. The median worldwide ratio is approximately 1 but after adjustment for the ESO tax benefit increases to 1.45 and the median U.S. ratio is .94 before adjustment and 1.40 after adjustment. Recall that a ratio greater than 1 indicates that pretax book income is greater than estimated taxable income. Not surprisingly, when ESO tax benefits are incorporated (as a subtraction) into the estimate of taxable income the ratio increases indicating a greater gap between the two income measures. Overall, these

descriptive statistics indicate that if ESO tax benefits are ignored, the analyst is likely to overstate tax burdens and overstate taxable income by a substantial amount.

Table 2 presents the ETRs and adjusted ETRs for the 42 sample firms. We calculate three worldwide and three U.S. ETRs. The first ETR is total tax expense/pretax book income, the second ETR is current tax expense/pretax book income, and the third ETR is current tax expense less the ESO tax benefit divided by pretax book income. Consistent with prior research in the ETR literature, if the numerator (tax expense) of the ETR is negative we set the ETR to 0, and, to reduce the effects of outliers, if the ETR is greater than 100% we set the ETR to 100%. The number of observations reset for each ETR are reported in the table. Not surprisingly given the means and medians reported in Table 1 for the sample firms, the adjusted ETR for many sample firms is substantially smaller than the reported ETR reflecting the large ESO tax benefits to these firms. See, for example, Dell Computer, Ebay Inc, Novell Inc, and Sun Microsystems. The mean (median) adjusted worldwide current ETR is approximately 52 percent (55 percent) of the unadjusted worldwide current ETR (ETR3/ETR2). The corresponding numbers for the U.S. ETRs are 45 percent (mean) and 36 percent (median) – large and important effects. Thus studies that ignore the ESO tax benefits, especially those that examine samples of firms similar to the NASDAQ 100, are likely to result in serious measurement error and flawed inferences.

### **CONCLUDING REMARKS**

Employee stock options are widely used by U.S. corporations and, in conjunction with a booming stock market, have resulted in large gains being realized by employees. These gains are generally taxable to the employees and deductible by the issuing corporation in the year of exercise (if the options are nonqualified options). These tax benefits can be substantial for successful firms that use options extensively (for example, Microsoft, Cisco, Yahoo and Dell). These same firms elect note disclosure of the value of new option grants rather than recognize compensation expense for financial reporting purposes, and thus option compensation appears to fit the definition of a permanent difference (an item appearing in one set of books and not the other). However, GAAP as per APB 25 requires that the ESO tax benefit be credited to additional paid-in capital rather than as a reduction (credit) in current tax expense. We illustrate the accounting by simple examples and firm note disclosures.

Accounting for ESO tax benefits as a credit to additional paid-in capital has implications for studies that:

- estimate firms' current tax burden (current tax expense/pretax book income). By using current tax expense, these studies overstate firms' current tax burdens.
- estimate taxable income from the financial statement disclosures. Taxable income is overestimated which means that marginal tax rate estimates can be overstated. Furthermore, ESOs create a large non-debt tax shield in addition to other items previously studied such as depreciation.
- examine earnings management via the valuation allowance account. Researchers often assume that any change in the valuation allowance directly affects reported after-tax earnings. However, to the extent that the deferred tax asset account (and thus valuation allowance) reflects unrealized ESO tax benefits, the benefits when recognized will be credited to additional paid-in capital rather than reducing total tax expense and increasing reported earnings.
- examine differences between reported pretax book income and estimated taxable income as a proxy for earnings quality and conservatism. Again taxable income is overstated (and thus book-tax differences understated), *ceteris paribus*, when estimated by current tax expense divided by the top statutory tax rate.
- provide evidence in the debate that the growing gap between corporate tax receipts and reported book profits is due to corporate tax shelters. This gap is not necessarily evidence that abusive corporate tax shelters are growing because ESO usage is growing and the gap is (partially) attributable to ESO tax benefits.

A simple correction for the error in assuming reported current tax expense equals the firm's current tax burden for firms *with positive taxable income* is to subtract the reported ESO tax benefits from current tax expense to estimate current tax burden (and taxable income and book-tax differences). For these firms, the amount reported in the statement of cash flows and shareholder's equity section should be the same (and approximately equal to what could be estimated from the stock option note disclosures). However, when firms have *tax losses with deferred tax assets*, inferring the ESO tax benefit is more difficult. Not surprisingly under accrual accounting, the period in which the ESO tax benefit is recognized (with a credit to additional paid-in capital) is likely to differ from when the tax benefit is realized (as reported in the statement of cash flows). Nevertheless, for firms with tax losses but no valuation allowance on the deferred tax asset arising from the tax loss (and also for firms that can immediately carry

back the loss to obtain a refund of prior taxes), the ESO tax benefit reported in the shareholders equity section provides a reliable estimate of the ESO tax deduction. However, for firms who place valuation allowances on the deferred tax asset in the year the tax loss arises, or in later years when these same firms reduce the valuation allowance, the ESO tax benefits are recognized in a period later than when they were actually deducted on the firm's tax return. For loss firms with valuation allowances, or for other firms in which the ESO tax benefit is not disclosed, the magnitude of the ESO tax deduction in any given year can be estimated from the stock option note disclosures.

In this paper, we provide an explanation of the accounting for the tax benefits of stock options and discuss the implications of this accounting treatment for academic research studies and financial statement users. We find that in many cases firms' reported effective tax rates are overstated as are estimates of marginal tax rates and tax burdens using financial statement disclosures. This study is important because it explains the accounting for the tax benefits of stock options, describes the problems this accounting may cause in empirical studies and for financial statement users, and provides some suggestions on adjusting for this accounting to more accurately estimate tax rates and burdens.

Finally, if the ESO tax benefits were to be treated as a permanent difference under GAAP, current tax expense would be lower resulting in a lower total tax provision and a higher reported after-tax book income. Thus not only would income be higher because of the zero compensation expense for stock options currently reported by almost all firms, but income would also be higher because of the associated tax benefit reducing current tax expense. While we believe the ESO tax benefits should be accounted for as permanent differences, we also recognize that this outcome might be particularly galling to individuals who believe the proper accounting for employee stock options is to recognize (book) compensation expense for the fair value of options granted. If the accounting for stock options is revisited and firms are required to book compensation expense for the fair value of options granted, then the issue of ESO tax benefits as an unbooked permanent difference would be mute (the difference should then properly be accounted for as a temporary difference).

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TABLE 1  
 Descriptive Statistics and Effects of ESO Tax Benefits on Estimated Tax Burden and Estimated  
 Taxable Income For Subsample of NASDAQ 100 Firms with Available Data  
 N = 42 Firms with Reported Positive U.S. Pretax Income, Fiscal Year 1999

	<b>Mean</b>	<b>Median</b>	<b>Std Devn</b>
ESO tax benefit	\$153.144	\$39.975	\$492.843
<i>Worldwide</i>			
Pretax book income	\$987.960	\$237.025	\$2,481.628
Total tax expense	335.362	74.915	863.550
Current tax expense	354.110	80.935	911.837
Estimated taxable income	1,011.742	231.243	2,605.247
Adjusted taxable income	547.189	118.186	1,676.452
EC ratio – unadjusted	1.144	1.011	0.907
EC ratio – adjusted	1.050	1.454	4.524
<i>United States</i>			
Pretax book income	\$726.168	\$176.550	\$1,949.604
Total tax expense	181.071	40.430	553.632
Current tax expense	281.410	51.330	801.115
Estimated taxable income	804.029	146.657	2,288.899
Adjusted taxable income	379.103	57.129	1,309.019
EC ratio – unadjusted	1.006	0.943	1.828
EC ratio – adjusted	3.263	1.402	7.801

Notes:

Estimated taxable income = Current tax expense/.35

Adjusted taxable income = (Current tax expense – ESO tax benefit)/.35

EC ratio = earnings conservatism ratio = pretax book income/estimated taxable income

EC ratio adjusted = pretax book income/adjusted taxable income

TABLE 2  
 Effect of ESO Tax Benefits on Effective Tax Rates  
 For Subsample of NASDAQ 100 Firms with Available Data  
 N = 42 Firms with Reported Positive US Pretax Income, Fiscal Year 1999

	Worldwide				United States		
	STR	ETR1	ETR2	ETR3	ETR1	ETR2	ETR3
ADC TELECOMMUNICATIONS INC	35%	45.4%	64.6%	64.6%		58.3%	58.3%
ADOBE SYSTEMS INC*	35%	36.5%	36.3%	20.7%	15.2%	15.4%	15.4%*
ALTERA CORP	35%	33.2%	40.4%	21.3%	34.1%	40.5%	17.6%
AMERICAN PWR CNVRSION	35%	29.5%	29.5%	28.6%	32.6%	32.8%	31.4%
APPLE COMPUTER INC	35%	11.1%	5.5%	0.0%	53.1%	6.3%	0.0%
ATMEL CORP	35%	36.0%	24.6%	20.6%	66.0%	71.9%	54.4%
BMC SOFTWARE INC	35%	23.8%	32.5%	22.2%	27.2%	39.2%	25.0%
BIOGEN INC	35%	33.0%	40.2%	7.1%	36.2%	44.4%	1.4%
BIOMET INC	35%	33.6%	34.5%	33.8%		30.3%	29.5%
CHIRON CORP	35%	18.0%	21.8%	0.0%	28.6%	17.7%	0.0%
CISCO SYSTEMS INC	35%	36.8%	43.0%	17.8%	44.4%	52.8%	14.8%
CITRIX SYSTEMS INC	35%	36.0%	43.3%	15.5%		43.4%	1.8%
DELL COMPUTER CORP	35%	29.9%	31.3%	10.0%		36.5%	7.9%
EBAY INC	35%	45.8%	66.6%	0.0%	30.2%	43.5%	0.0%
ELECTRONIC ARTS INC*	35%	38.3%	48.1%	43.3%	26.1%	39.1%	39.1%*
INTEL CORP	35%	34.9%	36.8%	32.3%	44.1%	46.4%	39.4%
INTUIT INC	35%	39.0%	41.5%	32.5%	31.2%	33.7%	24.8%
KLA-TENCOR CORP	35%	22.1%	77.6%	49.3%	2.2%	76.1%	28.9%
LEGATO SYSTEMS INC	35%	67.9%	100.0%	0.0%	74.5%	100%	0.0%
LINEAR TECHNOLOGY CORP	35%	32.0%	29.0%	11.8%	32.4%	29.0%	9.1%
MAXIM INTEGRATED PRODUCTS	35%	34.0%	33.8%	0.0%	29.7%	29.6%	0.0%
MICROSOFT CORP	35%	34.5%	36.2%	10.1%		37.8%	8.6%
MICROCHIP TECHNOLOGY INC	35%	27.0%	24.5%	17.4%	25.3%	21.6%	9.0%
MILLER (HERMAN) INC	35%	38.3%	32.4%	31.6%	37.0%	30.4%	29.4%
MOLEX INC	35%	22.7%	21.9%	21.9%	0.0%	0.0%	0.0%
NETWORK APPLIANCE INC	35%	37.5%	46.4%	15.2%	35.1%	44.0%	5.1%
NOVELL INC	35%	21.8%	26.2%	5.4%	20.7%	72.4%	0.0%
ORACLE CORP	35%	34.9%	34.8%	32.0%	25.8%	23.6%	19.2%
PMC-SIERRA INC	35%	31.6%	33.9%	9.5%	0.0%	0.0%	0.0%
PACCAR INC	35%	36.8%	37.5%	37.5%		33.2%	33.2%
QUINTILES TRANSNATIONAL CO	35%	36.9%	30.4%	27.2%	37.1%	24.2%	20.0%
REALNETWORKS INC	35%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SDL INC	35%	26.9%	26.9%	7.0%	22.8%	22.8%	0.9%
SIEBEL SYSTEMS INC*	35%	38.0%	42.9%	0.0%	0.0%	0.0%	0.0%*
SIGMA-ALDRICH	35%	27.1%	24.1%	24.1%	24.6%	20.7%	20.7%
STAPLES INC	35%	39.5%	57.7%	33.4%		51.9%	23.6%
SUN MICROSYSTEMS INC	35%	35.8%	34.6%	20.8%	39.2%	39.4%	16.6%
SYNOPSYS INC*	35%	35.8%	37.9%	26.0%	20.8%	22.4%	22.4%*
TELLABS INC	35%	31.5%	31.6%	31.6%	30.7%	31.5%	31.5%
3COM CORP	35%	31.1%	17.4%	2.6%	33.0%	5.9%	0.0%
XILINX INC	35%	29.8%	33.4%	14.5%	32.7%	35.5%	8.3%
YAHOO INC	35%	39.0%	46.0%	10.4%	34.2%	40.5%	3.7%
Mean		32.70%	37.08%	19.27%	29.34%	34.40%	15.50%
Median		34.26%	34.55%	19.17%	30.73%	33.44%	11.95%
Std Devn		10.15%	17.35%	14.95%	16.65%	21.36%	15.58%

Notes:

Blank = missing data (item missing is U.S. total tax expense)

STR = top corporate statutory tax rate

ETR1 = effective tax rate = total tax expense/pretax book income (= GAAP effective tax rate).

ETR2 = effective tax rate = current tax expense/pretax book income (= tax burden ETR)

ETR3 = effective tax rate = (current tax expense – ESO tax benefit)/pretax book income (= adjusted tax burden ETR)

If ETR < 0, then reset to zero.

If ETR > 100% then reset to 100%.

\* Denotes firm that breaks current tax expense into other current tax expense (due to ESO tax benefit) and U.S. current and foreign current. Thus in estimating U.S. current ETR no adjustment the ESO tax benefit is needed for these firms. An adjustment is still needed for worldwide ETR3 because total current includes the ESO tax benefit.

	Worldwide			United States		
	ETR1	ETR2	ETR3	ETR1	ETR2	ETR3
N > 100%	0	1	0	0	1	0
N < 0 %	0	0	6	3	2	11