

RECENT TRENDS IN STOCK OPTIONS

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ABSTRACT

This paper examines the significant increase in the use of stock options as a form of compensation for tax years (TY) 1997 (begins July 1997) to TY 2001 (ends June 2002). During this time period, we find that income attributable to the exercise of stock options more than doubled between TY 1997 and TY 2000, then declined precipitously in TY 2001. Although firms can expense stock option income for tax purposes, we find that the net impact on federal income tax liabilities is limited because (1) the related personal income is concentrated at high individual marginal tax rates and (2) some firms cannot effectively utilize the full deduction to offset corporate income tax. We also find that stock option activity is heavily concentrated among firms in the computer and information management industries. Across all firms, we find that stock option income composed approximately one-third of the difference between book and tax income.

I. INTRODUCTION

Firms have traditionally compensated their employees through some combination of wages, salaries, commissions, or bonuses. Much less prevalent was compensation tied to firm performance, such as stock and/or stock options. Historically, performance-based compensation was reserved for corporate executives and officers of the firm. In theory, this unique form of compensation helped align the interests of management and shareholders. Although firms still use stock options to encourage managers to maximize shareholder value, their pervasiveness during the past decade suggests a dramatic shift in the utilization of this form of compensation. Firms now grant stock options to a much broader range of employees for myriad reasons. Potential motivations may include general productivity enhancement, attraction and retention of valuable human capital, reduction of short-run compensation costs, increased short-run cash flows, and higher levels of book income.

The increasing prevalence of stock option compensation has implications for individual, corporate, and government finances. It also has implications for economic forecasters, because income attributable to stock options is typically much more volatile than traditional compensation, such as wages and salaries. In this paper, we document stock option activity for the five tax years (TY) beginning in July 1997 and ending June 2002.¹ To provide the broadest possible illustration of the impact of stock options, we provide tabulations that examine stock options from various perspectives. For example, tabulations of total grant dollars and income realized provide insight regarding the impact of stock options on firms, their employees, and government tax revenues. Alternatively, comparison of stock option income to total Wages and Salaries used in the National Income and Product Accounts provides context regarding the relative size and importance of this income. Finally, industry tabulations illustrate the relative utilization of stock options across firms in the economy.

¹ IRS' Statistics of Income (SOI) division considers all firms with tax years ending July of year t through June of year t+1 to be part of tax year t.

This paper proceeds as follows. We begin with a general discussion of stock options and their impact on corporate and individual income tax liabilities. The next section discusses the data set and methodologies used in the paper. We then present stock option data and estimates of economy-wide stock option activity for grants, exercises and spread income, and the associated impact on federal income tax liabilities for TY 1997 to TY 2001. Next, we discuss the concentration of stock option activity across sample firms for TY 1997 to TY 2001, as well as industry tabulations for TY 2000. We conclude with a brief examination of the relationship between stock option compensation and discrepancies between book and tax income concepts.

II. BACKGROUND AND DEFINITIONS

At the most general level, stock options are a form of compensation transferred (granted) to an employee, by an employer, in lieu of wages or salary. Stock options grant employees the right, but not the obligation, to purchase a specified number of shares of stock at a given price. Typically, the future purchase price (or strike price) is equal to the market price of the stock at the time of grant. Employees must remain with the firm for a specified period before options vest, typically three to five years. Upon vesting, employees may exercise their options. When an employee exercises options, he or she pays the firm the strike price for the shares, regardless of the then-current market price. The difference between the market and strike price at the time of exercise multiplied by the number of shares exercised is referred to as spread income. If an employee leaves the firm, outstanding vested and unvested options are forfeited or cancelled. Options not exercised by a date specified in the option contract, usually ten years from the date of grant, will expire.

Unlike traditional cash remuneration, stock options' ultimate value to the employee is dependent upon future stock performance, and thus is uncertain at the time of grant. When an employee elects to exercise their stock options, they may either purchase the underlying stock at a discounted price or receive an equivalent cash premium. This transfer from the firm to the employee becomes part of the employee's taxable income for the year and appropriate taxes are withheld by the firm. From the

employer's perspective, the realization of previously deferred compensation can be a cashless transaction if the firm issues new stock for the transaction. In this case, all existing shareholders bear the cost through stock dilution. If the firm wants to prevent dilution, it will purchase the shares on the open market and sell them to the employee at the strike price. In this case, the cost to the firm is the difference between the current market value and the price specified in the option contract. In either case, the employer may deduct the spread income paid to the employee from taxable income.

III. CATEGORIES OF STOCK OPTIONS

In general, two types of stock options are granted to employees: incentive stock options (ISOs) and nonstatutory stock options (also referred to as nonqualified stock options, or NSOs).² For the employee receiving stock options, ISOs have certain tax advantages. If required holding periods are met, the spread income that accrues to the employee is treated as a long-term capital gain and taxed at a lower marginal rate relative to regular income.³ If an immediate sale is not made upon exercise of an ISO, then the event is non-taxable, unless the taxpayer is subject to the Alternative Minimum Tax (AMT). Conversely, NSO spread income is treated as wage income to the employee and thus, is taxable.⁴ If NSO shares are not sold immediately upon exercise, then the employee may also be subject to tax upon any realized capital gains or losses.⁵

² Employee stock purchase plans (ESPPs) are sometimes considered a third type of stock option. Under an ESPP, an employee chooses to have a percentage of their salary withheld for a certain period of time, at the end of which they may use the withheld wages to purchase firm shares at a discount.

³ The shares must be held for at least one year after exercise and two years after grant. Otherwise, the sale of the shares results in a disqualifying disposition and the options lose certain tax advantages. In this case, the employee recognizes ordinary compensation income and possibly capital gains or losses.

⁴ As wage income, spread income on NSOs is subject to tax rates on ordinary income and Federal Insurance Contributions Act (FICA) taxes. However, other wage income for most individuals exercising options typically exceeds the contribution and benefit base for the old-age, survivors, and disability insurance (OASDI) portion of the tax. The hospital insurance (HI) rate applies for all spread income.

⁵ The tax basis of the acquired shares to the employee equals the option price paid plus the amount includible in the employee's gross income. The employee's holding period for such shares commences on the date of exercise.

Despite the tax advantages of ISOs for employees, other factors limit firms' overall reliance on them. Perhaps most significant is the fact that firms cannot deduct ISO spread income in the computation of taxable income, but they can deduct NSO spread income. ISOs also have stringent definitional requirements and cannot exceed \$100,000 in fair market value (calculated at the time of grant) per employee for each year of vesting. Finally, although ISOs are not taxable, ISO spread income is treated as a positive adjustment for AMT purposes in the year of exercise. This treatment may potentially offset some of the benefit attributable to preferential capital gains tax rates applied to the income in later tax years. Taxpayers must report this positive adjustment on the individual AMT return (Form 6251). (The amount of AMT owed, if any, at the time of exercise depends on a variety of factors on the taxpayer's return.) Because individuals not subject to the AMT do not submit Form 6251, amounts reported on this form will not capture all ISO activity. However, reported amounts do provide a lower bound for the annual level of ISO spread income. These amounts ranged from \$3.7 billion in TY 1997 to \$17.5 billion in TY 2000.

Although the dollar level for ISOs in TY 2000 is significant, we do not include this income in our annual estimates of spread income: only income attributable to NSOs is included. We do not include ISO income because: ISO income is not reported separately by firms, the income represents a relatively small portion of total option income, and corporations cannot deduct ISO income for tax purposes. One of the primary data sources used in this paper is firms' 10-K financial filings with the SEC. Most firms explicitly report the tax benefit attributable to the deduction of NSO income in their 10-K filing. Because ISO income is not deductible, these amounts are not included. Across the five tax years used in this study (1997-2001), 71 percent of our total spread income estimate is attributable to firms that explicitly reported NSO tax benefits. For non-reporting firms, we base spread income estimates on stock option data found in the footnotes that accompany the 10-K financial statements. These data may include ISO activity.

Therefore, to adjust for the potential inclusion of ISO income for non-reporting firms, we reduce sample spread income estimates by three percent.⁶

IV. PRIOR RESEARCH

The dramatic growth in stock options throughout the 1990s has been well documented by researchers (Hall and Liebman (2000), Mehran and Tracy (2001), Graham et al. (2002), Liang and Weisbenner (2001), and Desai (2002)). Many authors have extended the seminal work of Black and Scholes (1973) regarding the valuation of options at time of grant, taking into account factors such as risk-aversion and wealth (Hall and Murphy (2000)) and potential future repricings (Corrado et al. (2001)). Although valuation of options at grant allows for improved measures of compensation trends (Lebow et al. (1999) and Mehran and Tracy (2001)), we do not address issues related to proper valuation at time of grant. Rather, we limit our analysis of stock option activity to measures that are easily quantified and not dependent upon growth and volatility assumptions inherent in various valuation models.

Regardless of whether options are valued at grant or exercise, researchers have noted that stock options can have significant implications for employee, firm, and stockholder behavior. For example, Hall and Liebman (1998) document the strong, positive relationship between stock-based compensation and firm performance since 1980. Morgan and Poulsen (2001) find that options motivate managerial efforts to boost share values. Cipriano et al. (2001) find that the market negatively prices the tax benefit from employee stock options. Graham et al. (2002) find that options provide an important non-debt tax shield that explains the limited debt at highly profitable, option-intensive firms.

Previous research has also attempted to quantify spread income paid to employees and the associated tax benefit to corporations (Sullivan (2000), Mehran and Tracy (2001), Desai (2002), and

⁶ Based on AMT data, we estimate that 89 percent of all stock options are NSOs. Sullivan (2000) assumes 80-90 percent of stock options are NSOs. Hall and Liebman (2000) estimate NSOs account for 95 percent of option grants. Applying the 11 percent factor to the 29 percent of the spread income that was not reported yields 3 percent of the total, or a pro-ratio factor of 97 percent.

Graham et al. (2002)). Relative to previous studies, we use a larger sample of firms (approximately 600 per year) over a longer period of time (five years). We also employ a variety of measures to quantify historical levels and changes in stock option activity. The various measures we employ allow for the decomposition of spread income paid to employees into its two components: the number of shares exercised (i.e., prior grants of the firm) or market trends (i.e., the difference between market and strike prices). Finally, we match stock option data to tax return data for all firms included in the sample. The enhanced dataset allows us to derive the effective deduction utilized by corporations in a given tax year. Hence, we are able to determine the net effect of stock options on federal corporate income tax liabilities.

V. DATA AND METHODOLOGY

To quantify recent stock option activity, we utilize data supplied by firms in their annual 10-K filings with the Securities and Exchange Commission (SEC). Corporate 10-K filings and annual reports are the sole source of primary stock option data because taxpayers need not itemize income that is attributable to stock options on their tax returns. When employees exercise their stock options, firms report spread income with other compensation such as Wages and Salaries and/or Compensation of Officers on corporate Form 1120. Similarly, spread income earned by employees is treated as regular income for tax purposes and is embedded with other wages on Form W-2.⁷

Our final cross-section sample contains 3,069 observations for firms that were included in the S&P 500 and/or Nasdaq 100 indices for TY 1997 (tax years ending July 1997 to June 1998) through TY 2001 (July 2001 to June 2002). If a firm was removed from either index but continued to be traded

⁷ Box 12 of Form W-2 is used to report miscellaneous income (e.g., adoption benefits) or deferrals (e.g., elective deferrals to a section 401(k) plan). Each relevant type of entry is accompanied by a code. Code V pertains to income from the exercise of nonqualified stock options. Code V was added to Form W-2 for tax year 2001. However, use of the code was optional for tax years 2001 and 2002 and very few employers elect to voluntarily itemize this income in Box 12 of Form W-2.

publicly, then the firm was retained in the sample. Alternatively, if a firm was added to either index during this time period, then the final sample includes data for that firm for all years. Therefore, the number of observations in any given year will always exceed the number of unique firms included in the S&P 500 and/or Nasdaq 100 indices.

In general, these indices do not include foreign firms or American Depository Receipts (ADRs).⁸ Spread income estimates will be understated to the extent that U.S. residents receive stock option income from foreign firms and the income is taxable under U.S. law. However, spread income estimates will also be overstated because many U.S. firms have significant foreign operations and a portion of the spread income they pay will accrue to non-U.S. residents. Although these measurement issues will not offset exactly, it is likely that the size of any net error is relatively small. In any event, it is not possible to determine these amounts using either tax or financial data.

In July 2002, Standard and Poor's removed seven non-U.S. firms from the S&P 500 index to make the index more representative of the U.S. stock market. Firms removed from the index include Unilever, Royal Dutch Petroleum (ADR), Nortel Networks, Alcan Inc., Barrick Gold, Placer Dome Inc., and Inco Ltd. Firms added to the index include Goldman Sachs, Prudential Financial, United Parcel Service, eBay Inc., Principal Financial Group, Electronic Arts, and Sungard Systems. The final sample includes firms that were added in July 2002 for all years that they were traded publicly. The final sample excludes firms removed in July 2002 from all tabulations. However, due to significant U.S. operations and stock option activity, Nortel Networks was retained in our sample.

From the 10-K filings for TY 1997 to TY 2001, we record the employer identification number (EIN), fiscal year end, number of options outstanding, granted, exercised, and exercisable for each year, the respective weighted-average prices for options in each category, and the tax benefit attributable to the

⁸ Technically, the S&P 500 index still includes firms that are legally based in foreign countries such as Schlumberger Ltd. (registered for taxes in the Netherlands) and Tyco (registered for taxes in Bermuda).

exercise of stock options, if reported.⁹ Much of this information is available because Statement of Financial Accounting Standard No. 123 (FAS 123) requires firms to disclose the number of options granted and exercised during the year, and the average grant and exercise price for those options. Standard and Poor's Research Insight (formerly CompuStat) supplies additional company-specific information including ticker symbol, pre-tax book income, stock price and market value at the close of the firm's fiscal year, and information necessary to adjust for stock splits.

To determine the tax receipt implications attributable to stock options, we use firm EINs to match data from 10-K filings to annual tax return data for TY 1997 to TY 2000.¹⁰ If a firm filed a consolidated tax return, we combined any separately reported option and financial data.¹¹ Because tax data are not yet available for tax year 2001, we project 2001 tax income based on firm-specific book to tax relationships (excluding spread income) from tax year 2000. Tax data are from the Internal Revenue Service's (IRS) Statistics of Income (SOI) Division. For each tax year, SOI compiles a stratified sample of corporate income returns that have been verified for accuracy and completeness. This sample is used to generate the population statistics that appear in the annual publication of *Corporate Income Tax Returns*.

From these data sources, we estimate the spread income associated with stock options exercised during the year, the generated tax benefit, and the effective tax benefit (i.e., the amount that effectively offsets positive tax income for the tax year) for each firm. If firms reported the generated tax benefit in

⁹ Accounting Principles Board Opinion No. 25 (APB 25) generally requires that firms that do not expense options record the tax benefit attributable to stock options as an addition to paid-in-capital in the Statement of Shareholder Equity. Effective for fiscal periods ending after July 20, 2000, material tax benefits attributable to options are also generally recorded in the operating section of the Statement of Cash Flows. However, not all firms disclose these amounts if the amounts are relatively small or considered immaterial.

¹⁰ For a small number of firms, the EIN criterion did not result in a match to the SOI tax data file. These firms were retained in the final sample. For these firms, tax income was set equal to book income less spread income. Depending on the tax year, tax income was projected for 10 to 16 entities. These entities were relatively small because the SOI sample includes nearly all large firms.

¹¹ Unlike financial accounting standards, tax consolidation is voluntary and does not occur unless the parent company has at least 80 percent ownership of the entity. Consolidation of the non-tax data resulted in approximately eight fewer observations per tax year.

the Shareholder Equity or Cash Flow Statement, then spread income is equal to the reported tax benefit divided by the marginal corporate tax rate (35 percent).^{12 13} However, many firms do not report the tax benefit attributable to stock options in their financial statements. For non-reporting firms, we estimate the spread income deduction as the number of options exercised (reported) times the differential between the weighted-average market price (not reported) and the weighted-average strike price (reported) for exercises during the year. Because virtually all options are granted “at market,” we assume that the reported weighted-average grant price is also equal to the weighted-average market price for stock options exercised during the year.¹⁴ Because the option must be “in-the-money” to be exercised, we constrain spread income to be non-negative. If not reported by the firm, we estimate that the generated tax benefit is equal to 35 percent of spread income.

VI. STOCK OPTION ACTIVITY: TAX YEARS 1997-2001

To provide the proper context for tabulations presented in this paper, we note two issues. First, historical stock option activity can be quantified using two measures: the dollar amount of options granted

¹² To the extent that firms include state and local tax benefits with their reported tax benefit, this methodology will overstate implicit spread income for firms that report these amounts.

¹³ As noted by Hanlon and Shevlin (2002), firms may: not report tax benefits separately, report tax benefits only in the Equity Statement, or report amounts in both the Statement of Shareholder Equity and Statement of Cash Flows. In general, firms will report the same amount in both statements if the amount was considered “material” and if the firms were able to utilize the entire spread income deduction for tax purposes during the given tax year. However, firms may not separately itemize these amounts in the Statement of Cash Flows if they did not consider the amounts to be material or if the firm incurred a loss for the tax year. Finally, firms may also report different amounts in the two statements. This may occur if firms were unable to utilize the entire deduction against taxes and they did not establish a valuation allowance against the increase in future net operating loss deductions. In this manner, amounts reported in the Statement of Shareholder Equity generally represent the recognition of the tax benefit, while amounts reported in the Statement of Cash Flows represent realization of the tax benefit (if any). For these reasons, we utilize amounts reported in the Statement of Shareholder Equity.

¹⁴ This approach is similar to that used in Sullivan (2000) and Graham et al. (2002). Although we tested several other methods, this one proved both conceptually and empirically robust. Across all firms that reported tax benefits, this methodology produced estimates that were within 5 percent of the total amounts reported for individual years. However, we note that this methodology can also produce non-trivial over- or understatements for individual firms. An alternative calculation would be to use the weighted average price, based on sales volume, of the firm’s stock for the year. Because the majority of the spread income estimate is attributable to firms that report (approximately 75 percent for TY 2001), any error due to our choice of methodology should be relatively small. See Desai (2002).

by firms or the amount of spread income received by employees. We present both measures because each has relevance depending upon how activity is defined. For example, the dollar amount of grants is relevant if we consider a firm's or industry's relative reliance on stock options as a form of compensation. If firm A granted 100 stock options at the current market price of \$10 while firm B granted 100 stock options at \$100, the implicit amount of future compensation paid to the employee would be much greater for firm B if the two companies had similar expectations regarding income and price appreciation. Therefore, firm B utilizes this form of compensation to a greater extent than firm A.¹⁵ This activity measure is motivated solely by a contemporaneous decision of the firm's management about desired levels of future compensation, assuming that expectations of future share price prove accurate.

Alternatively, the amount of spread income paid to employees can also be used to quantify stock option activity. Unlike the dollar amount of grants, spread income paid in a given year is generally determined by recent performance of the firm's stock and liquidity needs of employees. If this measure is used to quantify stock option activity, then it is useful to decompose spread income into its two components: the number of options exercised (generally grants from four to six years earlier) and the difference between the market and strike prices for those options. This decomposition makes it possible to attribute changes in spread income to prior grants made by firms and/or general market forces (i.e., price differentials).

The second issue we note is that tabulations for the number of options granted, exercised, outstanding, or vested are presented both adjusted and unadjusted for stock splits. For data adjusted for stock splits, we restate all options data in terms of TY 2001 share volume. For example, if a two-for-one stock split occurred in TY 2001, then share amounts for TY 1997 through TY 2000 are multiplied by two and stock prices are divided by two. This adjustment ensures that tabulations are consistent across time

¹⁵ This simple comparison does not address each firm's relative utilization, only their absolute utilization.

and growth rates reflect real activity, as opposed to growth attributable to stock splits.¹⁶ We also present unadjusted amounts. Unadjusted data are necessary to decompose changes in the annual level of spread income into price factors and the actual number of shares exercised during the year.

A. Stock Option Grants, Exercises, and Spread Income Tabulations

Data from 10-K filings indicate that stock option activity increased significantly from TY 1997 to TY 2000, then declined in TY 2001. (See Table 1, located in the appendix.) Between TY 1997 and TY 2000, the dollar amount of grants (173 percent), exercises (49 percent), options outstanding (176 percent, includes underwater options, those with a strike prices that exceeds the current market price), and options vested (142 percent, includes underwater options) increased substantially. Between TY 2000 and TY 2001, the dollar amount of grants (-23 percent) and exercises (-17 percent) declined while options outstanding (15 percent) and vested (43 percent) continued to increase. The dollar amount of options outstanding and vested increased because the dollar amount of grants exceeded the dollar amount of options that were exercised or cancelled/forfeited.

Although the dollar amount of grants provides insight regarding firms' contemporaneous use of stock options, this is not true for the dollar amount of options exercised, outstanding, and vested. For these tabulations, additional data are needed to provide meaningful context. Table 1 provides historical data for the number of split-adjusted and non-split adjusted options exercised, outstanding, and vested, and the actual or potential spread income associated with those options. For exercises, spread income estimates represent amounts paid to employees of the firm. For shares outstanding and vested, potential spread income estimates represent amounts that would be realized if the shares were exercised at the end of firms' fiscal year. Potential spread income estimates are calculated using weighted average price data for options outstanding and vested supplied by firms in their 10-K financial footnotes and fiscal year-end

¹⁶ If a stock split occurs, firms typically, though not always, restate the options data found in the financial footnotes. If this occurs, we restate all years inside the three-year window included in the footnotes. For years outside the window, or if firms do not restate past amounts, we make manual adjustments.

closing prices. Tabulations exclude any negative amounts attributable to firms that, on average, have negative potential spread income (i.e., outstanding and vested options where the weighted average strike price exceeds the fiscal year-end market price).¹⁷

Tabulations from Table 1 show that the number of options, adjusted and unadjusted for splits, generally increased in all years. The sole exception is TY 2001 when the number of exercises declined by approximately 1.0 billion shares. Although not shown explicitly in Table 1, the number and dollar amount of options cancelled or forfeited increased significantly in TY 2001 due to bankruptcies of some relatively large firms.¹⁸

Similar to the dollar amount of grants, spread income paid to employees also increased significantly from TY 1997 to TY 2000, then declined in TY 2001. For sample firms, spread income for TY 1997 to TY 2001 is as follows: \$43 billion, \$61 billion, \$91 billion, \$111 billion, and \$68 billion. (During these five years, reported spread income composed an increasing portion of total spread income estimates. For TY 1997, 55 percent of the total spread income estimate was attributable to firms that reported stock option tax benefits. For TY 2001, the reported share increased to 76 percent of total spread income.) Potential spread income estimates associated with above-water options outstanding and vested exhibit similar, albeit stronger, patterns. Potential spread income had already started to decline in TY 2000 due to the broad bear market. The decline continued in TY 2001 as the drop in market prices overwhelmed the greater number of options outstanding or vested.

¹⁷ We note that estimates of potential spread income are likely subject to a high degree of variance, because they are based solely on weighted average price data supplied by firms. For example, the methodology used in this paper will exclude some outstanding and vested options that were above water but were more than offset by those underwater.

¹⁸ For tax year 2001, firms that filed for Chapter 11 with large numbers of stock options outstanding include Enron, Exodus Communications, At Home Corporation, and Global Crossing. For these firms, it was assumed that some employees were able to exercise a certain proportion of stock options prior to bankruptcy based on (1) the monthly stock price (i.e., how quickly the price fell) and (2) pertinent characteristics of options outstanding and vested from the end of the prior fiscal year. Therefore, although these firms may not file a 10-K for tax year 2001, stock option tabulations for 2001 include amounts for these firms for stock options exercised, cancelled/forfeited, and spread income.

Dividing spread income estimates by the number of (non-split adjusted) options yields the differential between the weighted average market and strike prices across all sample firms. This decomposition illustrates that the substantial increase in spread income paid to employees from TY 1997 to TY 2000 (\$67 billion, 156 percent) was largely attributable to an increasing gap between the weighted average market and strike prices (\$14.90 dollars, 94 percent); the increase in the number of options exercised (0.9 billion shares, 32 percent) played a lesser role. For TY 2001, the smaller wedge between weighted average market and strike prices had significant implications for actual and potential spread income. These data suggest that if the stock market remains flat, spread income realized by employees will likely continue to decline in the short-run. A stagnant market generally implies a narrower gap between market and strike prices, as the weighted average strike price on all vested options continues to approach current market prices.¹⁹

B. Extrapolation of Sample Data to Corporate Population

To extrapolate estimates of sample spread income to all corporations, we make two adjustments. First, we assume that the ratio of sample market value to total market value is also representative of the sample's share of total spread income. We use the Wilshire 5000 index as the denominator of this ratio because it represents the broadest range of publicly-traded stocks that are headquartered in the United States. Therefore, like the sample, projected population statistics do not capture any spread income that may accrue to U.S. residents from foreign firms. Because most firms have fiscal years that end in December, market values used for this ratio are measured as of December of the relevant fiscal year. Although this ratio varies slightly across years, the sample represents approximately 85 percent of total market capitalization. Therefore, this adjustment increases sample estimates by the reciprocal, or 1.18.

¹⁹ This general observation ignores any impact of a stagnant market on option holders' liquidity needs or psychology. For example, it is possible that a stagnant market implies that a higher proportion of vested, above-water options are exercised if employees or their spouses are laid off.

The second adjustment to sample data is for ISOs (not deductible by firms) that may have been reported with NSOs (deductible). Because our objective is to measure spread income attributable to NSOs only, we deflate sample statistics by three percent to account for embedded ISO activity. Therefore, the overall factor used to convert sample data to population data is equal to 1.14. Extrapolation of sample data to all firms increases spread income estimates for TY 1997 to TY 2001 as follows: \$49 billion, \$69 billion, \$104 billion, \$126 billion, and \$78 billion.²⁰ (See bottom of Table 1.)

C. A Note on Repricing of Stock Options

Between March 2000 and July 2002, the Nasdaq index declined by nearly 75 percent. As shown by the tabulations from Table 1, this drop had a significant impact on actual and potential spread income estimates for TY 2001. As a result, many options now have strike prices that exceed the current market price of the stock. In addition to any income and tax implications, these underwater options have diminished value as incentives to employees. Therefore, firms with significant amounts of underwater stock options may consider repricing them. A firm reprices options by canceling a set of existing options (with high strike prices) and reissuing them at the current lower market price. To the extent repricing occurred for sample firms between TY 1997 and TY 2001, the repricings would manifest themselves as cancellations and new grants.

Although the repricing and reissuance of underwater options may increase future tax benefits to the firm, this action also has two negative consequences. The first consequence is a possible deterioration in the relationship between management and shareholders. Non-option shareholders may feel slighted if the value of their stake in the firm falls while those perceived to be partially responsible for poor performance are held harmless through repricing. The second consequence from repricing is reduced

²⁰ By comparison, Desai (2002) obtains the following results for fiscal years (years ending June of year t to May of year $t+1$) 1997 to 2000: \$42.6 billion, \$73.6 billion, \$74.8 billion, and \$106.3 billion. These figures represent amounts extrapolated from stock option exercises of the top five executives for all firms included in the ExecuComp database. Generally, the ratio of grants to exercises for the top executives in a given company is applied to the total grants for all company employees. These fiscal years lag tax years used for tabulations in this paper by one month.

book income resulting from unfavorable accounting rules. Due to an interpretation made by the Financial Accounting Standards Board (FASB) in March 2000, there is an increased earnings cost to companies for repricing options. Retroactive to December 15, 1998, FASB Interpretation No. 44, "Accounting for Stock Issued to Employees," determined that, unlike prior treatment, repricings result in a compensation expense. The expense is calculated on a quarterly basis as the difference between the value at repricing (or start of a quarter) and the market value at the close of the quarter. Thus, any incremental appreciation in stock price lowers the book earnings of the firm. This treatment is known as variable plan expense accounting. The variable expensing of repriced options eliminates a major tax benefit to firms versus the original issuance of stock options: no expensing of option compensation on the company's tax return.

However, firms can circumvent variable plan expensing. For example, firms may simply issue new options at the current market price without canceling the existing underwater options. Some options are so far underwater that any near-term exercising of those options is unlikely. Thus, these firms need not worry about providing greater than planned compensation to the employees (although the increase in outstanding options may eventually lead to dilution issues). Another strategy used by firms is to cancel underwater options and reissue them after six months, which avoids the variable plan expensing treatment. Because it is relatively easy to avoid variable plan expensing, if the market remains flat or declines, we would expect that a greater proportion of options would be cancelled and reissued than we have observed in the recent past.

VII. RELATIVE IMPORTANCE OF STOCK OPTION INCOME IN THE ECONOMY

Although it is clear that stock options generated significant income in recent years, this form of compensation is still small relative to wages and salaries, as measured by the Bureau of Economic Analysis (BEA), U.S. Department of Commerce. For national income and product account (NIPA) measures, spread income attributable to stock options is embedded in both the Wages and Salaries and Profits Before Tax (as a deduction) series that compose approximately 70 percent of National Income. For calendar year (CY) 2000, the apex of spread income payouts, spread income composed 2.6 percent of

total NIPA Wages and Salaries.²¹ (See Table 2.) While stock option income is small relative to more traditional forms of compensation, the volatility of this income can have significant implications for macro and tax receipt forecasters. For example, when stock option income is included, NIPA Wages and Salaries increased 2.4 percent between CY 2000 and CY 2001. If stock option income is excluded, then the annual growth increases to 3.4 percent.

For NIPA Profits Before Tax, the deduction of spread income had a much greater impact. Spread income deductions reduced NIPA Profits Before Tax by approximately 14 percent in CY 2000.²² As discussed in BEA's methodology paper, *Corporate Profits*, NIPA Profits Before Tax includes certain income that is excluded from book and tax profits (e.g., unreported income). In addition, NIPA Profits Before Tax also excludes certain income that is included in book and tax profits (e.g., capital gains). Therefore, a more useful benchmark for corporations may be a comparison of spread income to reported pre-tax book income. Table 2 compares tabulations of pre-tax book income for sample firms with spread income estimates. As noted, firms did not deduct spread income in the derivation of pre-tax book income for TY 1997-2001. Had firms deducted these amounts, pre-tax book income for sample firms would have declined between 10 to 20 percent.

VIII. TAX RECEIPT IMPLICATIONS OF STOCK OPTIONS

Although stock options compose a relatively small portion of total economic activity, they can have much greater implications for federal tax receipts. This section of the paper examines the recent impact of stock options on corporate and individual income tax liabilities. An important caveat to this

²¹ Typically, NIPA measures are calculated on an accrual basis. However, due to the difficulty inherent in valuing stock options at the time of grant and placing any income actually realized in the proper year, BEA currently recognizes all spread income in the year it is realized by employees. For a discussion of BEA's treatment of option income, see Moylan (2000).

²² Profits Before Tax includes S Corporation profits, which are passed through to individual shareholders via Schedule K. Therefore, the impact on C Corporations is much greater than the amounts shown in Table 2.

discussion of “impacts” on tax liabilities is that we do not provide a formal counterfactual to the grant (and subsequent exercise) of stock options. Stock options are granted to employees as part of a total compensation package. Neither the individual nor corporate figures presented in this paper represent formal estimates of the tax revenue foregone due to firms’ utilization of options as a portion of this total compensation. To derive that estimate, it would be necessary to project the offsetting tax consequences of the traditional compensation that would have been paid in lieu of options. In addition, many factors besides tax considerations (e.g., productivity enhancement and employee retention) motivate firms’ decision to grant stock options.

A. Individual Income Tax Liability

Historically, individual income tax receipts have composed approximately eight percent of GDP in a given year. In CY 2000 this ratio, continuing a five-year growth trend, peaked at 10.3 percent of GDP. This two percentage point differential translates into an increase in individual income tax liability of approximately \$200 billion for CY 2000. Many factors have been identified as contributing to the dramatic increase in the ratio of tax receipts to GDP, including: appreciation of stock prices, increases in effective tax rates, and general growth of the economy (Bull (2001), CBO (2001)). Although it is possible to measure certain factors directly, using individual income tax return data compiled by SOI (e.g., changes in capital gains income), the growth attributable to stock option income cannot be observed explicitly on individuals’ returns. However, individual income tax data do provide evidence of where stock option income may be concentrated. For example, the share of wages to the top one percent of individual income tax returns increased from 10.5 percent in TY 1997 to 12.7 percent in TY 2000.²³

Another potential data source for stock option income paid to employees is ExecuComp. The ExecuComp database provides information on compensation, including stock option income, for the top five highly-compensated executives of publicly-traded firms. Because individuals included in the

²³ Returns ordered by modified adjusted gross income (AGI); defined as taxpayer AGI plus tax exempt interest, less social security and capital gains income normally included in AGI.

ExecuComp database compose approximately 12.4 percent of total options-related income over the 1997-2000 period, the data only provide insight to stock option income for very high income individuals.²⁴ (For 2000, spread income paid to the top five officers totaled \$15 billion.) The vast majority of individuals included in the ExecuComp database are subject to the highest marginal tax rate. However, even if individuals are not included in the ExecuComp database, they will be subject to the highest marginal income tax rate if stock options push their taxable income over (approximately) \$275,000. We assume that the weighted average marginal rate applied to spread income is relatively high due to the concentration of large dollar amounts at the top marginal tax rates. Based on an estimated distribution of spread income across the five marginal rates effective during the relevant tax year, we calculate a weighted average marginal rate of 37.3 percent. We apply this rate to the spread income base derived from the corporate data to calculate the associated impact on individual income tax liability.²⁵ For purposes of this analysis, we assume that the amount reported by individuals as taxable income matches amounts claimed by corporations as deductions. Using these assumptions, we estimate the impact on individual income tax liabilities for TY 1997 to TY 2001 as follows: \$18 billion, \$26 billion, \$39 billion, \$47 billion, and \$29 billion. (See Table 3.)

B. Corporate Income Tax Liability

To derive an estimate of the corporate tax benefit attributable to spread income deductions, we apply a marginal tax rate of 35 percent to spread income estimates. If fully utilized, spread income deductions reduced corporate tax liabilities by the following amounts for TY 1997 through TY 2001: \$17 billion, \$24 billion, \$36 billion, \$44 billion, and \$27 billion. (See Table 3.) However, many firms cannot effectively utilize the entire deduction in a single tax year. For example, firms already in a loss position

²⁴ Share calculated relative to the population estimate of option income.

²⁵ Rate does not include an estimate of employment taxes.

cannot utilize the spread income deduction to reduce tax liability further. For these firms, there are three possible outcomes. First, the firm may file Form 1139, Application for Tentative Refund, to carry back net operating losses or capital losses to generate refunds from prior tax years. Second, the firm may carry the loss forward as a net operating loss deduction to offset future positive income.²⁶ Third, some firms may never utilize the losses that are carried forward if the firm does not survive or fails to generate positive tax income.

We calculate the effective spread income deduction as the portion that offsets positive tax income during the tax year. Tax income is defined as Net Income as reported by the firm on line 28 of Form 1120. For example, if the firm reports positive tax income, then the entire spread income deduction is effective. If the firm reports negative tax income, then only the portion of the deduction that would produce positive tax income if the deduction were eliminated is effective. Therefore, effective deductions represent amounts that reduce current year tax liability, not liability from a prior or future tax year.

For TY 1997, effective spread income deductions reduced corporate tax liability by \$16 billion, 95 percent of the tax benefit generated during that tax year. (See Table 3.) For TY 2000, effective spread income deductions reduced tax liability by \$37 billion, 85 percent of the tax benefit generated during that tax year. As noted, micro data for TY 2001 are not yet available. To derive effective spread income deductions for TY 2001, it is necessary to project tax income for firms in our sample. We project 2001 tax income for each firm based on (1) 2001 pre-tax book income and (2) book to tax income ratios for 2000, net of the spread income deduction. We then deduct the 2001 spread income estimate to derive 2001 tax income for each firm. Based on this algorithm, we project that effective spread income deductions reduced TY 2001 corporate liability by \$18 billion, 67 percent of the tax benefit generated during that tax year. The proportion of the generated tax benefit that is effective has declined over time

²⁶ For TY 1997 to TY 2000, firms may carry net operating losses back up to two tax years or forward up to twenty tax years. Due to the Job Creation and Worker Assistance Act of 2002, firms may carry losses back up to five tax years for losses generated in TY 2001.

due to (1) a significant increase in the level of tax losses and (2) increased concentration of spread income to loss firms.

IX. CONCENTRATION OF STOCK OPTION ACTIVITY

Although sample tabulations presented in this paper include annual data from approximately 600 firms, a relatively small number of firms generate most stock option activity, regardless of how activity is defined. To illustrate this phenomenon, we group sample firms into six size classes based on grant amounts and spread income paid for TY 1997 to TY 2001. Size classes include the following: top 10 firms, firms 11 to 25, firms 26 to 50, firms 51 to 100, firms 101 to 200, and all other firms. Firms are ranked independently across tax years; we do not constrain firms to appear in the same size class over time. Therefore, tabulations merely reflect activity levels for a specific size class for a given tax year; they cannot be used to make general statements about a particular group of firms. In addition, the top 10 firms need not be the same for the two measures of stock option activity that we employ.

If activity is defined as dollars granted, concentration tabulations reveal that the top 50 firms compose a little more than half of the total amount. These firms also compose approximately 40 percent of total sample market value in a given year. (See Table 4.) If activity is defined as spread income paid, then the concentration ratio increases. For spread income paid, the top 25 firms compose approximately one-half of the total amount. These same firms compose approximately 30 percent of sample market value in a given year. For both activity measures, class shares are relatively stable over time. Therefore, the significant increase and decline in stock option activity from TY 1997 to TY 2001 appears to have been a fairly broad-based phenomenon for firms included in our sample.

X. STOCK OPTION ACTIVITY ACROSS INDUSTRIES

The pervasiveness of stock options in the computer, telecommunication, and information industries has been well documented in recent years. Characteristics that are unique to stock options may make this form of compensation more appealing to firms in these industries. For example, stock options

may help firms retain younger, mobile workers who have the human capital and flexibility to meet the demands of these industries. Stock options can also improve the short-run income statements of firms via improved cash flows.^{27 28} Core and Guay (2001) find firms use options to a greater extent when they face cash flow constraints and when the costs of external capital are greater. Prospective employees of these firms may also find options relatively more appealing if they value potential future rewards more than higher levels of immediate compensation and increased employment security afforded by other industries.

To examine the relative utilization of stock options across industries, we group sample firms into industries based on the North American Industry Classification System (NAICS) for TY 2000. We use TY 2000 because it represents the apex of recent stock option activity and generally excludes the impact from the recently revised treatment of goodwill for book income accounting purposes.²⁹ We define New Economy industries to include three industries from the Manufacturing sector (Computer and Peripheral Equipment, Semiconductor and Other, and Communications Equipment), three from the Information sector (Information and Data Processing Services, Software Publishers, and Telecommunications) and one from the Finance, Insurance and Real Estate sector (Computer System Design and Related Services). In general, industries were classified as New Economy if they produce goods or services related to computers, communications, and/or electronic-related data services. We note that this definition

²⁷ The reduction of income taxes paid as a result of the deduction triggered by employee exercise of stock options constitutes an operating cash flow. Shareholders must balance this improvement to cash flows with the concomitant dilution to earnings per share when evaluating company financial statements. Firms also generate positive cash flows via proceeds from employees exercising options and from delayed compensation.

²⁸ Cipriano et al. (2001) find that the tax benefit from stock options increased average cash flow from operations by 19.2 percent for fiscal years 1997 to 2000 for S&P 100 and Nasdaq 100 firms.

²⁹ Starting January 1, 2002, firms must generally write off goodwill when it is determined that the value of the asset has become impaired. Previously, firms amortized goodwill for book income purposes. While this change impacted some firms in TY 2000 (tax years ending July 2000 to June 2001), most firms were not affected in TY 2000 (e.g., taxpayers with tax years ending December 2000). A notable exception was JDS Uniphase. For purposes of comparisons to pre-tax book income, an explicit adjustment was made for JDS Uniphase. For tax year 2000, JDS Uniphase (fiscal year ending June 2001) declared a one-time reduction for impairment of goodwill of \$50.1 billion. The firm's pre-tax book income was adjusted to exclude this one-time write down. The firm is included in the Semiconductor and Other Manufacturing category.

combines some traditional manufacturers and service firms with truly “new” industries that did not exist in the previous decade. We also note that many firms do not engage solely in the activity under which they are classified. For example, many manufacturers also act as wholesalers and/or retailers for their products. Industry classifications merely represent a firm’s primary business activity, as defined by Standard and Poor’s Research Insight. For general comparisons, we classify all non-New Economy industries as Other industries.

Table 5 presents industry data on market value, the dollar amount of grants, spread income, pre-tax book income, and tax income for TY 2000. Aggregated figures for New Economy and Other industries are presented at the bottom of the table. The data illustrate that while New Economy industries composed 30 percent of sample market value, their share of grant dollars (58 percent) and spread income (53 percent) was much greater. Conversely, New Economy industries composed a much lower portion of total pre-tax book income (17 percent) and tax income (18 percent).

The data also reveal that spread income deductions had much greater significance for the book and tax profits of New Economy firms in TY 2000. To illustrate this phenomenon, the pre-tax book income and tax income tabulations each include an additional column: spread income / pre-tax book income and spread income / tax income plus spread income. The first additional column illustrates the projected impact on pre-tax book profits if firms had expensed spread income. The second additional column illustrates the actual impact on tax profits. For TY 2000, the expensing of stock options would have decreased pre-tax book profits by 54 percent for New Economy firms, compared to only 10 percent for Other firms.³⁰ Notable were Computer Manufacturers and Software Publishers, whose pre-tax book income was eliminated completely. For tax income, the expensing of stock options reduced tax profits by 44 percent for New Economy firms, compared to 13 percent for Other firms.

³⁰ Graham et al. (2002) find that stock option deductions represent approximately 10 percent of aggregate pre-tax book income for S&P 100 firms for FY 2000: deductions equal to \$30 billion on pre-tax book income of \$310 billion. For Nasdaq 100 firms, stock option deductions eliminated all pre-tax book income: deductions equal to \$69 billion on pre-tax book income of \$52 billion.

XI. DISCREPANCIES BETWEEN BOOK AND TAX INCOME

Currently, firms may either disclose the value of stock options in their financial footnotes or expense their computed fair value. Prior to CY 2002, nearly all firms elected to forego expensing.³¹ For these firms, spread income compensation was not deducted from pre-tax book income, but was deducted in the derivation of income for tax purposes. This divergent treatment of spread income is one of many factors that cause reported values of book and tax income to diverge. The Treasury Department (1999) noted that growing disparities between book and tax income growth rates may result from increased tax shelter activity.³² In response to the Treasury study, analysts noted that stock option compensation had become a significant factor contributing to greater disparities between book and tax income.³³ However, more recently Desai (2002) found that “increased sheltering is responsible for the distinctive breakdown in the relationship between book and tax income.” Desai finds that identifiable factors (stock options, unrepatriated foreign source income, and depreciation differentials) and unexplained factors (all other factors) have both been responsible for the increasing divergence between book and tax income. For 1998, Desai estimates that unexplained factors composed a little more than one-half of the total book-tax gap for his sample of firms. Tax deductions attributable to stock options accounted for one-quarter of the book-tax difference in that year.

The options-tax data sample constructed for this paper provides useful insight regarding historical discrepancies between the tax and book income concepts. Table 6 provides a simple comparison of pre-tax book income (excluding tax-exempt interest) to tax income for TY 1997 to TY 2000.³⁴ For

³¹ Prior to CY 2002, large firms that expensed spread income included Boeing and Winn Dixie. In an effort to increase investor confidence in financial statements, many firms have recently declared their intention to expense options. As of February 2003, the Wall Street Journal notes 143 firms that have stated they will expense stock options.

³² See Treasury (1999) and Sullivan (1999).

³³ See Kies (1999), Sullivan (2000), Manzon and Plesko (2001), and Desai (2002). Analysts have also noted that many other legitimate factors (e.g., temporary timing factors such as depreciation, permanent factors such as increased investment in tax-favored assets, or issues related to consolidation) may explain any disparity.

³⁴ Due to significant changes in the book income treatment of goodwill, this comparison was not made for TY 2001.

TY 1997, pre-tax book income exceeds tax income by \$121 billion for firms included in our sample. By TY 1999, the discrepancy increases to \$274 billion. For these years, the divergent treatment of spread income can explain approximately one-third of the book-tax discrepancy. For TY 2000, the discrepancy declines and the spread income deduction composes approximately one-half of the difference.

This simple comparison illustrates that the divergent treatment of stock option compensation has been a significant factor in book-tax discrepancies for recent tax years. Currently, firms need not disclose this discrepancy on Schedule M-1 of Form 1120, Reconciliation of Income (Loss) per Books With Income per Return. However, given the relative magnitude of the spread income deduction in recent tax years, this deduction may warrant separate itemization on Schedule M-1.

XII. CONCLUSIONS

This paper documents stock option activity for taxable U.S. corporations for five tax years beginning July 1997 and ending June 2002. We find that stock option activity increased significantly in the first four years as measured by the dollar amount of grants (173 percent) or spread income paid to employees (156 percent). For TY 2001, we find substantial declines for dollar grants (-23 percent) and spread income paid (-38 percent).

Relative to existing literature that attempts to quantify stock option activity and spread income, we use a much larger sample of firms and utilize tax data to derive effective spread income deductions. Our results support previous spread income estimates. Our population estimate of spread income for TY 1999 is \$104 billion. Previous studies have comparable estimates for the same year: Sullivan (2000) estimates more than \$70 billion, Mehran and Tracy (2001) estimate \$116 billion, the Congressional Budget Office (2001) estimates a range of \$50 to \$100 billion, and Desai (2002) estimates \$75 billion. Our population estimate for TY 2000 is \$126 billion. Previous studies have comparable estimates for 2000 as well: Desai (2002) estimates \$106 billion and Graham et al. (2002) estimate approximately \$100 billion (S&P100 and Nasdaq 100 only).

We find that TY 2000 represents the apex of stock option activity. For TY 2000, we estimate total grant dollars for sample firms of \$318 billion and total spread income for all firms of \$126 billion. However, even for this historically large year, we find that stock option income composed a relatively small portion of total Wages and Salaries (2.6 percent). While relatively small, the inherent volatility of this income can potentially explain a significant portion of the movement in much larger series such as NIPA Wages and Salaries or federal individual and corporate income tax receipts.

We match financial information from the 10-K filings to annual tax return data to calculate the net impact of stock options on federal income tax receipts. For TY 2000, we estimate that stock options increased individual income tax liability by \$47 billion and decreased corporate tax liability by \$37 billion. We note that this calculation excludes any net operating loss deductions or carryback refunds related to options from other tax years. We also note again that we assume the relevant base of taxable personal income is equal to the amount of corporate deductions from stock options.

For TY 2000, we provide tabulations of stock option activity and book and tax income across NAICS industries. We find that stock option activity for New Economy industries is significantly greater relative to Other industries. For TY 2000, New Economy firms composed 58 percent of total dollar grants and 53 percent of total spread income paid. By contrast, these firms composed only 30 percent of total market value. Spread income deductions also had a much greater impact on profit levels for New Economy firms. Spread income deductions decreased tax income by 44 percent for New Economy firms (13 percent for Others). Had firms expensed these amounts for book income purposes, pre-tax book income for New Economy firms would have declined 54 percent (10 percent for Others).

We also consider the impact of stock options on discrepancies between book and tax income. We find that stock options compose a non-trivial portion of the discrepancy between book and tax income for recent tax years. If analysts compare these profit concepts over time in an attempt to make inferences regarding possible aggressive or illegal tax behavior, analysts should account for spread income paid to corporate employees. Spread income deductions are not only large, but, as illustrated by this paper, they are sensitive to general fluctuations in the stock market.

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APPENDIX

Table 1
Stock Option Activity, Tax Years 1997-2001 (1)

Sample Data	TY 1997	TY 1998	TY 1999	TY 2000	TY 2001	Annual Change			
	TY 1997	TY 1998	TY 1999	TY 2000	TY 2001	TY 1998	TY 1999	TY 2000	TY 2001
Number of Entities	611	624	628	610	596				
Dollar Amounts									
Grants	116.6	150.2	239.6	318.1	244.7	33.6	89.5	78.4	-73.4
Exercises	32.2	36.5	42.9	47.9	40.0	4.3	6.5	5.0	-7.9
Outstanding	263.5	353.2	522.1	727.9	833.2	89.7	168.9	205.7	105.3
Vested	98.7	128.9	171.3	239.1	343.0	30.2	42.4	67.8	103.9
Split Adjusted Number									
Grants	5.9	6.2	6.7	8.1	7.9	0.3	0.4	1.4	-0.2
Exercises	3.4	3.5	3.6	3.7	2.7	0.1	0.1	0.0	-1.0
Outstanding	18.5	20.0	21.9	25.4	27.6	1.5	1.9	3.5	2.2
Vested	8.1	8.8	9.6	11.4	13.4	0.7	0.8	1.8	2.0
Non-Split Adjusted Number									
Grants	4.7	5.4	5.9	7.9	7.9	0.7	0.5	2.0	0.0
Exercises	2.7	3.0	3.1	3.6	2.7	0.2	0.1	0.5	-0.9
Outstanding	14.8	16.8	19.1	24.5	27.6	2.0	2.3	5.4	3.1
Vested	6.7	7.5	8.4	10.9	13.4	0.8	1.0	2.5	2.5
Spread Income									
Exercises, Actual	43.3	60.5	91.2	110.6	68.4	17.2	30.7	19.4	-42.2
Outstanding, Potential (2)	201.5	312.1	427.1	346.5	164.3	110.6	115.0	-80.6	-182.2
Vested, Potential (2)	128.7	185.0	235.1	232.3	136.5	56.3	50.1	-2.8	-95.8
Weighted Average Price Difference									
Exercises	15.91	20.51	29.56	30.81	25.74	4.60	9.05	1.24	-5.06
Outstanding (2)	13.59	18.59	22.38	14.15	5.96	5.00	3.79	-8.23	-8.19
Vested (2)	19.35	24.80	27.91	21.31	10.16	5.45	3.12	-6.61	-11.15
Pro-Rated Population Statistics									
Factor 1: Proportion of NSOs	97.0%	97.0%	97.0%	97.0%	97.0%				
Factor 2: Sample Composition of Total	85.0%	85.0%	85.0%	85.0%	85.0%				
Conversion Factor	1.14	1.14	1.14	1.14	1.14				
Total Spread Income	49.4	69.1	104.1	126.2	78.1	19.7	35.0	22.1	-48.1
Annual Growth		39.9%	50.7%	21.3%	-38.1%				

(1) All figures in this and subsequent tables are in billions of dollars or billions of shares.

(2) Estimates for firms that, on average, have options that are above water.

Table 2
Relative Impact of Stock Option Income

	<u>TY 1997</u>	<u>TY 1998</u>	<u>TY 1999</u>	<u>TY 2000</u>	<u>TY 2001</u>
Total Spread Income	49.4	69.1	104.1	126.2	78.1
CY NIPA Wages and Salaries	3,888.9	4,192.8	4,470.4	4,836.3	4,950.6
Percent Spread Income	1.3%	1.6%	2.3%	2.6%	1.6%
Growth Including Spread Income		7.8%	6.6%	8.2%	2.4%
Growth Excluding Spread Income		7.4%	5.9%	7.9%	3.4%
CY NIPA Profits Before Tax	792.4	721.1	762.1	782.3	670.2
CY NIPA Profits Before Tax					
Plus Spread Income	841.8	790.2	866.2	908.5	748.3
Reduction due to Spread Income	-5.9%	-8.7%	-12.0%	-13.9%	-10.4%
Sample Pre-Tax Book Income	471.0	509.8	647.2	653.7	352.1
Sample Spread Income	43.3	60.5	91.2	110.6	68.4
Reduction to Pre-Tax Book Income	-9.2%	-11.9%	-14.1%	-16.9%	-19.4%

Table 3
Tax Implications of Stock Options

	<u>TY 1997</u>	<u>TY 1998</u>	<u>TY 1999</u>	<u>TY 2000</u>	<u>TY 2001</u>
Total Spread Income	49.4	69.1	104.1	126.2	78.1
Marginal Tax Rate, Individual Income Tax	37.3%	37.3%	37.3%	37.3%	37.3%
Increase to Individual Income Tax Liability	18.4	25.8	38.8	47.1	29.1
Marginal Tax Rate, Corporate Income Tax	35.0%	35.0%	35.0%	35.0%	35.0%
Reduction to Corporate Income Tax Liability	-17.3	-24.2	-36.4	-44.2	-27.3
Effective Corporate Deductions for Tax Year	46.9	62.2	91.8	106.8	52.3
Reduction to Corporate Income Tax Liability	-16.4	-21.8	-32.1	-37.4	-18.3
Ratio: Effective Deductions / Total Deductions	94.9%	90.1%	88.2%	84.6%	67.0%

Table 4
Stock Option Activity Concentration

	TY 1997			TY 1998			TY 1999			TY 2000			TY 2001		
	Dollar Amount	Percent Activity	Percent Mar Val	Dollar Amount	Percent Activity	Percent Mar Val	Dollar Amount	Percent Activity	Percent Mar Val	Dollar Amount	Percent Activity	Percent Mar Val	Dollar Amount	Percent Activity	Percent Mar Val
Grant Amount															
Top 10 Entities	26.1	22.4%	11.0%	31.1	20.7%	13.9%	65.2	27.2%	13.3%	86.8	27.3%	14.5%	62.5	25.5%	16.4%
11 to 25	17.8	15.2%	11.9%	22.9	15.2%	14.0%	35.9	15.0%	17.5%	47.2	14.8%	5.9%	36.4	14.9%	12.1%
26 to 50	17.6	15.1%	17.1%	21.7	14.4%	13.3%	33.5	14.0%	14.9%	49.6	15.6%	21.5%	38.2	15.6%	14.8%
51 to 100	19.7	16.9%	15.3%	24.5	16.3%	19.2%	35.1	14.6%	14.2%	53.1	16.7%	13.7%	39.2	16.0%	15.1%
101 to 200	18.6	15.9%	16.8%	24.3	16.2%	15.4%	33.9	14.1%	16.2%	43.4	13.6%	19.3%	35.0	14.3%	18.8%
All Other	<u>16.8</u>	<u>14.4%</u>	<u>28.0%</u>	<u>25.7</u>	<u>17.1%</u>	<u>24.2%</u>	<u>36.1</u>	<u>15.1%</u>	<u>23.9%</u>	<u>38.0</u>	<u>11.9%</u>	<u>25.1%</u>	<u>33.4</u>	<u>13.6%</u>	<u>22.7%</u>
Total	116.6	100.0%	100.0%	150.2	100.0%	100.0%	239.6	100.0%	100.0%	318.1	100.0%	100.0%	244.7	100.0%	100.0%
Sample Spread Income															
Top 10 Entities	13.1	30.2%	15.9%	19.7	32.6%	17.3%	34.2	37.5%	18.2%	37.1	33.5%	15.4%	24.6	35.9%	13.8%
11 to 25	6.9	15.9%	12.5%	11.4	18.8%	15.5%	13.5	14.8%	12.0%	19.3	17.4%	11.7%	10.8	15.7%	14.6%
26 to 50	6.6	15.2%	11.6%	8.3	13.7%	13.1%	12.2	13.3%	14.6%	15.8	14.3%	14.4%	8.1	11.8%	14.5%
51 to 100	6.4	14.8%	14.5%	8.3	13.7%	15.1%	12.7	13.9%	17.0%	17.4	15.7%	16.5%	9.5	13.8%	15.3%
101 to 200	6.0	14.0%	16.9%	7.1	11.8%	14.1%	11.5	12.6%	14.9%	14.6	13.2%	16.9%	9.0	13.2%	16.2%
All Other	<u>4.3</u>	<u>10.0%</u>	<u>28.7%</u>	<u>5.7</u>	<u>9.4%</u>	<u>24.9%</u>	<u>7.1</u>	<u>7.7%</u>	<u>23.4%</u>	<u>6.4</u>	<u>5.8%</u>	<u>25.1%</u>	<u>6.5</u>	<u>9.5%</u>	<u>25.6%</u>
Total	43.3	100.0%	100.0%	60.5	100.0%	100.0%	91.2	100.0%	100.0%	110.6	100.0%	100.0%	68.4	100.0%	100.0%

Table 5
Stock Option Data by NAIC, Tax Year 2000

	<u>Market Value</u>	<u>Percent of Total</u>	<u>Grant Amount</u>	<u>Percent of Total</u>	<u>Spread Income</u>	<u>Percent of Total</u>	<u>Pre-Tax Book Inc</u>	<u>Percent of Total</u>	<u>Sp Inc / Book Inc</u>	<u>Tax Net Income</u>	<u>Percent of Total</u>	<u>Sp Inc / Adj Tax Inc</u>
Mining	179.5	1.4%	2.1	0.7%	0.9	0.8%	13.9	2.1%	6.7%	5.5	1.3%	14.4%
Utilities	363.2	2.9%	3.6	1.1%	0.4	0.3%	19.3	3.0%	1.9%	15.8	3.8%	2.3%
Construction	8.2	0.1%	0.2	0.1%	0.0	0.0%	1.4	0.2%	3.1%	1.1	0.3%	3.7%
Manufacturing												
Food and Apparel	552.9	4.4%	6.6	2.1%	1.6	1.5%	38.0	5.8%	4.3%	26.4	6.4%	5.8%
Wood and Paper	153.2	1.2%	2.3	0.7%	0.3	0.3%	11.3	1.7%	2.5%	7.5	1.8%	3.6%
Petroleum and Coal	472.2	3.8%	2.4	0.8%	0.9	0.9%	57.7	8.8%	1.6%	46.9	11.4%	2.0%
Chemical	1,738.2	13.8%	21.1	6.6%	12.7	11.5%	60.1	9.2%	21.2%	28.2	6.9%	31.1%
Plastic, Rubber, Metal, Machine	264.9	2.1%	6.7	2.1%	1.9	1.7%	18.1	2.8%	10.6%	12.5	3.1%	13.3%
NE Computer and Peripheral Equip.	957.6	7.6%	44.4	14.0%	18.0	16.2%	17.0	2.6%	105.6%	5.1	1.2%	77.9%
NE Communication Equipment	400.9	3.2%	29.5	9.3%	6.5	5.9%	7.4	1.1%	87.9%	3.5	0.9%	64.7%
NE Semiconductor and Other	591.0	4.7%	29.1	9.1%	11.0	10.0%	21.8	3.3%	50.7%	18.0	4.4%	38.0%
Electrical and Other	245.6	2.0%	7.6	2.4%	1.9	1.8%	12.0	1.8%	16.2%	5.0	1.2%	28.2%
Transportation	284.5	2.3%	4.2	1.3%	2.0	1.8%	32.1	4.9%	6.1%	15.5	3.8%	11.2%
Furniture and Misc.	102.0	0.8%	2.4	0.8%	0.5	0.4%	5.3	0.8%	8.9%	2.7	0.7%	14.7%
Wholesale	178.9	1.4%	4.3	1.4%	1.9	1.7%	8.5	1.3%	22.5%	5.8	1.4%	24.6%
Retail	742.4	5.9%	8.2	2.6%	3.9	3.6%	34.5	5.3%	11.4%	27.3	6.6%	12.6%
Transportation	158.4	1.3%	1.5	0.5%	0.6	0.6%	14.6	2.2%	4.4%	5.6	1.4%	10.4%
Information												
Publishers, except Software	82.0	0.7%	2.2	0.7%	0.4	0.3%	4.5	0.7%	8.0%	8.4	2.1%	4.1%
NE Software Publishers	756.7	6.0%	35.7	11.2%	14.4	13.0%	11.7	1.8%	122.8%	12.4	3.0%	53.7%
Motion Picture and Broadcasting	443.1	3.5%	12.3	3.9%	4.3	3.9%	6.2	0.9%	69.4%	2.6	0.6%	62.4%
NE Telecommunications	709.2	5.6%	30.3	9.5%	4.6	4.1%	45.5	7.0%	10.1%	20.1	4.9%	18.6%
NE Info and Data Processing	108.0	0.9%	8.4	2.6%	2.8	2.5%	-7.6	na	na	2.5	0.6%	52.8%
Finance, Ins., Real Est., Rental												
Depository Credit Intermediation	721.7	5.7%	13.2	4.2%	2.5	2.3%	62.6	9.6%	4.0%	33.4	8.1%	7.0%
Non-Dep Credit Intermediation	506.7	4.0%	9.9	3.1%	3.5	3.2%	40.4	6.2%	8.7%	24.0	5.8%	12.8%
Securities, Comm. Contracts, Other	247.2	2.0%	7.8	2.5%	5.6	5.1%	26.4	4.0%	21.3%	15.8	3.9%	26.2%
Insurance Real Estate, Rental	606.8	4.8%	5.9	1.8%	2.1	1.9%	38.3	5.9%	5.6%	30.6	7.5%	6.5%
NE Comp. System Design and Services	196.5	1.6%	7.5	2.4%	1.5	1.4%	12.9	2.0%	11.7%	12.2	3.0%	11.0%
Management, Research, Admin.	101.4	0.8%	2.0	0.6%	0.6	0.5%	4.7	0.7%	11.9%	2.4	0.6%	19.0%
Health Care	55.3	0.4%	0.6	0.2%	0.4	0.3%	2.8	0.4%	13.2%	2.3	0.6%	13.9%
Service and Hotel	84.9	0.7%	2.0	0.6%	0.5	0.4%	6.6	1.0%	7.2%	3.9	1.0%	10.9%
All Other	<u>572.8</u>	<u>4.6%</u>	<u>3.9</u>	<u>1.2%</u>	<u>2.4</u>	<u>2.1%</u>	<u>25.8</u>	<u>4.0%</u>	<u>9.2%</u>	<u>7.3</u>	<u>1.8%</u>	<u>24.4%</u>
Total	12,585.8	100.0%	318.1	100.0%	110.6	100.0%	653.7	100.0%	16.9%	410.3	100.0%	21.2%
New Economy	3,719.9	29.6%	185.0	58.1%	58.7	53.1%	108.7	16.6%	54.0%	73.8	18.0%	44.3%
Other	8,865.9	70.4%	133.2	41.9%	51.9	46.9%	545.0	83.4%	9.5%	336.5	82.0%	13.4%

(NE) Denotes New Economy Industry.

Table 6
Book and Tax Income Comparisons

	TY 1997	TY 1998	TY 1999	TY 2000	Annual Change		
					TY 1998	TY 1999	TY 2000
Pre-Tax Book Income	471.0	509.8	647.2	653.7	38.8	137.4	6.5
Less Tax-Exempt Interest	<u>9.5</u>	<u>10.6</u>	<u>11.3</u>	<u>11.8</u>	<u>1.0</u>	<u>0.7</u>	<u>0.6</u>
Modified Pre-Tax Book Income	461.5	499.3	635.9	641.8	37.8	136.7	5.9
Less Tax Income	<u>340.1</u>	<u>312.5</u>	<u>362.3</u>	<u>410.3</u>	<u>-27.6</u>	<u>49.9</u>	<u>48.0</u>
Residual Income	121.4	186.8	273.6	231.5	65.4	86.8	-42.1
Sample Spread Income	43.3	60.5	91.2	110.6	17.2	30.7	19.4
Percent of Residual	35.6%	32.4%	33.3%	47.8%			