EVIDENCE THAT THE SECURITIES MARKETS PERCEIVE CHANGES IN EFFECTIVE TAX RATES AS PLACING A HIGHER BURDEN ON HIGH-GROWTH FIRMS THAN LOW-GROWTH FIRMS

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ABSTRACT

In this study, we test whether the securities markets perceive changes in effective tax rates as being fair across high- and low-growth firms. In those years surrounding major tax legislation (1981-1982, 1986-1987, and 1990-1992), we find that the market perceived increases in effective tax rates as taxing high-growth firms to the extent that their expected rate of growth will suffer. We find no such evidence for low-growth firms, however, suggesting that the government properly calibrates tax increases for low-growth firms, but may overestimate the degree to which high-growth firms will alter their contracting environment to avoid higher taxation. With reductions in effective tax rates, we find that the 1981 and 1986 Acts were perceived as stimulating growth for all firms, but the acts of the early 1990s were perceived as stimulating growth only for low-growth firms. The R&D tax credits granted by the acts of the early 1990s may be an example of tax relief that was likely targeted to a specific class of taxpayer (high growth, in this case) that is exploited by other non-targeted classes.

INTRODUCTION

Researchers typically assume that a firm is a nexus of contracts designed to efficiently arrange transactions (Coase, 1988; Milgrom & Roberts, 1992). When tax laws change, however, the contracting environment is altered, compelling firms to negotiate new "contracts" or renegotiate existing "contracts." These changes in contracting arrangements arise from attempts to exploit new tax incentives that lower a firm's effective tax rate or from attempts to mitigate the effects of new tax increases that raise a firm's effective tax rate. The extent to which a firm can successfully negotiate or renegotiate these contracts depends on a firm's tax-planning flexibility.

Prior empirical research on tax-planning flexibility has been limited to examining whether taxpayers respond to tax law changes by shifting reported earnings into the more favorable taxing period (pre- or post-enactment). Guenther (1994), for instance, shows that firms managed accruals

in response to the tax law changes of 1986. These one-time shifts in reported earnings were designed either to exploit tax loopholes that would be closed by the end of 1986 or to exploit tax incentives that became effective in 1987. While the timing of earnings recognition may be easily managed by a broad cross-section of firms, the flexibility to favorably negotiate new contracts or to renegotiate existing contracts in light of new tax legislation is likely to vary significantly across firms.

The ability to favorably negotiate new contracts (and possibly renegotiate existing contracts) should be most easily accomplished by firms experiencing high growth. Such firms are engaging in new business where the terms of trade are yet to be determined. These firms would thus have the greatest flexibility in structuring their future contracts. This flexibility in structuring future contracts affords *high-growth* firms greater opportunities to pursue those tax planning strategies that would exploit the provisions of the new tax laws. In the short-run (the phase-in period provided by many statutory changes) tax planning strategies are likely to be limited to modifying the firm's investment and financing positions in order to exploit any loopholes or incentives in the new statute. In the long-run, tax planning strategies are likely to be more flexible, allowing a firm to increase the level of debt, exercise options to purchase leased assets, exploit any 'grandfather' provisions or exercise provisions in existing contracts that allow for renegotiation, among others.

The Federal Government typically amends the Federal tax code in an attempt to achieve some policy objective. It targets specific classes of taxpayers and either lowers taxes by providing tax incentives and rate reductions, or raises taxes by eliminating incentives, raising rates or identifying sources of additional revenue. The difficulty facing the government is how to target specific classes of taxpayers for tax increases, when those taxpayers would be likely to pursue tax-planning strategies that would mitigate the new tax. This difficulty is just as pronounced when the government grants tax incentives or tax relief to specific classes of taxpayers, because taxpayers other than those in targeted classes are also likely to pursue those tax-planning strategies that exploit the new tax law.

In amending the Federal tax code, the Federal Government must not only anticipate the tax-planning flexibility of the targeted class of taxpayers, but also that of non-targeted classes. Miscalibrating the extent (or lack thereof) of tax-planning flexibility could lead to placing too high or too low of a tax burden on certain classes of firms, thus contra-veining the government's policy (or revenue) objective. In other words, miscalibrating could provide the wrong incentives to some firms while not providing the desired incentives to others (i.e., an adverse selection problem).

In this study, we test whether the securities markets value changes in effective tax rates differently for *high-growth* and *low-growth* firms. Typically, increases in a firm's effective tax rate would be negatively associated with market prices while decreases would be positively associated. If the securities markets anticipate a tax increase would be mitigated more effectively by one class of taxpayer than another, then the negative association typically found between market prices and tax rate increases would be less negative for those firms the market expects to best mitigate the tax increase. If the government anticipates the targeted class would have greater tax-planning flexibility than is actually exhibited, then tax law changes that increase the effective tax rate would overburden those taxpayers and would ultimately reduce their firm productivity.

When effective tax rates are reduced, the association between market prices and tax rate decreases would be stronger for those firms that are expected to best exploit the new tax law to their benefit. If the government reduces the effective tax rate of a targeted class of taxpayer as a strategy to stimulate economic growth, the effectiveness of such a government strategy would depend on whether the government was able to anticipate the extent to which the targeted class can exploit the new law. If the government underestimates the tax-planning flexibility of the targeted class, the economic stimulus would fall short of expectations.

Over the 15-year (1980 to 1994) sample period of our study, Congress passed new tax legislation in virtually every year, legislation that potentially altered the effective tax rates of many (but not all) firms. For each of these acts, effective tax rates increased for certain classes of taxpayers and decreased for others. We find, however, that only during those time periods surrounding major tax legislation do the securities markets value tax changes associated with increases in effective tax rates as being excessive, relative to the value the markets place on earnings. Specifically, these results are for those years associated with the tax acts passed in 1981 (The Economic Recovery Tax Act of 1981) and 1986 (Tax Reform Act of 1986), as well as the series of acts passed in the early 1990s (primarily relating to NOL carrybacks, transactions with stockholders and research and development credits). This finding, however, is limited to *high-growth* firms, suggesting that the Federal Government's expectation of tax-planning flexibility for *high-growth* taxpayers is greater than that of the securities markets' expectations.

When effective tax rates decrease, the securities markets would value the decreases in a similarly to their valuation of earnings, if the securities markets anticipate that the tax rate change would sustain long-term growth for these firms. Otherwise, the market would value these decreases less than they would value earnings. Our findings indicate that for *high-growth* firms, the securities markets value tax rate decreases similarly to earnings only in those tax years surrounding The Economic Recovery Tax Act of 1981 and the Tax Reform Act of 1986. In all other years, decreases in the effective tax rates of *high-growth* firms are valued significantly less than the value the securities markets place on earnings.

In contrast, securities markets value effective tax rate changes (increases and decreases) for *low-growth* firms no differently than they value earnings in any of our sample years. This suggests that while the Federal Government may have substantial difficulty in anticipating the tax-planning flexibility of *high-growth* firms, the tax-planning flexibility of *low-growth* firms is easily anticipated.

The following section provides a brief summary of the major changes in U.S. corporate tax law over the period analyzed, and discusses the related literature. Section three presents our test model and discusses the tests conducted. Section four describes the empirical measures used in the research, and the sample selection criteria. Section five presents the empirical results, and section six discusses the implications of the study.

CHANGES IN U.S. CORPORATE TAX LAW

Changes in the U.S. tax code over the 1980 to 1994 period provided both increased and decreased marginal corporate tax rates, instituted and eliminated the investment tax credit, lengthened and shortened depreciable asset lives, instituted the amortization of goodwill, imposed a "minimum" tax, limited the deferral of installment sale income, and reduced the deductions for entertainment expenses, indirect manufacturing costs and dividends received from other corporations. These changes were largely the result of policy initiatives designed to encourage or discourage economic actions.

The changes in U.S. corporate tax law in the early 1980's were largely aimed at stimulating economic activity. The Installment Sales Revision Act of 1980 reduced the corporate alternative tax rate on installment sales to 28% from 30%, and the maximum corporate rate from 48% to 46%. The Economic Recovery Tax Act of 1981, in addition to introducing an accelerated depreciation schedule, created a credit for research and experimental expenses and lengthened the carryover period for net operating losses, in an attempt to motivate growth.

This program of economic stimulation stalled with The Tax Equity and Fiscal Responsibility Act of 1982, which reduced certain tax preferences benefit, and The Tax Reform Act of 1984, which increased top corporate rates. The most dramatic of all these changes were associated however, with the Tax Reform Act of 1986. The changes in tax law following the 1986 Act (The Omnibus Budget Reconciliation Act of 1987, The Technical and Miscellaneous Revenue Act of 1988, The Revenue Reconciliaiton Act of 1989, The Omnibus Budget Reconciliation Act of 1990, and The Revenue Reconciliation Act of 1993) generally provided for increases in taxation and few targeted tax breaks. The only notable tax incentive is with regards to the tax credit granted during the early 1990s for investments in research and development.

Prior research examining firms' responses to changing tax rates have largely dealt with income shifting and the manipulation of accruals. Scholes, Wilson and Wolfson (1992) found evidence of income shifting in response to changes in marginal tax rates, as did Guenther (1994). Boynton, Dobbins and Plesko (1992), Manzon (1992), and Wang (1995) found that firms managed accruals to minimize their exposure to the Alternative Minimum Tax. Klassen, Lang and Wolfson (1993) found income shifting across international borders, and Harris (1993) found that higher levels of "flexible expenses" were associated with such income shifting.

The income shifting examined by the above studies can, however, be considered one-time responses since income shifting typically affects only those years immediately prior and subsequent to a new tax law's implementation.1 Unlike prior studies, we do not focus on a particular tax response strategy. Rather, our study focuses on whether a firm's overall growth potential allows it to effectively respond to changing effective tax rates and how this might affect the association of market prices with earnings or earnings components.

MODEL DEVELOPMENT

In order to test how the securities markets value tax changes relative to accounting earnings, we decompose that component of tax expense that resulted from a change in the effective tax rate ($\Delta\tau_{j.t}$) from aggregate earnings within the valuation framework presented in Ohlson (1995). The decomposition of aggregate earnings is illustrated in equation (1), below.[2]

$$P_{j,t} = \alpha_0 + \alpha_1 BV_{j,t} + \alpha_2 DIV_{j,t} + \alpha_3 (NI_{j,t} - \Delta\tau_{j,t}) + \alpha_4 \Delta\tau_{j,t} \quad (1)$$

Where: $P_{j,t}$ is price per share, $BV_{j,t}$ is net book value of equity per share, $DIV_{j,t}$ is dividends net of capital contributions per share, $NI_{j,t}$ is current after-tax earnings per share, $\Delta\tau_{j,t}$ is the tax change component of earnings per share, $\alpha_{0,..,4}$ are coefficients, $\varepsilon_{j,t}$ is the error term, j is the firm designation and t is the time dependency subscript. Note that the term ($NI_{j,t}$ - $\Delta\tau_{j,t}$) is equal to what net income would have been had a firm been taxed at the prior year's effective tax rate.

In equation (1), if market values ($P_{j,t}$) are associated with current income ($NI_{j,t}$) in substantially the same way as market values are associated with changes in effective tax rates ($\Delta\tau_{j,t}$), then the securities markets anticipate that the change in the effective tax rate is simply proportional to a firm's current earnings and growth potential. In this case, α_4 will not differ from α_3.

In the case where a firm's effective tax rate increases ($\Delta\tau_{j,t} > 0$), a firm would prefer to take actions that would reduce α_4. If the securities markets perceive that the effects of an increase in effective tax rates will aversely affect a firm's growth or ability to maintain its current level of earnings, α_4 will be greater than α_3. If, however, the securities markets perceive that the firm can mitigate the increase such that there would be no adverse affects on growth, the coefficient $\Delta\tau_{j,t}$ will be less than or equal to the coefficient on accounting earnings ($\alpha_3 \leq \alpha_4$).

In the case where a firm's effective tax rate decreases ($\Delta\tau_{j,t} < 0$), the firm would prefer to exploit the tax reduction by taking actions that would increase α_4. If the securities markets perceive the effects of a reduction in a firm's effective tax rate as stimulating long-term growth through enhanced earnings, the coefficient $\Delta\tau_{j,t}$ will be greater than or equal to the coefficient on accounting earnings ($\alpha_3 \geq \alpha_4$). If, however, the perception is that the reduction will not stimulate growth, then α_4 will be less than α_3.

The desire of firms to mitigate an increase in effective tax rates and to sustain a decrease in effective tax rates leads to different predictions regarding α_4 for tax increases and for tax decreases. We therefore partition the tax change component in our valuation model into tax *increases* ($\Delta\tau_{j,t}^{+}$) and tax *decreases* ($\Delta\tau_{j,t}^{-}$). This partition allows us to test whether the value relevance of tax increases differs from the valuation relevance of tax decreases, since it is unlikely that these effects are symmetric.

Finally, to address whether the securities markets perceive the effects of changing effective tax rates as being different for *high-growth* and *low-growth* firms, we interact all of the regressors in equation (1) above, with the indicator variables denoting whether firms are classified as *high-growth* (*H*) or *low-growth* (*L*).[3] These (*H* and *L*) indicator variables are also included independently

in the model to control for systematic differences across firm types, providing assurance that our classifications themselves do not induce the relationships of our tax measures to firm value. Equation (2), below, presents our test model.[4]

$$P_{j,t} = \beta_1 H + \beta_2 L + \beta_3 BV_{j,t} H + \beta_4 BV_{j,t} L + \beta_5 DIV_{j,t} H + \beta_6 DIV_{j,t} L + \beta_7 NI^*_{j,t} H + \beta_8 NI^*_{j,t} L + \beta_9 \Delta\tau^+_{j,t} H + \beta_{10} \Delta\tau^+_{j,t} L + \beta_{11} \Delta\tau^-_{j,t} H + \beta_{12} \Delta\tau^-_{j,t} L + \varepsilon_{j,t} \quad (2)$$

Where: $NI_{j.t}^*$ is current after-tax earnings per share excluding the tax change component ($NI_{j,t} - \Delta\tau_{j,t}$), $\beta_{1,..,12}$ are coefficients and all other variables are as previously defined.[5]

By regressing equation (2), we can address our research question of whether the associations of $\Delta\tau_{j,t}^{+}$ and $\Delta\tau_{j,t}^{-}$ with market price differ between *high-growth* and *low-growth* firms. Perhaps more importantly, however, we can identify those years (and those years associated with specific tax legislation) in which the coefficients on $\Delta\tau_{j,t}^{+}$ are significantly greater than the coefficients on $NI_{j.t}^*$, (i.e., where increases in effective tax rates are perceived as adversely affecting growth) and whether this difference holds for both *high-growth* and *low-growth* firms.[6] Likewise, we can identify those years (and those years associated with specific tax legislation) in which the coefficients on $\Delta\tau_{j,t}^{-}$ are significantly less than the coefficients on $NI_{j.t}^*$, (i.e., where decreases in effective tax rates are perceived as not stimulating long-term growth) and whether this difference holds for both *high-growth* and *low-growth* firms.

If the securities markets perceive governments as calibrating tax changes to changes in a firm's earnings, β_7 will not differ from β_9 or β_{11} and, β_8 will not differ from β_{10} or β_{12}. If, however, tax changes are seen as favoring *high* or *low-growth* firms, then the coefficients will not be equal. The next section discusses the empirical considerations in performing our tests.

EMPIRICAL ISSUES

This section is divided into two subsections. The first explains how we proxy for earnings growth. The second details our sample selection procedure.

Variable Definitions

The earnings-price (E/P) ratio is often characterized as forward-looking, an indicator of growth in future earnings. When E/P is low (a high P/E), the ratio is an indicator of high-expected earnings growth, while a high E/P is an indicator of low future growth.

The E/P ratio itself may not sufficiently encompass the many aspects of expected future contracting opportunities. Penman (1996) argues that the E/P ratio must be combined with the book-to-market (B/M) ratio, because B/M is an indicator of many factors including growth, leverage, risk, and distress. Thus, firms that have both a low E/P and a low B/M, are classified as *high-growth*, while those with both a high E/P and high B/M, are classified as *low-growth*.[7]

The E/P and B/M ratios are measured as of the beginning of each fiscal year (*t-1*). *H* (*L*) are dummy-indicator variables that are set to one when a firm is classified as *high-growth* (*low-growth*), and zero otherwise. We assign *H* to those observations ranked in the lower 25-percent of the distribution for both the B/M and the E/P ratios. We assign *L* to those observations ranked in the upper 25-percent of the distribution for both ratios. Firms not ranked consistently in the lower or upper 25-percent of the distribution for both ratios are deleted from the sample since we cannot clearly classify the growth as being either high or low.

The dependent variable, price ($P_{j,t}$), is set at the closing security price on the last trading day of the firm's fiscal year. $BV_{j,t}$ is net book value. $DIV_{j,t}$ is set equal to annual common dividends less capital contributions. $NI_{j,t}^{*}$ is after-tax net income exclusive of the tax change component, before extraordinary items, less preferred dividends. $\Delta\tau_{j,t}$ is the product of pretax earnings and the change in effective tax rate. The '+' and '–' designations on $\Delta\tau_{j,t}$ (equation 2) indicate whether the effective tax rate increased (+) or decreased (–) from the prior year. All variables are in per-share increments, standardized by end-of-year net book value. This approach follows from Sougiannis (1994) to control for heteroscedasticity and size.

The tax change component is equal to the change in the average effective tax rate from *t-1* to *t*. As suggested by Gupta and Newberry (1997), we use average rather than marginal effective rates, because the objective of this research is to evaluate perceptions of the distribution of tax burden across firms rather than to analyze the relation between specific tax incentives and specific firm actions.

We computed the effective tax rates in two ways to gauge the sensitivity of our results. Following Gupta and Newberry (1997), the first method sets the effective tax rate equal to: tax expense (exclusive of deferred taxes), divided by pre-tax earnings. This metric is used to evaluate the effect of changing tax rates on high and low growth firms in regards to book income. The second method sets the effective tax rate equal to: tax expense (exclusive of deferred taxes), divided by operating cash flows (Zimmerman, 1983). Our test metric is the change in this construct, multiplied by current net income. This method is used to control for size and systematic differences in accounting choice (Zimmerman 1983, Shevlin and Porter 1992).[8]

Sample Selection

Our sample consists of those firms listed on the *Compustat Primary, Secondary and Tertiary (PST) File* and *Research File* for the period 1980 to 1994. *Compustat* data is required for the following items: common dividends, common equity total, common shares outstanding, current assets, current liabilities, deferred tax expense, depreciation and amortization expense, factor to adjust for stock splits and stock dividends, income before extraordinary items, long-term debt, operating income, preferred dividends, price at year-end, total tax expense, and total assets.

Observations with negative book values or earnings are excluded from the sample. We exclude these observations because the book-to-market and earnings-price ratios are uninterpretable for negative values. Additionally, net book value serves as our regression deflator and defining a deflator as a negative value could create spurious results. Further, firms with negative book values

or negative earnings are likely to have larger bases of *net operating losses* (NOLs). These firms are unlikely to pay taxes and thus could skew our results.

Over our sample period, these selection criteria result in 58,588 firm-year observations of which 6,959 are classified as *high-growth* and 7,032 as *low-growth*. Additional data screens applied to those observations are depicted in Table 1. We exclude from the sample, those firms engaged in regulated businesses (utilities and financial institutions). This data screen reduced the *high-growth* and *low-growth* samples by 1,751 and 1,693 firm-year observations, respectively. Additional 1,011 and 820 firm-year observations were deleted from the *high-growth* and *low-growth* samples, respectively, due to missing *Compustat* data. Finally, we deleted 143 *high-growth* and 271 *low-growth* observations whose E/P or B/M ratio is ranked in the upper or lower one-percent of our sample distribution, to insure that our classification is not the result of transitory earnings. This yields a final sample of 3,954 *high-growth* and 4,248 *low-growth* observations.

TABLE 1: SAMPLE SELECTION

	Full-Sample	***High-Growth* Sub-sample**		***Low-Growth* Sub-sample**	
	observations	observations	% of full sample	observations	% of full sample
Firm-years with required *Compustat* data to classify as either *High-* or *Low-Growth*	58,388	6,959	12%	7,032	12%
Less: Firm-years from regulated industries: SIC codes 4300-4399, 4900-4999 and 6000-6999	12,867	1,751		1,693	
Subtotal	45,521	5,208	11%	5,339	12%
Less: Firm-years with missing Compustat data required to perform tests:	6,186	1,011		820	
Subtotal	39,335	4,197	11%	4,519	11%
Less: Firm-years in which the E/P or B/M ratio is ranked in the upper of lower one-percentile	1,417	143		271	
Final sample of firm-year observations	37,918	3,954	10%	4,248	11%

Notes: An observation is classified as *high- (low-) growth* if both the earnings-price ratio and the book-to-market ratio, as measured at the beginning of the fiscal year, are ranked in the bottom (top) 25-percent of the full sample.

Table 2 presents the distribution of sample firms by industry and *H-L* classification. The largest industry group is from the *Steel and Machinery* sector (with 33.67 percent of the total) followed by the *Other Services* sector (13.38 percent) and the *Retail* sector (9.52 percent).[9] The smallest sectors represented are *Agriculture* (0.38 percent) and *Miscellaneous* (0.41 percent).

TABLE 2: INDUSTRY DISTRIBUTION OF SAMPLE FIRM-YEARS

Group	**SIC Codes**	**Full-Sample**		***High-Growth* Sub-sample**		***Low-Growth* Sub-sample**	
		observations	% of sample	observations	% of sub-sample	observations	% of sub-sample
Agriculture	100-999	144	0.38	17	0.43	15	0.35
Mining	1000-1499	2,027	5.35	363	9.18	158	3.72
Construction	1500-1999	708	1.87	49	1.24	125	2.94
Food	2000-2199	1,426	3.76	68	1.72	178	4.19
Textile	2200-2399	1,088	2.87	26	0.66	254	5.98
Wood	2400-2599	898	2.37	32	0.81	140	3.30
Paper and Printing	2600-2799	1,779	4.69	75	1.90	170	4.00
Chemicals	2800-2999	2,482	6.55	267	6.75	162	3.81
Plastics, Glass & Cement	3000-3299	1,519	4.01	61	1.54	341	8.03
Steel & Machinery	3300-3999	12,768	33.67	1,427	36.09	1,280	30.13
Transportation	4000-4899	2,008	5.30	175	4.43	236	5.56
Wholesale	5000-5199	2,234	5.89	129	3.26	348	8.19
Retail	5200-5999	3,608	9.52	420	10.62	408	9.60
Other Services	7000-8999	5,074	13.38	828	20.94	418	9.84
Miscellaneous	9000-9999	155	0.41	17	0.43	15	0.35
Totals		37,918		3,954		4,248	

Notes: An observation is classified as *high- (low-) growth* if both the earnings-price ratio and the book-to-market ratio, as measured at the beginning of the fiscal year, are ranked in the bottom (top) 25-percent of the full sample.

EMPIRICAL RESULTS

Descriptive Statistics

Table 3 presents the descriptive statistics for our data. Panel A presents the pooled statistics across the full sample period as well as statistics on our tax variables for those years not associated with major tax legislation. Panel B presents the same statistics on our tax variables for those years associated with major tax legislation, specifically 1981-1982, 1986-1987 and 1990-1992. We include as a basis of comparison those firms classified as neither *high-growth* nor *low-growth* (firms not ranked consistently in the lower or upper 25-percent of the distribution for both the E/P and B/M ratios).

The descriptive statistics reveal that firms classified as *high-growth* are smaller in size (measured as the log of total assets) and have lower prices, earnings and book values per share than firms classified as *low-growth* (all significantly different at the one-percent level). Dividends per share, however, are larger for *high-growth* firms than *low-growth* firms (significantly different at the one-percent level). By definition, *high-growth* firms have smaller E/P and B/M ratios than *low-growth* firms.

For our tax variables, we find that effective tax rates rose on average 1.8 percent across our full sample of firms for the 1980 to 1994 time period. *low-growth* firms averaged a 3.0 percent increase and *high-growth* firms averaged a 5.1 percent increase (significantly different from the *low-growth* firms at the ten-percent level). In years without major tax legislation, the effective tax rates rose for all firms on average, but the average rate of growth is significantly larger (at the five-percent level) for *high-growth* firms (6.7 percent) than *low-growth* firms (3.6 percent). Even though effective tax rates rose faster over the period for *high-growth* firms than for *low-growth* firms, we find that effective tax rates for the two groups are not significantly different for either our full sample period or for those years without major tax legislation.

While the changes to *low-growth* firm's effective tax rates are significantly less than those of *high-growth* firms (the standard deviation of the changes is also smaller, although not statistically so), the effects of these changes are more dramatic for *low-growth* firms. The tax cost from tax increases ($Tax\ Effect^{+}$) and the tax savings from tax decreases ($Tax\ Effect^{-}$), for both the full sample period and for those years not associated with major tax legislation, are significantly greater (at the one-percent level) for *low-growth* firms than *high-growth* firms. This statistic may be indicative of *high-growth* firms attempting to minimize the overall effect of any tax change on their financial performance.

TABLE 3: DESCRIPTIVE STATISTICS

Panel A: Statistics Pooled Across All Sample Years and Non-Major Tax Legislation Years

	Full Sample					*High-Growth* Sub-sample					*Low-Growth* Sub-sample					Difference in Means
			Percentile					Percentile					Percentile			
	Mean	Sd Dev	25%	50%	75%	Mean	Sd Dev	25%	50%	75%	Mean	Sd Dev	25%	50%	75%	(*H* - *L*)
Ln (TAssets)	4.883	1.994	3.462	4.701	6.105	4.229	1.835	2.940	4.092	5.319	4.544	2.059	3.129	4.205	5.598	-0.315 ***
Price	13.834	19.243	4.250	8.750	16.313	15.151	23.253	4.250	8.882	16.500	12.168	19.962	3.000	6.750	13.618	2.983 ***
*Earnings**	0.941	1.659	0.137	0.487	1.090	0.660	1.508	0.070	0.284	0.683	1.149	1.968	0.150	0.553	1.311	-0.489 ***
Book Value	9.876	14.536	2.896	5.672	10.940	6.618	13.879	1.764	3.479	6.048	13.913	18.046	3.863	8.034	16.378	-7.295 ***
Dividends	-0.616	2.485	-0.317	0.011	0.346	-1.134	2.267	-1.195	-0.075	0.006	-0.451	2.651	-0.127	0.055	0.465	-0.682 ***
EP Ratio	0.085	0.057	0.047	0.073	0.110	0.034	0.018	0.021	0.033	0.044	0.167	0.066	0.115	0.154	0.206	-0.133 ***
BM Ratio	0.787	0.515	0.418	0.652	1.005	0.287	0.094	0.215	0.278	0.348	1.497	0.539	1.070	1.381	1.764	-1.210 ***
Tax Variables - Pooled: All Years (n=37,918 - 3,954 *High-Growth* and 4,248 *Low-Growth* Observations)																
$Rate_{i,t}$	0.272	0.213	0.000	0.346	0.423	0.385	0.143	0.327	0.386	0.449	0.394	0.137	0.338	0.397	0.455	-0.009
$\Delta Rate_{i,t}$	0.018	0.237	-0.035	0.000	0.053	0.051	0.285	-0.064	0.012	0.247	0.030	0.272	-0.078	0.005	0.150	0.021 *
Tax Effect^{+}	-0.077	0.152	-0.067	-0.017	-0.004	-0.081	0.301	-0.052	-0.014	-0.004	-0.128	0.401	-0.093	-0.021	-0.004	0.047 ***
Tax Effect^{-}	0.165	0.288	0.011	0.045	0.176	0.189	0.598	0.010	0.040	0.161	0.278	0.744	0.016	0.067	0.240	-0.089 ***
Tax Variables - Pooled: Non-Major Tax Legislation Years (n=20,800 - 2,172 *High-Growth* and 2,279 *Low-Growth* Observations)																
$Rate_{i,t}$	0.267	0.214	0.000	0.343	0.420	0.387	0.147	0.327	0.387	0.452	0.391	0.141	0.337	0.394	0.455	-0.004
$\Delta Rate_{i,t}$	0.023	0.236	-0.030	0.000	0.055	0.067	0.294	-0.060	0.017	0.306	0.036	0.267	-0.069	0.006	0.152	0.031 **
Tax Effect^{+}	-0.082	0.159	-0.073	-0.019	-0.005	-0.075	0.216	-0.055	-0.016	-0.004	-0.140	0.411	-0.094	-0.022	-0.004	0.065 ***
Tax Effect^{-}	0.171	0.290	0.012	0.049	0.189	0.197	0.625	0.011	0.045	0.172	0.306	0.875	0.018	0.075	0.245	-0.109 ***

TABLE 3: CONTINUED

Panel B: Statistics Partitioned by Major Tax Legislation

	Full Sample					*High-Growth* Sub-sample					*Low-Growth* Sub-sample					Difference in Means
			Percentile					Percentile					Percentile			
	Mean	Sd Dev	25%	50%	75%	Mean	Sd Dev	25%	50%	75%	Mean	Sd Dev	25%	50%	75%	*(H - L)*
Tax Variables - Pooled: 1981-1982 (n=5,415 - 772 *High-Growth* and 702 *Low-Growth* Observations)																
$Rate_{i,t}$	0.302	0.217	0.000	0.383	0.453	0.380	0.138	0.319	0.400	0.455	0.418	0.134	0.361	0.426	0.463	-0.038 **
$\Delta Rate_{i,t}$	0.036	0.261	-0.038	0.000	0.103	0.041	0.292	-0.081	0.011	0.244	0.070	0.281	-0.057	0.011	0.275	-0.030 **
$Tax\ Effect^{+}$	-0.093	0.173	-0.083	-0.022	-0.005	-0.133	0.510	-0.068	-0.022	-0.005	-0.128	0.359	-0.111	-0.028	-0.005	-0.004
$Tax\ Effect^{-}$	0.244	0.371	0.016	0.075	0.292	0.263	0.753	0.012	0.046	0.204	0.354	0.669	0.026	0.123	0.407	-0.091 **
Tax Variables - Pooled: 1986-1987 (n=4,822 - 427 *High-Growth* and 526 *Low-Growth* Observations)																
$Rate_{i,t}$	0.284	0.222	0.000	0.369	0.446	0.414	0.144	0.356	0.418	0.468	0.415	0.126	0.364	0.418	0.466	-0.001
$\Delta Rate_{i,t}$	-0.002	0.239	-0.057	0.000	0.044	0.014	0.287	-0.102	-0.001	0.167	0.005	0.285	-0.090	0.003	0.113	0.009
$Tax\ Effect^{+}$	-0.074	0.140	-0.070	-0.021	-0.005	-0.051	0.197	-0.039	-0.011	-0.004	-0.154	0.546	-0.116	-0.029	-0.005	0.103 **
$Tax\ Effect^{-}$	0.136	0.246	0.011	0.041	0.138	0.120	0.285	0.010	0.027	0.126	0.243	0.558	0.016	0.058	0.213	-0.123 ***
Tax Variables - Pooled: 1990-1992 (n=6,881 - 613 *High-Growth* and 741 *Low-Growth* Observations)																
$Rate_{i,t}$	0.253	0.199	0.000	0.329	0.383	0.366	0.134	0.326	0.363	0.399	0.361	0.127	0.310	0.369	0.410	0.005
$\Delta Rate_{i,t}$	-0.001	0.236	-0.032	0.000	0.032	0.037	0.241	-0.032	0.006	0.113	-0.010	0.261	-0.100	-0.004	0.087	0.047 *
$Tax\ Effect^{+}$	-0.051	0.116	-0.038	-0.010	-0.004	-0.055	0.192	-0.028	-0.007	-0.004	-0.075	0.260	-0.049	-0.011	-0.004	0.020
$Tax\ Effect^{-}$	0.097	0.197	0.008	0.026	0.097	0.110	0.351	0.007	0.019	0.097	0.124	0.358	0.008	0.037	0.105	-0.014

TABLE 3: CONTINUED (NOTES)

An observation is classified as *high-* (*low-*) *growth* if both the earnings-price ratio and the book-to-market ratio, bothas measured at the beginning of the fiscal year, are ranked in the bottom (top) 25-percent of the full sample.

The variables are defined follows:

Ln(*TAssets*) = Log of total assets;
Price = Security price per share at year end;
*Earnings** = Net income (exclusive of tax expense) before extraordinary items less preferred dividends, expressed per share;
Book Value = Total common equity, expressed per share;
Dividends = Annual common dividends less capital contributions, expressed per share;
EP Ratio = Earnings per share before extraordinary items less preferred dividends divided by beginning-of-year security price per share.
BM Ratio = Book value per share divided by beginning-of-year security price per share.
Rate = The effective tax rate calculated as total tax expense less deferred tax expense, divided by either pretax income;

$\Delta Rate$ = Change in $Rate_{j,t}$

Tax Effect^{+} = Pretax earnings multiplied by the change in the effective tax rate (t-1 to t), expressed per share, when the change in the effective tax rate increases;
Tax Effect^{-} = Pretax earnings multiplied by the change in the effective tax rate (t-1 to t), expressed per share, when the change in the effective tax rate decreases.

In those sample years that surround major tax legislation, we find for the full sample of firms that effective tax rates rose only in those years surrounding the 1981 Tax Act. In those years surrounding the 1986 Tax Act and the tax acts of the early 1990s, no change in effective tax rates was found (on average) for the full sample of firms. While the 1981 Tax Act increased the effective tax rates of both high- and *low-growth* firms, effective tax rates rose significantly more (at the five-percent level) for *low-growth* firms than for *high-growth* firms. In contrast, the average change in effective rates was close to zero for both high- and *low-growth* firms surrounding the 1986 Tax Act. The trend reversed in the period surrounding the acts of the early 1990s, in that effective tax rates rose significantly more for *high-growth* firms (at the ten-percent level) than for *low-growth* firms.

In contrast to those years without major tax legislation, where increases in effective tax rates adversely affected *low-growth* firms significantly more than *high-growth* firms, increases in effective tax rates (*Tax Effect* $^{+}$) in years surrounding major tax legislation were more dramatic for *low-growth* firms only in the years surrounding the 1986 Tax Act. In those years, tax rate increases resulted in earnings-per-share decreasing 15.4 cents for *low-growth* firms and 5.1 cents for *high-growth* firms (significantly different at the five-percent level). The lack of results for those years surrounding the 1981 Tax Act and the tax acts of the early 1990s suggest that that these acts may have been perceived as shifting a greater portion of the tax burden to *high-growth* firms through higher effective tax rates.

For reductions in effective tax rates (*Tax Effect* $^-$), we find that both the 1981 and 1986 Tax Acts favored *low-growth* firms, but the acts of the early 1990s appear not to favor either group. For 1981-1982, we find that the tax savings resulted in earnings-per-share decreasing 35.4 cents for *low-growth* firms and 26.3 cents for *high-growth* firms (significantly different at a five-percent level). For 1986-1987, the tax savings resulted in earnings-per-share decreasing 24.3 cents for *low-growth* firms and 12.0 cents for *high-growth* firms (significantly different at a one-percent level). Note, however, that earnings-per-share for *low-growth* firms is almost double that of *high-growth* firms, indicating that when the greater nominal tax savings afforded low growth firms is considered proportional to earnings, no difference exists in the tax reductions between *low-growth* and *high-growth* firms resulting from the 1981 and 1986 Tax Acts.

Regression Results

Panel A of table 4 presents the results from regressing equation (2). Consistent with the predictions from Ohlson (1995), the coefficients on $BV_{j,t}$ and $NI_{j,t}^{*}$ are positive and the coefficients on $DIV_{j,t}$ are negative (all significant at a one-percent level for the pooled regression). Not surprisingly (based on how we define high and low growth), the coefficients on $BV_{j,t}$ and $NI_{j,t}^{*}$ are significantly larger for the *high-growth* firms than for *low-growth* firms. The coefficients on $DIV_{j,t}$ are not significantly different across *high-* and *low-growth* firms in any of the regressions.

For the primary variables of interest, the coefficients on $\Delta\tau_{j,t}^{+}H$, $\Delta\tau_{j,t}^{+}L$, $\Delta\tau_{j,t}^{-}H$, and $\Delta\tau_{j,t}^{-}L$, are all positive and significant (at the one-percent level) when we pool over the entire sample period and when we regress those years not surrounding major tax legislation. In the pooled regression, the coefficients on $\Delta\tau_{j,t}^{+}$ and $\Delta\tau_{j,t}^{-}$ are significantly greater (at the one-percent and ten-percent level, for differences in the coefficients on $\Delta\tau_{j,t}^{+}$ and $\Delta\tau_{j,t}^{-}$ respectively) for *high-growth* firms than for *low-growth* firms. The coefficients on $\Delta\tau_{j,t}^{+}$ and $\Delta\tau_{j,t}^{-}$ are not significantly different for *high-* and *low-growth* firms in the regression that includes only those years without major tax litigation. This suggests that the difference noted in the pooled regression is driven by differences that exist in those years surrounding major tax legislation.

For the years surrounding major tax legislation (1981-1982, 1986-1987 and 1990-1992), we find that the coefficients on $\Delta\tau_{j,t}^{+}$ are positive and significant (at the one-percent level) only for *high-growth* firms. The coefficients on $\Delta\tau_{j,t}^{+}$ for *low-growth* firms are not significant in any of those years surrounding major tax legislation and are significantly smaller than the coefficients for *high-growth* firms for 1986-1987 and 1990-1992 (at the ten-percent and one-percent levels, respectively). These findings provide evidence that the market perceived all three legislative acts (or series of acts) as placing a greater tax burden on *high-growth* firms, and that the burden was a shifted from *low-growth* firms to *high-growth* firms by the *1986 Tax Act* and the acts of the early 1990s.

TABLE 4: REGRESSION RESULTS WITH TAX CHANGES MEASURED AS A PERCENTAGE OF PRETAX EARNINGS

$$P_{j,t} = \beta_1 H + \beta_2 L + \beta_3 BV_{j,t} H + \beta_4 BV_{j,t} L + \beta_5 DIV_{j,t} H + \beta_6 DIV_{j,t} L + \beta_7 NI^*_{j,t} H$$
$$+ \beta_8 NI^*_{j,t} L + \beta_9 \Delta\tau^+_{j,t} H + \beta_{10} \Delta\tau^+_{j,t} L + \beta_{11} \Delta\tau^-_{j,t} H + \beta_{12} \Delta\tau^-_{j,t} L + \varepsilon_{j,t}$$

Panel A: Regression Coefficients and Differences between Coefficients on Variables Interacted with Growth Indicators (*H* or *L*)

Obs.	Adj. R^2	H	L	$BV_{j,t}H$	$BV_{j,t}L$	$DIV_{j,t}H$	$DIV_{j,t}L$	$NI^*_{j,t}H$	$NI^*_{j,t}L$	$\Delta\tau^+_{j,t}H$	$\Delta\tau^+_{j,t}L$	$\Delta\tau^-_{j,t}H$	$\Delta\tau^-_{j,t}L$
		?	?	+	+	−	−	+	+	+	+	+	+
Regressions - Pooled: All Years													
8,202	**0.6189**	**0.052**	**0.128**	**2.164**	**0.628**	**-0.078**	**-0.065**	**4.756**	**2.742**	**7.773**	**3.789**	**2.893**	**1.574**
		3.09	4.63	81.26	27.52	-4.81	-3.04	26.79	12.72	9.27	3.18	6.54	2.59
		(0.0020)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0024)	(0.0001)	(0.0001)	(0.0001)	(0.0015)	(0.0001)	(0.0096)
Differences in β_i		**-0.077**		**1.536**		**-0.013**		**2.014**		**3.984**		**1.319**	
		-2.37		43.78		-0.49		7.21		2.73		1.76	
		(0.0177)		(0.0001)		(0.6271)		(0.0001)		(0.0063)		(0.0793)	
Regressions - Pooled: Non-Major Tax Legislation Years													
4,421	**0.6266**	**0.044**	**0.142**	**2.222**	**0.671**	**-0.089**	**-0.045**	**4.687**	**2.639**	**3.653**	**3.600**	**3.200**	**1.832**
		1.96	3.72	60.55	20.90	-3.84	-1.52	19.58	8.86	2.81	2.26	5.93	2.27
		(0.0502)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.1283)	(0.0001)	(0.0001)	(0.0050)	(0.0238)	(0.0001)	(0.0235)
Differences in β_i		**-0.098**		**1.551**		**-0.044**		**2.048**		**0.053**		**1.368**	
		-2.21		31.81		-1.17		5.36		0.03		1.41	
		(0.0270)		(0.0001)		(0.2408)		(0.0001)		(0.9795)		(0.1593)	

TABLE 4: CONTINUED

Panel A: Continued

Obs.	Adj. R^2	H	L	$BV_{j,t}H$	$BV_{j,t}L$	$DIV_{j,t}H$	$DIV_{j,t}L$	$NI^{*}_{j,t}H$	$NI^{*}_{j,t}L$	$\Delta\tau^{+}_{j,t}H$	$\Delta\tau^{+}_{j,t}L$	$\Delta\tau^{-}_{j,t}H$	$\Delta\tau^{-}_{j,t}L$
		?	?	+	+	−	−	+	+	+	+	+	+
Regressions - Pooled: 1981-1982													
1,474	**0.6220**	**0.113**	**0.105**	**1.746**	**0.444**	**-0.195**	**-0.210**	**4.635**	**2.535**	**7.512**	**3.931**	**4.658**	**2.008**
		3.42	1.47	30.85	7.83	-5.09	-3.16	13.23	4.52	4.79	1.38	4.80	1.70
		(0.0006)	(0.1408)	(0.0001)	(0.0001)	(0.0001)	(0.0016)	(0.0001)	(0.0001)	(0.0001)	(0.1689)	(0.0001)	(0.0887)
Differences in β_i		**0.008**		**1.302**		**0.014**		**2.100**		**3.581**		**2.650**	
		0.11		16.26		0.19		3.18		1.10		1.74	
		(0.9160)		(0.0001)		(0.8501)		(0.0015)		(0.2720)		(0.0830)	
Regressions - Pooled: 1986-1987													
953	**0.5979**	**0.165**	**0.117**	**2.273**	**0.730**	**0.037**	**-0.022**	**4.397**	**2.509**	**10.296**	**2.572**	**1.222**	**2.712**
		2.95	1.46	29.50	12.01	0.96	-0.34	7.78	4.91	3.73	0.70	0.62	1.52
		(0.0032)	(0.1442)	(0.0001)	(0.0001)	(0.3360)	(0.7319)	(0.0001)	(0.0001)	(0.0002)	(0.4859)	(0.5362)	(0.1294)
Differences in β_i		**0.048**		**1.543**		**0.059**		**1.889**		**7.724**		**-1.490**	
		0.50		15.71		0.79		2.48		1.68		-0.56	
		(0.6206)		(0.0001)		(0.4306)		(0.0134)		(0.0942)		(0.5759)	
Regressions - Pooled: 1990-1992													
1,354	**0.6768**	**-0.029**	**0.095**	**2.176**	**0.606**	**-0.077**	**-0.058**	**6.861**	**3.338**	**14.855**	**4.785**	**1.902**	**1.850**
		-0.68	1.66	32.39	12.27	-1.95	-1.45	13.86	6.43	8.53	1.72	1.28	0.83
		(0.4978)	(0.0965)	(0.0001)	(0.0001)	(0.0509)	(0.1469)	(0.0001)	(0.0001)	(0.0001)	(0.0863)	(0.2019)	(0.4079)
Differences in β_i		**-0.125**		**1.570**		**-0.019**		**3.523**		**10.069**		**0.052**	
		-1.74		18.82		-0.33		4.91		3.06		0.02	
		(0.0830)		(0.0001)		(0.7404)		(0.0001)		(0.0022)		(0.9847)	

TABLE 4: CONTINUED

Panel B: Differences between the Coefficients on Net Income and on the Tax Change Components

$\Delta\tau^{+}_{j,t}H - NI^{*}_{j,t}H$	$\Delta\tau^{+}_{j,t}L - NI^{*}_{j,t}L$	$\Delta\tau^{-}_{j,t}H - NI^{*}_{j,t}H$	$\Delta\tau^{-}_{j,t}L - NI^{*}_{j,t}L$
+ or −	+ or −	+ or −	+ or −
Regressions - Pooled: All Years			
3.017	**1.047**	**-1.863**	**-1.168**
3.88	0.93	-3.94	-1.83
(0.0001)	(0.3515)	(0.0001)	(0.0672)
Regressions - Pooled: Non-Major Tax Legislation Years			
-1.034	**0.962**	**-1.487**	**-0.807**
-0.84	0.64	-2.56	-0.95
(0.4014)	(0.5195)	(0.0105)	(0.3403)
Regressions - Pooled: 1981-1982			
2.877	**1.396**	**0.024**	**-0.526**
1.98	0.52	0.02	-0.41
(0.0480)	(0.6067)	(0.9818)	(0.6810)
Regressions - Pooled: 1986-1987			
5.899	**0.064**	**-3.176**	**0.204**
2.34	0.02	-1.56	0.11
(0.0193)	(0.9860)	(0.1197)	(0.9121)
Regressions - Pooled: 1990-1992			
7.994	**1.447**	**-4.959**	**-1.488**
5.30	0.56	-3.20	-0.65
(0.0001)	(0.5737)	(0.0014)	(0.5170)

TABLE 4: CONTINUED (NOTES)

Each cell presents the regression coefficient, the White's (1980) adjusted *t*-statistic and *p*-value.

An observation is classified as *high-* (*low-*) *growth* if both the earnings-price ratio and the book-to-market ratio, as measured at the beginning of the fiscal year, are ranked in the bottom (top) 25-percent of the full sample.

The variables are defined follows:

$P_{j,t}$ = Security price at year end, deflated by end-of-year net book value;
$BV_{j,t}$ = End-of-year net book value of equity, deflated by end-of-year net book value (This variable is regressed with a value of one. The intercept, therefore, is regressed as one over $BV_{j,t}$ since all other variables are deflated by end-of-year net book value.);
$NI_{j,t}^{*}$ = Net income (inclusive of tax expense) before extraordinary items less preferred dividends, deflated by end-of-year net book value;
$DIV_{j,t}$ = Annual common dividends less capital contributions, deflated by end-of-year net book value;
$\Delta\tau_{j,t}^{+}$ = Pretax earnings multiplied by the change in the effective tax rate (t-1 to t), deflated by end-of-year net book value, when the change in the effective tax rate increases, otherwise zero;
$\Delta\tau_{j,t}^{-}$ = Pretax earnings multiplied by the change in the effective tax rate (t-1 to t), deflated by end-of-year net book value, when the change in the effective tax rate decreases, otherwise zero;
H = Dummy indicator variable set to one, if a firm is classified as *high-growth*, otherwise zero;
L = Dummy indicator variable set to one, if a firm is classified as *low-growth*, otherwise zero;
β_i = Regression coefficients, $i \in [1,2,3,4,5,6,7,8,9,10,11,12]$
$\varepsilon_{j,t}$ = Error term.

For tax decreases associated with those years surrounding major tax legislation, we find $\Delta\tau_{j,t}^{-}$ to be significant only for the years surrounding the *1981 Tax Act*. We find that the coefficients on $\Delta\tau_{j,t}^{+}H$ and $\Delta\tau_{j,t}^{+}L$ are both significantly different from zero (at the one-percent and ten-percent levels, respectively) for the 1981-1982 regression. The significant results for *The Economic Recovery Act of 1981* are consistent with the legislative intent of bolstering the economy. The boost we document, however, is significantly greater for *high-growth* firms than for *low-growth* firms (at the ten-percent level). The coefficients on $\Delta\tau_{j,t}^{-}$ are not, however, significantly different from zero for either 1986-1987 or 1990-1992, suggesting that the acts passed in those years were perceived as providing an overall economic stimulus.

Panel B of table 4 presents the results of testing for differences between the coefficients on adjusted net income and on the tax change component(s). The pooled results over the full sample period suggest that changes in effective tax rates are perceived as increasing at a rate greater than the rate of growth for *high-growth* firms. The coeffieint on $\Delta\tau_{j,t}^{+}$ is significantly greater than the coefficient on $NI_{j,t}^{*}$ for the pooled regression (significant at the one-percent level). When we regress only those years without major tax legislation, however, we find no difference in the coefficients on $\Delta\tau_{j,t}^{+}H$ and $NI_{j,t}^{*}$, indicating that the pooled regression results are driven by those years with major tax legislation. Indeed, we find that for *high-growth* firms, the coefficients on $\Delta\tau_{j,t}^{+}H$ are

significantly greater than the coefficients on $NI_{j,t}^{*}$ for 1981-1982, 1986-1987 and 1990-1992 (significant at the ten-percent, five-percent and one-percent levels, respectively). These findings suggest that the major tax acts were *all* perceived as having increased the tax burden of *high-growth* firms sufficiently high as to hinder earnings growth.

When effective tax rates decrease, the coefficient on $\Delta\tau_{j,t}^{-}$ will be less than that on $NI_{j,t}^{*}$, if the tax reduction is not perceived as stimulating earnings growth beyond the level at which the firm is already growing (or the level at which the firm is sustaining its current level of earnings). For *high-growth* firms, the coefficients on $\Delta\tau_{j,t}^{-}$ are significantly less than the coefficients on $NI_{j,t}^{*}$ for the pooled regression, the non-major tax year regression and the 1990-1992 regression (significant at the one-, five- and one-percent levels, respectively). Since it was the legislative intent of the early 1990s acts to generate additional revenues, rather than provide economic incentives (generally), it is not surprising that those factors that reduced effective tax rates (such as extending research and development credits) did not stimulate sustainable earnings growth.

For the 1981-1982 and 1986-1987 regressions, we find that the coefficients on $\Delta\tau_{j,t}^{-}H$ are not significantly different than the coefficients on $NI_{j,t}^{*}$. This provides evidence that the economic incentives in *The Economic Recovery Tax Act of 1981* that were designed to stimulate the economy (such as the introduction of the *accelerated cost recovery system* for depreciation) were perceived to have stimulated sustainable earnings growth. Likewise, the lower statutory tax rates created by the *Tax Reform Act of 1986* were also seen as stimulating sustainable growth.

For *low-growth* firms, we find that the coefficients on both $\Delta\tau_{j,t}^{+}$ and $\Delta\tau_{j,t}^{-}$ are not significantly different from the coefficients on earnings in either those years with or those years without major tax legislation.[10] This suggests that tax rate changes for *low-growth* firms are consistently proportional to earnings.

While several reasons exist for why changes in effective tax rates are proportional to earnings for *low-growth* firms but not for *high-growth* firms, one plausible explanation could be that governments can more easily anticipate the reactions of *low-growth* firms to changes in effective tax rates. As noted above, these *low-growth* firms are not afforded the flexibility to alter their contracting environment, as are *high-growth* firms. Governments, therefore, are more likely to miscalibrate tax changes for *high-growth* firms than for *low-growth* firms.

CONCLUSIONS

In this study, we test whether the market perceives the relevance of changes in effective tax rates differently across high- and *low-growth* firms. Our results provide evidence that in years surrounding major tax legislation, increases in effective tax rates are perceived as taxing *high-growth* firms to the extent that their expected rate of growth will suffer. We find no evidence, however, that increases in effective tax rates for *low-growth* firms are perceived as hindering growth (or curtailing these firms' abilities to sustain their current level of profitability). These findings suggest that the government properly calibrates tax increases for *low-growth* firms, but may overestimate the degree to which *high-growth* firms will alter their contracting environment to avoid higher taxation.

We also find evidence that the tax reductions associated with The Economic Recovery Tax Act of 1981 and Tax Reform Act of 1986 were perceived as stimulating earnings growth for both high- and *low-growth* firms. The tax reductions associated with the tax acts of the early 1990s (such as the granting of tax credits for research and development expenditures), however, do not seem to be perceived as providing sustainable earnings growth to *high-growth* firms, but do seem to be perceived as providing earnings growth for *low-growth* firms. The acts of the early 1990s may be an example of tax relief that while targeted for a specific class of taxpayer (high growth, in this case, since it is this class of taxpayer that would most likely stimulate growth), is exploited by other non-targeted classes.

From an investment perspective, our study provides evidence on how changes in a firm's effective tax rate affect firm value, and evidence that this effect differs across *high-growth* and *low-growth* firms when the changes are associated with major tax law revisions. From a policy perspective, our study provides evidence of how some of the targets of corporate income taxation are perceived as being able to elude or offset the negative consequences of tax increases, while some of the targets of tax incentives are perceived as being unable to benefit from those inducements. The outgrowth of this phenomenon is a game of cat-and-mouse, where legislatures must continually revise and refine the corporate tax statutes in order to uncover alternative sources of revenues/stimulus - all the while cognizant of the political liabilities associated with actions that would impede earnings growth or place an inequitable burden on weaker or marginal firms. In light of our findings, Congress would do well to identify those elements of prior tax law revisions that did, and did not, generate expectations contrary to the revision's intent, and to investigate the distribution of corporate tax burden - conditional on contracting opportunities.

One possible limitation of our research design should be noted. Our proxy for that component of earnings that is a result of changing effective tax rates is subject to measurement error, due to transitory earnings. We limit the possible measurement error by truncating the upper and lower one-percent of our sample from our tests, as well as by designating firms as high- (low-) growth only when a firm ranks in the lower (upper) quartile of both the earnings-price and book-to-market ratios (the most common proxies for growth). If our tests were influenced by the existence of transitory earnings, we would have documented results randomly across our sample period. Our findings, however, are limited to those years surrounding major tax legislation, providing assurance that our tests are not unduly influenced by transitory earnings.

ENDNOTES

[1] One exception is Collins and Shackelford's (1992) finding that firms that shifted from debt to preferred stock in response to the statutory changes in the 1986 Tax Reform Act generated tax savings beyond the initial phase in period.

[2] The form of the model presented in equation (1) is equivalent to the model presented in Sougiannis (1994) in his study of research and development costs. This form of the model allows us to test the tax change component in relation to reported earnings rather than in relation to abnormal earnings, as was the case in Sougiannis' study. Many other studies adopt similar approaches to valuing an earnings component, such as Barth, Beaver and Landsman (1998).

[3] We employ two (H and L) dummy indicator variables rather than a single dummy indicator variable so that we can test a4 - a3 separately for H and L firms. Effectively, we are running two separate regressions for H and L firms simultaneously. Interacting all variables with H and L controls for possible systematic differences between H and L firms other than the tax term: Dtj,t.

[4] Feltham and Ohlson (1995, 1996) extend Ohlson (1995) to consider how accounting conservatism effects valuation. We do not directly address this issue, but the partitioning of all the variables in the regression allows us to control for systematic differences in how accounting conservatism may alter how accounting earnings and other components map into firm value.

[5] We deflate all variables in equation (2) by net book value, to control for heteroskedasticity and size.

[6] By regressing equation (2) with two dummy-indicator variables (H and L), we are able to directly test whether significant differences exist between the coefficients on earnings and the tax change components. These differences are not directly revealed when only one dummy-indicator variable is regressed (H or L). These two approaches are, however, econometrically identical. Both types of regressions are presented in Table 4 so as to present both differences across variables (the two dummy-indicator variable approach) and differences across firm type (the one dummy-indicator variable approach).

[7] The requirement of our sample firms being ranked as high (low) for both the E/P and B/M ratios minimizes the possibility of misclassification due to transitory earnings. This requirement also minimizes the possibility that firms would be ranked as low (high) in one year and high (low) in another, without a steady change in that firm's growth opportunities over an extended period of time. To further assure that transitory earnings are not inducing a misclassification of a firm's growth rate, we delete from our sample those firms whose E/P or B/M ratio is ranked in the upper or lower one-percent of our sample distribution.

[8] Since the results are substantially identical for both measures, we present only those results in which the Gupta and Newberry (1997) method was employed. We also follow Gupta and Newberry (1997) in addressing those firms with negative effective tax rates (tax refunds), or those firms that pay taxes but have no book income. We set the effective tax rate equal to zero if tax expense is less than zero, or equal to one if the tax rate is more than one (i.e., more than 100 percent of income).

[9] Because over 50-percent of our sample is from the Steel and Machinery, Retail and Other Services industries, we reran our tests by including control variables for these industries. The results (not reported) are substantially unchanged from those reported in the tables.

[10] The pooled regression across all years shows a difference between $\Delta \tau^{-}_{j,t} H$ and $NI^{*}_{j,t}$ (at the ten-percent level of significance). The contradictory results of the separate regressions for those years with and without major tax legislation suggest the pooled regression result may be misleading.

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