Corporate Income Tax As a Real Option on Corporate Earnings

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Abstract

The conventional wisdom has been that lowering the corporate tax will enhance economic growth and hence create more jobs. If merely lowering the tax rate can accomplish this, then elimination of corporate tax should create an economic boom. However, despite this possibility, the United States has yet to make a shift to Value Added (VAT) or consumption based tax system. Moreover, one of the most popular criticisms of the corporate form of business organization is the "double taxation" of dividends. It is argued that corporate income is taxed once at the corporate level and second at the shareholder level as dividend income tax. Even though this concept assumes that taxes follow the money rather than the economic unit, policy makers have tended to advocate reduction in or elimination of the tax on individual dividend income. In addition, elimination of corporate tax according to the stance of policy makers and lobbyist should spur economic growth and avoid the perceived double taxation of dividends. Yet, no pro-business entities have proposed the elimination of corporate taxes. The objective of this paper is to demonstrate that among other reasons, the corporate tax system provides an option contract on the earnings of the corporation. The corporation is the seller of the contract, while the government is the holder of the call option contract. If the corporate sales exceed the break-even sales, the government and the shareholders split the profit based on the firm's corporate tax rate. If on the other hand the sales volume is below the break-even point, all taxes collected on sales are used to offset the shortfall. Thus the existence of corporate tax in and of itself has value to the corporation and hence the shareholders.

Keywords: Options, Corporate tax, Consumption tax, Value-added tax, Public goods

1. Introduction

The debate on the level of corporate tax and its effect on entrepreneurship and economic growth are age-old. Over the years most of this debate has centered around the need to pay for public goods versus the negative impact of taxes on investment decisions. In a market economy, the government must pay for the public goods it provides by levying taxes on its citizens. The corporation, as a legal economic unit, must also share this burden in as much as it consumes public goods. In the United States, the cost of public goods and government is allocated based on the income of its citizens, hence the corporate income tax burden on corporations. Under the current tax system, corporations face a maximum average tax rate of 35%, with the marginal tax rate going as high as 39% for the $100,001 to $335,000 income tax bracket. According to the *Internal Revenue Service Statistics of Income- 2005*, corporations paid an average tax rate of 25.98% on their income. As a percent of gross receipts, the corporate income tax represented only 1.374%.

Garner (2005) calculated the percent of federal receipts from corporate income tax to be 10.1% in 2004. This number contrasts with 82% from combined individual income taxes and social insurance and retirement receipts. Based on the attention given to corporate tax issues, one would expect its share of federal receipts to be much higher. This statistic seems to make corporate tax trivial. The relevant statistic is not the taxes actually paid by the corporations, but the taxes collected from consumers by the corporations. Corporations pay for all their expenses from the revenue generated from operations. Taxes are a business expense, hence deductible from revenues. Good capital budgeting practice requires that all incremental cash flows associated with a project be included in the capital budgeting decision process. The relevant tax rate for this process is the marginal tax rate. The difference between the projected taxes and actual taxes paid on the project is the source of the benefit and the reason for the resistance to the elimination of the corporate tax system.

Corporate taxes have a way of adversely influencing investment decisions. The concept of accelerated depreciation groups assets into depreciable lives that are independent of the economic life of the asset. This practice tends to

arbitrarily penalize investments in assets grouped into longer lives while rewarding shorter-lived assets whose shorter depreciable lives increases the present value of a project's expected cash flow and hence its acceptability.

The corporate tax system is largely responsible for the existence of Tax Havens. Gravelle (2009) contend that the United States government loses both individual and corporate income tax revenue from the shifting of profits and income into low-tax countries (tax havens). He estimates that costs up to $60 billion in lost revenues. Bellak and Leibrecht (2009) studied the effect of low corporate income tax rates on Central- and East European countries on foreign direct investments (FDI). They conclude that there is an inverse relationship between corporate tax burden and FDI. The show that a one-percentage point decrease in the tax rates will increase FDI inflows be 1.4%.

Another distortive effect of corporate taxes, resides in the fact that taxes are a cost of doing business. The existence of corporate taxes affects the cash flow available to suppliers of capital. Since investment projects are evaluated on an after tax basis, the level of operating income needed to achieve profitability is elevated. Thus, the corporate income tax system reduces the pool of available investments.

The distortive effects of corporate taxes are perhaps most salient in capital structure decisions. Interest payment to creditors is considered a business expense for tax purposes, whereas dividend payment to shareholders is not. It is because of this disparaging treatment of equity that led Modigliani and Miller (1958) to conclude that in the absence of risk and bankruptcy costs, the optimal capital structure would be 100% debt. The tax shield from interest payment reduces the cost of capital and hence increases the value of the firm. In response to this preferential treatment of debt, opponents have advocated eliminating the personal income tax on dividends, describing it as double taxation.

Hines and Summers (2009) studied the effect of corporate tax on globalization. They conclude that the greater international mobility of economic activity, and associated responsiveness of the tax base to tax rates, increase the economic distortions created by taxation. They find small open economies rely much less heavily on corporate and personal income taxes, but more on consumption-type taxes, including taxes on sales of goods and services and tariffs. Hines and Summers argue that the United States government faces both greater expenditure demands and very limited ability to finance these expenditures by greater mobility of the tax base and competition from other parts of the world for mobile economic activity. Despite the benefits of reduction/elimination of the corporate tax system, the U. S. government still does not favor implementation of some form of consumption-based tax.

The need to pay for the cost of public goods is primary argument for the existence of corporate tax. Public goods, by definition, possess characteristics that make its provision by the private sector inefficient. Filoso (2010) argues that this view assumes that entrepreneurs are unable to overcome the difficulty of non-excludability or non-rivalrous consumption in way that they can earn a profit. According to Filoso, the treatment of the neutrality of corporate income tax is a consequence on the practice in neoclassical economics to build economic models based on peculiar circumstances and then improperly extending their implications to contexts in which the same circumstances may not hold.

Filoso (2010) observes that in the field of Austrian economics, the philosophy of human actions forms the foundation of all theories. Human actions rely on subjective value, imperfect knowledge, and genuine uncertainty. Under the basic premise of praxeology, Filoso argues that any coerced trade between human beings, as in the case of taxes and public goods, must result in a loss to at least one participant, in this case the tax consumer. He concludes that "every tax worsens consumers' satisfaction". In this same light, he argues, "there is no independence between production and distribution, viz; there cannot be such a thing as a neutral tax". The belief that the incidence of taxes will cause the seller to raise prices as taxes push up costs is faulty and violates the concept of marginal utility because if sellers can raise prices before tax, they will not wait for taxes before doing so. Filoso contends that the short-run increase in price is a result of decrease in demand as marginal firms go out of business. The long-run effect on the other hand is a decrease in price as the demand for the input factors of production declines because of the fewer firms in the industry. Moreover, the argument on the effect of taxes on economic growth ignores the asymmetric treat of losses relative to provides. Profits (a result of speculation) are taxed, whereas the tax deductibility of losses assumes that the firm earned a positive taxable income in some other engagement. The consequence of this disparate treatment of profit and loss is that entrepreneurs focus more on avoiding losses (Filoso, 2010). High profit tax rates encourage individuals to engage in more routine tasks and less in innovation, speculation, and forecasting resulting in the decline of economy's growth and capital accumulation (Filoso, 2010).

It is apparent that the corporate income tax system plays a major role in corporate the investment decisions. These decisions in turn determine the output and employment levels within the economy. Despite these distortions, the movement to eliminate the corporate income tax systems is virtually non-existent. The objective of this paper is to show that the lack of interest in abolishing the U.S. corporate income tax is at least partially due to its value to the firm in the form of options. The rest of the paper is organized as follows: section II looks at the role of

value-added/consumption tax as an alternative source of revenue for the government. Section III develops the option value model of the corporate income tax. Section IV provides some concluding remarks.

2. Consumption Tax versus Corporate Income Tax

Most European countries rely on some form of consumption rather than income tax, to finance their public goods. In addition, Hines (2007) noted that, as of 2004, at least 134 countries relied on value-added taxes (VAT) as a substantial source of funding. Thus, the United States stands are somewhat anomalous among high-income countries where value-added taxes are the norm. Hines (2007) presents a comprehensive overview of the role of consumption taxes and concludes that:

"Heavy American reliance on income rather than consumption taxation has not served the U.S. economy well. The inefficiency associated with taxing the return to capital means that the tax system reduces investment in the United States and distorts intertemporal consumption by Americans, meanwhile discouraging U.S. labor supply no less than would consumption tax alternative."

Knirsch and Niemann (2008), proposes the replacement of the corporate income tax by shareholder-based capital income taxation. They show that such a tax system would guarantee investment neutrality of taxation and reduced compliance costs. Neutrality of taxation requires that investment and financing decisions after taxes coincide with the corresponding decisions in a world without taxes. They propose a tax system in which only transactions between shareholders and corporations are subject to tax. Transactions within the corporate sector are not taxable.

Price and Porcano (1992) discuss some of the major concerns about value-added tax. Concerns regarding VATs primarily fall into two categories: regressivity and administrative cost arguments. Of the two arguments, the more daunting and compelling is the regressivity of the VAT wherein the final consumer pays 100% of the taxes on the goods or services they consume. They also point out that "the poor, retirees and young couples earn less and consume a greater portion of their incomes." This regressivity argument assumes that corporations pay the corporate income taxes resulting from their earnings. Nothing could be farther from the truth. Corporations pay taxes on their taxable income: revenues in excess of their expenses. The final consumer of the product or service provides or in other words, is the source and only source of this revenue. The demographic characteristics of the consumer are irrelevant. These same consumers must also pay their own individual income taxes. It has also been argued that VAT is regressive on an annual basis, but not on a lifetime basis. As Price and Porcano (1992) points out, "income taxes in the United States are pay-as-you-go and not based on lifetime income."

The second argument stems from the government's use of tax policies to achieve a nation's social, economic and political objectives. The argument is as follows. Satisfying the national socioeconomic/political objectives will entail modifications to a simple consumption tax system and the increase in complexity will come with high administrative expenses. However, it is arguable that the cost of the VAT system would be comparable to that of our current system.

The case for and against the consumption tax system is predicated on the substitution of the current income tax system with a consumption tax. What if we retain the current personal income tax system and only replace the corporate income tax with some form of consumption tax? Such a system will address all the investment related distortionary effects of the income tax system. However, such a system has received little if any attention. Thus it follows there must be other benefits of the corporate income tax system that negates its adverse investment effects. This paper posits that one of the reasons could be the option value of the corporate income tax to the shareholders.

3. Option Value of the Model of Corporate Income Tax

The use of option models to value contingent claims is no longer a novelty in financial management practice. Capital budgeting decisions can now be refined using real options embedded in the project. Such options include expansion, timing, abandonment, scale and strategic implications. These are actions that the management can take given its experience as the project unfolds. Ross et al. (2008, pp651) discusses the implicit options embedded in capital structure decisions and the concept of stocks and bonds as options. The bondholder's position is described as an embedded option: as a creditor owed principal and interest payments by the shareholders or as a market participant having "sold a put option on the firm to the stockholders with an exercise price" equal to the principal and interest payments. Alternately, shareholders own a call option on the firm with an exercise price equal to the value of the debt. Bondholders assume the role of owners of the firm who have sold a call option to the shareholders. If the value of the firm exceeds the value of debt, shareholders exercise the option by retiring the debt. If on the other hand the value of the firm is less than the value of debt, bondholders take possession of the firm through bankruptcy proceedings.

The above situation is analogous to the government/firm relationship on corporate taxes. The corporation through its management has essentially sold a call option on the firm revenues to the government. Consider a firm's common-size income statement on a "per unit of product sold" basis. From capital budgeting studies, firms make decisions based on an after-tax cash flow. Thus, the unit price received by the firm has embedded within it the portion of the tax liability for the project. Although the consumer has paid the portion of the corporate tax for the consumption of the product or service, the government does not have any claim to this tax until the corporation has generated enough revenue to cover its costs, interest expense included. The total cost at which taxable income equals zero acts as the exercise price of the option. For revenues greater than the exercise revenue, the government receives the contribution margin times the marginal tax rate. As such, the government's receipt of tax revenues is actually a contingent claim dependent on how well the corporation controls its expenses and the degree of public acceptance of the firm's goods/services.

Following the approach of Burger-Helmchen (2007), the conceptual analogy between corporate tax options and financial options following the Black-Scholes (BS) model, is depicted as below:

Similarity Between Financial Options and Corporate Tax Option

Variable	Financial Option	Corporate Tax Option
E	Exercise Price	Operating cost plus Interest expense
S	Stock Price	Revenue from operations
T	Time to expiration	Tax period
σ^2	Variance of the stock returns	Variance of the firm's annual revenue
R	Risk-free rate of return	Risk-free rate of return

With these variable definitions, the Black-Scholes option-pricing model can be used to calculate the value of the corporate tax option.

Black-Scholes Model

$$C = SN(d_1) - Ee^{-Rt} N(d_2) \quad (1)$$

Where

C is the value of the call option

$$d_1 = \left[\ln\left(\frac{S}{E}\right) + \left(R + \frac{\sigma^2}{2}\right)t\right] / \sqrt{\sigma^2 t} \quad (2)$$

$$d_2 = d_1 - \sqrt{\sigma^2 t} \quad (3)$$

N(d) = Probability that a standardized, normally distributed, random variable will be less than or equal to d.

4. Data and Methodology

In order to calculate the tax option premiums, the variables in the Black-Scholes (BS) model had to be modified. In the BS model, the variance of the stock price is replaced the by variance of the firm's total expense turnover ratio, with total expense equal to the difference between sales and taxable income. If this ratio is greater than one, the firm has a positive taxable income. This makes it a more relevant measure of the variability that is comparable to the stock price variability.

The exercise price was also modified to reflect the tax option model. For the government to receive any tax payments, the firm's sales must exceed its total expenses for the accounting period. This expected total expense (ExTEXP) is the exercise price. The exercise price is the projected total expenses based on the five-year average growth rate in total assets. The choice of the appropriate growth rate relies on the belief that planned increases in total expenses are driven by capital budgeting decisions. In addition, the choice of period (five years), though arbitrary, is an attempt to minimize the incidence of structural changes such as mergers and reorganizations, within the firm. The current stock price in the BS model is replaced with the firm's last fiscal year total expenses (TEXP).

The sample space for this study consisted of 34 firms selected randomly from the Dow Jones Composite index. The data was extracted from the firm's 10K filings for years 1997 through 2008. The excel functions for the BS model were used to calculate the option values. Given the price of the options, the study was expanded to identify, if any, the firm operating and/or other characteristics that could explain the cross-sectional variation in the option premiums. The selected explanatory variables were average degree of combined leverage (AvDCL), average Capital intensity ratio (AvCIR), and Average tax rate (ATR). In order to address possible non-linear relationship between the option premium and the independent variables, the variance of the CIR (VaCIR) , the variance of degree of combined

leverage (VaDCL) and the natural logarithm of the variance of the degree of combined leverage (LnVaDCL) were included as explanatory variables. The input data for the regression is presented in Table 2. "EasyReg" statistical software, Bierens (2008) was used to perform the OLS estimation.

5. Results and Analysis

The option values using the excel BS model functions as well as the input variables are presented in Table 1. The results indicate that there is a significant option value in the corporate income tax system. The option premiums ranged from a low of almost zero ($ 6.14E-70) for Wal-mart to a high of $2,628.89 million for Pfizer. It is important to point out that this option premium applies to both the corporation and the government. This is because in the conventional options, the intrinsic (exercise) value of the option accrues to the holder of the option. In the corporate income tax option, the positive taxable income, which is the intrinsic value of the option, is split between the corporation as net income and the government as income tax. The distribution of these benefits is a function of the firm's marginal tax rate.

The results of the OLS estimation of the option premium are presented in Table 3. A backward regression method was used to determine the variables that had significant effect on the variability of the option premium. For each model, the Jarqe/Salmon-Kiefer test was conducted to test for the normal distribution of the errors. The Breusch-Pagan test was conducted to test for homoskedasticity of the error terms. The Akaike, Hannan-Quinn, and Schwarz Information Criteria were calculated as another test statistic to rank the models. Although the full model utilizing all the independent variables had the highest explanatory power as measured by the R-squared statistic (48.77%), the Jarqe/Salmon-Kiefer test rejected the null of normal distribution with a p-value 0.0249. In addition, the null of homoskedasticity was rejected, with p-value of 0.0117. A detailed result for each model is shown in panels A through E of Table 3.

The final model of the option premium has ATR, VaDCL and LnVaDCL as the independent variables. Although the VaDCL variable had a 1.534 t-statistic, its removal (panel E) resulted in a significant reduction in adjusted R^2 to 38.09% as well as the introduction of heteroskedasticity in the error terms. The model explained 40.68% of the option premium consistent with a normal and homoskedastic error term. The results indicate an inverse relation between tax option premium and the average tax rate. The significance of the degree of combined leverage based variables indicates the effect of risk on the option premium. The higher the variability in the DCL, as measured by the variance, the higher the tax option premium.

6. Conclusion

The objective of this paper was to show that despite the opposition to the corporate tax system and its distortive effects on investment decisions, corporations and shareholders have not attempted to repeal the tax system because the benefits that resulting from the existence of the corporate tax system outweigh such concerns. It was further hypothesized that this benefit is tied to an embedded real option in the corporate tax structure. The results of this study have demonstrated and quantified the existence of this option. In addition, it has identified the variables that drive the magnitude of the option outside of the Black-Scholes model parameters.

The combination of the firm's operating and financial risk as measured by the variance of the degree of combined leverage is shown to have a positive relationship with the option premium. Secondly, the analysis shows that the option premium varies inversely with the average tax rate. Thus, decreases in the tax rate results in an increase in the option premium. This is consistent with the relentless demand for a reduction in the corporate tax rate.

This study has tax policy implications. Given that less than 2% of corporate revenue goes to taxes, whereas households (consumers) pay more in expected taxes to corporations, government can raise more revenue from taxes by switching from the current corporate income tax to a consumption tax without raising taxes on consumers. Because corporations will lose the option to retain the collected taxes, advocates of this proposal should be ready to face stiff opposition. The arguments of regressivity and administrative costs made by the supporters of the current system are merely a cover-up for the actual benefit of the system: the value of the tax option.

There are some caveats that go with this result. First, this is an exploratory study with a limited sample size. Further study is required that uses a large sample as well as time interval to test the robustness of this finding. Secondly, the limitations of the BS model stemming from the underlying assumptions of the model are still pertinent. Specifically, the BS model is based on a European option, which can only be exercised on the expiration date. Corporations pay taxes on a quarterly basis. They also are able to claim past tax payments against current losses as well as carry losses into the future for up to twenty years.

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Table 1. Results of the Black-Scholes Option Model(All dollar values are in millions)

T/S	TEXP($)	ExTEXP($)	σ	d_1	d_2	$N(d_1)$	$N(d_2)$	Price($)
XOM	395,609	447,017	0.0454	-2.2838	-2.3292	0.0112	0.0099	67.95
UNP	14,314	15,405	0.1504	-0.2969	-0.4473	0.3833	0.3273	531.06
CVX	230,048	267,310	0.035	-3.7745	-3.8095	8.02E-05	6.96E-05	0.15
DD	29,445	29,831	0.079	0.0960	0.0170	0.5382	0.5068	992.38
DIS	30,441	31,713	0.1232	-0.1286	-0.2518	0.4488	0.4006	1179.22
HD	67,698	69,831	0.0623	-0.1858	-0.2481	0.4263	0.40203	1271.90
HPQ	107,891	117,584	0.0498	-1.3503	-1.4001	0.0885	0.08074	215.39
FDX	35,937	39,957	0.0439	-1.9969	-2.0407	0.0229	0.02064	13.30
IBM	86,915	88,431	0.0503	0.0292	-0.0211	0.5117	0.49157	1753.78
GMT	1,173	1,209	0.2279	0.0594	-0.1685	0.5237	0.43311	99.92
CSCO	29,285	34,009	0.1212	-1.0287	-1.1499	0.1518	0.1251	265.42
CHRW	8,001	9,475	0.0176	-8.607	-8.6246	3.75E-18	3.21E-18	5.96E-17
KFT	39,624	43,343	0.0618	-1.1382	-1.1999	0.1275	0.1151	151.55
LSTR	2,466	2,718	0.0173	-4.6022	-4.6195	2.09E-06	1.92E-06	1.78E-05
INTC	29,900	31,594	0.2112	-0.0717	-0.2835	0.4714	0.38841	2037.01
EXPD	5,134	5,963	0.0122	-10.814	-10.826	1.48E-27	1.29E-27	8.42E-27
ALEX	1,747	1,910	0.0336	-2.127	-2.1605	0.0167	0.015364	0.34
LUV	10,745	12,410	0.0822	-1.4989	-1.5811	0.0669	0.056926	25.13
MSFT	36,606	40,857	0.1763	-0.4359	-0.6122	0.3315	0.270205	1284.56
EIX	9,302	9,151	0.0615	0.5815	0.5199	0.7195	0.69845	412.61
PG	67,425	76,506	0.0165	-6.5776	-6.5941	2.39E-11	2.14E-11	3.87E-09
T	104,125	132,017	0.0506	-4.3161	-4.3667	7.94E-06	6.31E-06	0.0088
AA	26,109	27,764	0.1246	-0.2904	-0.4151	0.3857	0.33904	821.25
MCD	17,364	17,929	0.1312	-0.0451	-0.1763	0.4820	0.43003	793.28
KO	24,505	26,904	0.0825	-0.8787	-0.9612	0.1898	0.16822	203.16
VZ	87,595	93,624	0.0620	-0.7599	-0.8212	0.2237	0.20555	680.02
JNJ	46,818	50,662	.08068	-0.7208	-0.8015	0.2355	0.21142	500.90
PFE	38,602	38,049	0.1296	0.3112	0.1816	0.6222	0.57204	2628.89
MRK	14,042	14,167	0.3992	0.2213	-0.1779	0.5876	0.42939	2272.83
MMM	20,161	21,512	0.063	-0.7209	-0.7839	0.2355	0.21655	169.79
ABC	66,758	71,059	0.0357	-1.2403	-1.2760	0.1074	0.10097	121.27
WMT	384,709	421,218	0.0038	-19.361	-19.365	8.23E-84	7.65E-84	6.14E-82
UTX	51,745	58,607	0.013	-8.2401	-8.2531	8.6E-17	7.72E-17	6.81E-15
TRV	20,761	22,830	0.2291	-0.2238	-0.4529	0.4114	0.32531	1243.99

Table 2. Option Premium Analysis Data (Dollar values are in millions)

T/S	Price ($)	ATR	VaDCL	AvCIR	VaCIR	LnPrem	LnVaDCL	AvDCL
CHRW	5.96E-17	0.3838	1.2189	0.2402	0.001	-37.359	0.1979	1.496
LSTR	1.78E-05	0.3847	4424.7	0.2711	0.0024	-10.936	8.3949	-0.287
EXPD	8.24E-27	0.3699	2.325	0.3947	0.0008	-60.039	0.8437	1.27
PG	3.8E-09	0.2916	0.4561	1.5417	0.7016	-19.37	-0.785	1.375
WMT	6.14E-82	0.34	1.181	0.4216	0.001	-187.0	0.1664	0.884
UTX	6.81E-15	0.273	0.6419	1.0199	0.0117	-32.62	-0.4433	1.25
XOM	67.95	0.4125	14.27	0.5746	0.0166	4.2188	2.6578	1.72
UNP	531.06	0.3376	182.36	2.4691	0.2556	6.2749	5.2060	1.054
CVX	0.15	0.4264	6.62	0.6260	0.0043	-1.888	1.8904	1.912
DD	992.38	0.1205	5900.1	1.1574	0.1946	6.9001	8.6827	23.4
DIS	1,179.22	0.3419	47.52	1.7124	0.0120	7.0726	3.8612	4.16
HD	1,272.90	0.3679	83.29	1.4140	13.606	7.1491	4.4223	4.11
HPQ	215.39	0.2082	614.97	0.9094	0.0082	5.3725	6.4216	6.07
FDX	13.30	0.3860	144.06	0.7058	0.0063	2.5875	4.9702	1.358
IBM	1,753.78	0.2959	2922.6	1.1399	0.0137	7.4695	7.9802	13.46
GMT	99.92	0.3306	11101.	4.0128	1.1426	4.6043	9.3148	-15.75
CSCO	265.42	0.2568	3.72	1.5029	0.0324	5.5813	1.3133	1.15
KFT	151.55	0.2842	34.97	1.7200	0.1007	5.0209	3.5543	-2.4
INTC	2,037.01	0.2856	75.98	1.3640	0.0241	7.6192	4.3304	5.053
ALEX	0.35	0.3731	11.01	1.3244	0.0599	-1.056	2.3985	2.01
LUV	25.13	0.3703	79.49	1.6060	0.1871	3.2241	4.3756	-0.287
MSFT	1,284.56	0.2922	24.83	1.6708	1.2222	7.1582	3.2119	1.848
EIX	412.61	0.2969	7.27	3.3203	1.5806	6.0225	1.9842	-0.461
T	0.01	0.3309	1520.9	2.1818	4.6619	-4.733	7.3271	-8.379
AA	821.25	0.2983	128.91	1.3386	0.0148	6.7108	4.8591	7.148
MCD	793.28	0.3081	300.23	1.3791	0.0682	6.6762	5.7046	-0.444
KO	203.16	0.2360	5.33	1.3463	0.0552	5.3140	1.6734	-0.884
VZ	680.02	0.3347	616.27	2.1573	0.0669	6.5221	6.4237	5.498
JNJ	500.90	0.2503	16.15	1.2574	0.0364	6.2164	2.7817	2.153
PFE	2,628.89	0.1821	310732	2.4214	0.0410	7.8743	12.6467	-99.3
MRK	2,272.83	0.2323	7200.6	1.9678	0.0184	7.7288	8.8819	-20.78
MMM	169.79	0.3217	35.66	0.9911	0.0070	5.1345	3.5739	0.482
ABC	121.27	0.3760	868.16	0.2074	0.0013	4.7980	6.7664	1.004
TRV	1,243.99	0.2078	2010.1	4.6054	0.1610	7.1261	7.6060	14.003

Table 3. OLS Regression of the Corporate Tax Option Premium

	A ***Y=Premium***		**B** ***Y=Premium***		**C** ***Y=Premium***		**D** ***Y=Premium***		**E** ***Y=Premium***	
Varaibles	**Coeff.**	**t-value**	**Coeff.**	**t-value**	**Coeff.**	**t-value**	**Coeff**	**t-value**	**Coeff**	**t-value**
ATR	-3250	-1.768	-3365	-2.009	-3532	-2.273	-3236	-2.096	-3720	-2.409
VaCIR	47.28	1.106	48.42	1.167	48.29	1.183				
AvCIR	19.96	0.187								
AvDCL	5.07	0.326	4.39	0.298						
VaDCL	0.005	0.892	0.005	0.894	0.003	1.595	0.003	1.534		
LnVaD	70.97	1.826	72.79	1.985	72.60	2.013	77.14	2.136	99.94	2.973
Intercept	1154.9	1.653	1213	2.038	1275	2.326	1199	2.188	1280	2.297
N	34		34		34		34		34	
R^2 (%)	48.77		48.72		48.55		46.07		41.84	
Adjusted R^2 (%)	37.38		39.56		41.46		40.68		38.09	
F-test	4.28		5.32		6.84		8.54		11.15	
p-value	0.0037		0.00147		0.0005		0.0003		0.0002	
Jarque-Bera	7.383		6.814		5.611*		5.211*		1.87**	
Breusch-Pagan	16.41		14.062		9.012*		6.998*		6.608	
Akaike I.C	12.91		12.85		12.79		12.78		12.80	
Hannan-Quinn	13.02		12.94		12.87		12.84		12.85	
Schwarz	13.22		13.12		13.02		12.96		12.93	

*Significant at the 5% level
**Significant at the 10% level
Both the Jarque-Bera and Breusch-Pagan tests are based on a Chi-square (χ^2) distribution.