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Market Frictions: Financing Decision and Firm Value Effects

Saad Murtuza Siddiqui

MARKET FRICTIONS: FINANCING DECISION AND FIRM VALUE EFFECTS

by

Saad Murtuza Siddiqui

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To my parents, Mrs. Farzana Siddiqui and Mr. Murtuza Siddiqui– in your belief, lies my strength.

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ABSTRACT

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This dissertation examines the impact of market frictions on the financing decision of a firm. Corporate finance literature overwhelmingly assumes that market frictions do not exist. However, market frictions such as regulation and taxes are becoming an increasingly important aspect of managerial decision-making. This dissertation explores the issue of whether and how market frictions affect a part of managerial decision-making namely the financing decision. The study further looks at the mechanisms that play into why management chooses a particular financing decision by exploring firm risk and firm value. The first dissertation paper investigates the financing decision impact of large firms that are involved in tax aggressive behavior. The study shows that tax aggressive firms take on less debt and the effect on firm value is proposed as a possible explanation. This research will be useful to regulators and academic researchers interested in the field of tax avoidance and capital structure. The second dissertation paper investigates the effect of audit quality on risk, cost of debt and the financing decision of emerging growth companies (EGC) as defined by the Jump-Start Our Business Startups Act (JOBS Act). The results show that JOBS Act decreased the idiosyncratic risk of EGCs as compared to similar firms prior to the passing of JOBS Act. This research contributes to existing knowledge about SOX404 (b) attestations, emerging growth companies (EGC) and financing decision of small IPO firm while evaluating auditing regulation and assisting the audit committee in making optimal decision regarding investments in stronger internal control. The third dissertation paper examines the impact of information asymmetry on the financing decision of a firm. Contrary to theory, the results show that firms with lower disclosures (or greater information asymmetry) have less debt. This research has policy implications and contributes to academic research on financing decisions and information asymmetry. Overall, the dissertation has major policy implications in addition to facilitating managerial, investor, and creditor decision-making.

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CHAPTER 1

INTRODUCTION

This dissertation examines the impact of market frictions on the financing decision of a firm. Corporate finance literature overwhelmingly assumes that market frictions do not exist. However, market frictions such as regulation and taxes are becoming an increasingly important aspect of managerial decision-making. This dissertation explores the issue of whether and how market frictions affect a part of managerial decision-making namely the financing decision. The study further looks at the mechanisms that play into why management chooses a particular financing decision by exploring firm risk and firm value. The findings suggest that market frictions indeed have an effect on the financing decision of the firm. The study has major policy implications in addition to facilitating managerial, investor, and creditor decision-making.

The first dissertation paper investigates the financing decision impact of large firms that are involved in tax aggressive behavior. There is overwhelming anecdotal evidence about the pervasive uses of tax aggressive techniques but there is limited research on the topic due to the confidential nature of a firm's tax policies. The study shows that tax aggressive firms take on less debt and the effect on firm value is proposed as a possible explanation. The study supports adding tax aggressiveness as a determinant of the financing decision and sheds light on why firms may have aggressive tax policy.

The second dissertation paper investigates the effect of audit quality on risk, cost of debt and the financing decision of emerging growth companies (EGC) as defined by the Jump-Start Our Business Startups Act (JOBS Act). This paper also evaluates the effects of JOBS Act against its stated objective of "improving access to the public capital markets." Section 103 of the JOBS Act exempts EGCs from the attestation of internal controls (SOX404 (b)) required by the Sarbanes Oxley Act even though SOX404 (b) attestations are widely acknowledged to result in higher audit quality. The results show that JOBS Act decreased the idiosyncratic risk of EGCs as compared to similar firms prior to the passing of JOBS Act. Further, the results show that the JOBS Act is positively related to the cost of debt and significantly changes the financing decision of the firms.

The third dissertation paper examines the impact of information asymmetry on the financing decision of a firm. The modified pecking order theory (Myers 1984) predicts that more of the financing needs will be satisfied by debt if the level of a firm's information asymmetry is higher (Bharath et al. 2009). However, a recently passed regulation (JOBS Act) reduces the disclosures requirement for certain firms in an attempt to increase equity funding. The paper uses comparative methodology to test the implications of modified pecking order theory and judge the success of JOBS Act. Contrary to theory, the results show that firms with lower disclosures (or greater information asymmetry) have less debt.

CHAPTER 2

TAX AGGRESSIVENESS, FIRM VALUE AND THE FINANCING DECISION OF LARGE FIRMS

2.1 Introduction

The Trade-Off theory of capital structure posits that management decides how much debt finance to use by balancing costs and benefits. Kraus and Litzenberger (1973) originally posited that firms considered a balance between the dead-weight costs of bankruptcy and the tax saving benefits of debt.[1] On the other hand, Miller (1977) argues that personal taxes on interest income increase pre-tax yields on debt to the point where there is no tax advantage to have debt. Therefore, there is an important gap in modern finance theory on the effect of taxes on the financing decision. Furthermore, Graham (2003) concludes that extant research shows that tax benefits increase firm value but the interpretation is clouded by econometric issues and alternate explanation. This paper focuses on a relatively new field in tax literature, tax aggressiveness, and posits that tax aggressiveness has a significant and differential effect on firm value and the financing decision of large firms.

The determinants, magnitude, and consequences of corporate tax aggressiveness is of interest to researchers (Shackelford and Shevlin 2001). This paper defines tax aggressiveness in terms of firms in the lowest quartile of taxes paid. Tax aggressiveness means "different things to different people" (Hanlon and Heitzman 2010) because deciphering the intention of a firm to enter into a transaction is a matter of judgment. Furthermore, tax planning strategies and transaction details are confidential and therefore,

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[1] The interest on debt is tax deductible, thereby making it more appealing than equity where the dividends are not tax deductible.

not available to researchers. This study also does not distinguish between technically legal tax aggressiveness and illegal evasion because the legality of a transaction is often determined after the fact (Weisbach 2003). Therefore, firms with relatively low effective tax rate are deemed tax aggressive.

The driving theory for the effect of tax aggressiveness on financing decision is the substitution hypothesis. The substitution hypothesis states that a firm with access to non-debt tax shields will not take on as much debt because the tax advantage of debt is mitigated (DeAngelo and Masulis, 1980). Mackie-Mason (1990) empirically tested this idea using tax loss carry forwards (TLCF) as a non-debt tax shield and find that firms with high TLCF are likely to use less debt. Dhaliwal et al. (1992) find further support for the substitution hypothesis after controlling for several alternate explanations. Dhaliwal et al. (2006) also show that the equity risk premium associated with leverage is decreasing in the corporate tax benefit from debt. However, Bradley et al. (1984) find results contrary to the hypothesis possibly because non debt tax shields at the time of the study were available to capital intensive and low growth firms which are more likely to finance with debt. The primary non-debt tax shields in Bradley et al. (1984) included high depreciation costs and investment tax credits but this is not the case anymore.

Several more techniques for reducing taxes are in the toolbox of corporate tax departments now. The IRS admits that since the mid-1990s, they have witnessed a proliferation of abusive tax schemes, particularly those with offshore components.[2] For example, the tax disclosures to December 31, 2011 financial statements of General Electric (GE) state:

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[2] See http://www.irs.gov/uac/Abusive-Tax-Schemes-Criminal-Investigation-(CI) for detailed listings of prohibited tax scams.

> GE and GECS file a consolidated U.S. federal income tax return. This enables GE to use GECS tax deductions and credits to reduce the tax that otherwise would have been payable by GE [...] The effect of GECS on the amount of the consolidated tax liability from the formation of the NBCU joint venture will be settled in cash when it otherwise would have reduced the liability of the group absent the tax on formation. (GE Annual Report 2012; p.66)

In academic research, Donohoe (2012) demonstrate how financial derivatives along with creative ownership structures, reduce taxes by generating noneconomic losses. The IRS also continually updates several different abusive tax schemes[3], which includes transfer pricing and incorrect revenue recognition policies. This anecdotal and empirical evidence underlies our assumption that larger firms have sophisticated tax "compliance" departments that enable a firm to be tax aggressive without having the firm characteristics reported in Bradley et al. (1984). This change in tax behavior also has implication for firm value.

The theoretical framework for the effect on firm value due to the tax benefit of debt goes back to Modigliani and Miller (1963). Modigliani and Miller establish that firm value increases with the use of debt till marginal cost equals the marginal benefit of debt consistent with the tradeoff theory. However, additional models introduce different costs that balance against the tax benefits of debt. In models driven by agency theory, the impact on value (through profitability) by financing decisions is driven by a change in behavior. It is argued that higher leverage allows a firm's manager to hold a larger fraction of its common stock (Jensen and Meckling 1976) thereby, reducing agency problems by aligning the manager's interests with the interests of stockholders. Another theory suggests that leverage impacts firm value by reducing discretionary cash

[3] See http://www.irs.gov/uac/Examples-of-Abusive-Tax-Schemes-Fiscal-Year-2013 for the tax abuses found in 2013 alone.

that may be wasted on bad investments (Jensen 1986). This study does not enter the debate about the mechanism that decides the optimum level of debt and instead, focuses on the differential impact of tax aggressive firms on value.

Numerous empirical studies have been conducted in this area with varied results. Ignoring all costs, 9 – 10% of increase in firm value may be attributed to the tax benefit of debt during 1980-1994 (Graham 2000). Goldstein, Ju, and Leland (2001) estimate that the tax benefits of debt should equal between 8% and 9% of firm value if firms can restructure debt. Evidence further suggests that leverage-decreasing exchange offers decrease equity value and vice versa (Masulis 1980). On the other hand, Myers (1984) and Cornett and Travlos (1989) argue that increasing debt may not increase firm value, even if interest reduces tax liabilities. Fama and French (2002) found no evidence that the tax effects of financing decisions affect firm value. This paper posits that tax aggressive firm's financing decision is influenced by its effect on firm value.

This study is significant for regulators in quantifying the benefits and unintended consequences of closing the tax loopholes. The IRS "talking points on tax avoidance schemes"[4] says:

> It is difficult to quantify the amount of assets being held offshore or the rate at which the industry is growing. But it has been estimated that some $5 trillion in assets worldwide is held 'offshore' in tax havens [...] One authority has estimated the annual revenue loss to the U.S. at a minimum of $70 billion. (para 3).

These figures warrant additional research into the behavior of tax aggressive firms. Furthermore, this study is significant for its contribution to an unresolved issue in extant research -- effect of tax on the financing decision and firm value.

[4] This information was found at http://www.irs.gov/businesses/small/article/0,,id=106568,00.html.

To test the propositions, a regression model is developed based on Frank and Goyal (2009), which examines the relative importance of 39 factors in the financing decisions of publicly traded non-financial U.S. firms from 1950-2000. The sample for this study includes all publicly traded non-financial firms domiciled in the US, with total market capitalization of at least $1 billion.

The results of the study show that there is a significant differential effect of leverage on tax aggressive firms as compared to the conservative firms. Moving from conservative to aggressive quartile reduces the leverage by 2.2% after controlling for other factors. The paper also finds a possible explanation for this phenomena being the significant effect of leverage on firm value. An increase in leverage is associated with a decrease in Tobin's Q of about 0.5%.

These results contribute to the literature in the following ways. First, it informs the interested users of financial statements the financing effect of the tax aggressive behavior. Second, it emphasizes the importance of distinguishing between Cash ETR, GAAP ETR and Book-Tax Difference. Third, it adds another statistically significant determinant of leverage to aid academic researchers with the omitted variable bias problem. Lastly, the study sheds light on a different aspect of the effect of taxes on firm value.

The study is organized as follows. Section 2 presents a literature review on capital structure, accounting for income taxes (SFAS 109), and firm value. Section 3 explains the hypotheses development and section 4 describes the data and methodology. Section 5 reports the empirical results and section 6 concludes.

2.2 Literature Review

2.2.1 Leverage and Taxes

Dhaliwal et al. (2006) presented an analytical model which presented the value of the levered firm as follows:

$$V_L = V_U + \left(1 - \frac{(1-T_c)(1-T_e)}{1-T_d}\right) B_L \qquad (1)$$

Where,

V_L is the value of the levered firm, V_U is the value of the unlevered firm, T_c is the corporate tax rate, T_e is the personal tax rate on equity (dividends and capital gains), T_d is the personal tax on debt (interest), and B_L is the market value of debt. Expressing the equation this way, they teased out the effects of the "gain from leverage" as:

$$\left(1 - \frac{(1-T_c)(1-T_e)}{1-T_d}\right) B_L \qquad (2)$$

As discussed earlier, it is possible that the corporate tax rate is flexible. Holding constant T_e and T_d, the "gain" from leverage can actually be negative by simple linear transformation. This implies that there is a tipping point for a firm's corporate ETR that makes more debt have a negative effect on firm value.

The modern theory of capital structure began with the seminal paper of Modigliani and Miller (MM) (1958). They showed that if a firm had no taxes, agency costs, bankruptcy costs, or information asymmetries, the choice between debt and equity would not affect firm value. MM (1963) recognized that corporate interest deductions can create incentives for firms to use debt. Their ideas evolved into the trade-off theory which says that capital structure is determined by a trade-off between the benefits of debt and the costs of debt. The "tax-bankruptcy trade-off' perspective is that firms balance the tax benefits of debt against the deadweight costs of bankruptcy.

Another theory closely related to the trade-off theory is the stakeholder co-investment theory. This theory implies that all stakeholders, such as employees and business partners must continue to participate in the firm if the is to be successful over an extended period of time. Thus, less debt may be used compared to other firms to insure the willingness of all stakeholders to make valuable co-investments. In this vein, Titman (1984) suggests that firms producing unique products will lose customers if they appear over-leveraged.

The agency theory can also be used to explain the trade-off theory of capital structure. Jensen and Meckling (1976) identify the conflicts between the various stakeholders, namely, managers, debt holders and equity holders. They argue that an optimal capital structure can be obtained by trading off the agency cost of debt against the benefit of debt. Conversely, Miller (1977) argues the “irrelevance theorem” where personal taxes on interest income increase pre-tax yields on debt to the point where the corporate tax advantage is completely offset.

DeAngelo and Masulis (1980) (DM) propounded a compromise theory between MM (1958, 63) and Miller (1977). They showed that a firm-specific optimal capital structure emerges when firms exhaust their interest tax shields. DM argue that non-debt tax shields can be considered substitutes for the debt tax shield arising from the deductibility of interest payments allowed by the Internal Revenue Service for tax reporting. On the other hand, Boquist and Moore (1984) (BM) questions the empirical validity of DM's tax shield hypothesis. According to them, DM appeared to cite evidence on industry leverage and tax shield differences rather than evidence at the firm level, where the ultimate leverage decision resides. Their results also rejected DM's theory by changing the proxies for leverage and the standardizing variable. BM used only interest bearing debt to proxy for leverage and operating income as a method of standardizing the measure of the non-debt tax shelter. In addition, Bradley et al. (1984) found that leverage is increasing in non-debt tax shields. This could possibly be because firms with high investment tax credits and depreciation costs may be capital intensive and low-growth, and therefore more likely to finance with debt.

Titman and Wessels (1988) observed that the empirical work in capital structure has not caught up to theory mainly because the relevant firm attributes are described in the abstract which are not operationalizable. They suggest that there may be no proxy of the attributes and measurement errors may be correlated with the dependent variables, creating spurious correlations and therefore, they used a factor-analytic technique to mitigate this measurement problem. Their results indicate that firms with unique or specialized products have relatively low debt ratios.

Literature had described the pecking order theory in the 1960s (Donaldson 1961), but it was clearly articulated by Myers (1984) calling it a modified pecking order theory. He also compared the static tradeoff theory and the pecking order theory. His theory stated that firms have good reasons to avoid having to finance real investment by issuing common stock or other risky securities. Firms then set target dividend payout ratios and plans to cover part of normal investment outlays with new borrowing while making sure the debt is default-risk free. If and when the firm exhausts its ability to issue safe debt, it turns to less risky securities going from regular debt to convertible debt and lastly equity.

Recent literature seems to favor the 'market timing hypothesis' which suggests that that capital structure is the cumulative outcome of past attempts to time the equity market. Baker and Wurgler (2002) claimed that market timing is the first order determinant of a corporation's capital structure. According to this theory, firms prefer equity when they perceive the relative cost of equity as low and prefer debt otherwise.

Fama and French (2002) did an in depth evaluation of both trade-off and pecking order models. They identified a minor flaw in the trade-off model (the negative relation between leverage and profitability), one major flaw in the pecking order model (the large equity issues of small low-leverage growth firms), and one area of conflict (the mean reversion of leverage) on which the data was inconclusive. They conclude that the many shared predictions of the two models tend to do well but when shared predictions are confirmed, attributing causation is elusive.

Liang and Zhang (2006) looked at the accounting treatment of uncertainty and its effect on capital structure. Their analysis distinguishes between incentive uncertainty and inherent uncertainty. While inherent uncertainty relates to the raw information quality about future cash flows, the incentive uncertainty refers to the accounting numbers quality conveying the raw information. They conclude that when information about future cash outflows is more difficult to obtain than future cash inflows, debt financing is preferred and vice versa due to the assessed default risk.

Huang and Ritter (2009) present empirical evidence regarding the relative importance of three of the capital structure hypotheses – static trade-off, pecking order, and market timing. Their evidence implies that both the static trade-off model and market timing model explain capital structure decisions. When the cost of equity is high (1974-

1981), pecking order model is followed by firms with a preference for debt. However, when the cost of equity is lower, the pecking order model fails as a descriptive model of how firms behave.

There are a few studies specifically looking at the relationship between tax aggressiveness and debt. Graham and Tucker (2006) gathered a unique sample of 44 tax shelter cases to investigate the magnitude of tax shelter activity and whether participating in a shelter is related to corporate debt policy. They found that compared to companies with similar pre-shelter debt ratios, the debt ratios of firms engaged in tax shelters fall by about 8%. Wilson (2009) developed a profile of the type of firm that likely engages in tax sheltering. The findings suggest that firms actively engaged in tax sheltering exhibit 11% less debt that the matched control sample. Finally, Lisowsky (2010) also observe that tax shelter likelihood is negatively related to leverage. However, these studies look at firms already involved in a tax shelter and therefore, likely suffers from self-selection bias. This study uses cash ETR and stratification to classify tax aggressive firms without considering tax shelters.

2.2.2 Accounting for Income Taxes (SFAS 109)

Accounting for income taxes has been a most controversial financial accounting topic for many years. It became a significant issue in the 1940s when the Internal Revenue Code (IRC) permitted companies to depreciate the cost of emergency facilities considered essential to the war effort over a period of 60 months (Rayburn 1986). In 1967, the profession through APB 11, embraced the concept of reporting income tax expense in the same period as events that give rise to the expense, regardless of when the tax actually is paid. APB 11 was replaced in 1987 by SFAS 96, which reiterated the objective of reporting deferred taxes but redirected the focus to an asset-liability approach. SFAS 96 was delayed three times and then replaced in 1992 with SFAS 109 before ever becoming mandatory.

SFAS 109's objectives are to

> recognize (a) the amount of taxes payable or refundable for the current year and (b) deferred tax liabilities and assets for the future tax consequences of events that have been recognized in an enterprise's financial statements or tax returns. This statement establishes procedures to (a) measure deferred tax liabilities and assets using a tax rate convention and (b) assess whether a valuation allowance should be established for deferred tax assets. (SFAS 109, p.38)

It is important to note that the tax expense is the accrual accounting estimate and not the actual cash tax paid which is disclosed in the notes to the financial statements. It includes an estimate of the actual tax paid during the period — the current tax expense — and an accrued expense for the estimated taxes paid in the past related to current year transactions or due in the future — the deferred tax expense (or benefit). However, the current tax expense includes tax accruals, and thus does not strictly reflect the actual taxes paid on the current year's earnings.

What does and does not affect GAAP ETR also provides a better picture. A company that does not qualify for bonus depreciation will not have a lower GAAP ETR relative to a firm that does not qualify even with the same level of investment. Such provisions reduce the current tax expense by creating a temporary difference but the deferred tax expense increases by the same amount if the tax rate remains constant (Hanlon and Heitzman 2010).

The GAAP ETR, however, is affected by permanent differences despite not being affected by temporary differences. Items that create no book-tax difference at all (tax credits, foreign earnings that are permanently reinvested, the incremental effects of state taxes, and changes in the valuation allowance) directly reduce the taxes owed.

SFAS No. 109's requirements have three effects. First, firms no longer estimate deferred tax balances using outdated historical tax laws or rates. Second, SFAS No. 109's requirements assure that upon partial settlement of a deferred tax item, no residuals associated with the partially settled item remain in the deferred account as a result of failing to account for tax law or rate changes. Finally, SFAS No. 109 eases the requirements for recognizing deferred tax assets to a standard that is more consistent with SFAC No. 6 (FASB 1985) and presumably the market's definition of an asset. SFAC No. 6 defines "assets" as probable future economic benefits.

There are at least two arguments against the value relevance of SFAS 109 view. First, Chaney and Jeter (1994) argue that SFAS No. 109 increases the complexity of accounting for income taxes. If SFAS No. 109's complexity results in inconsistent treatment of deferred taxes across firms, the value-relevance of the net deferred tax liability may be adversely affected. Petree et al. (1995) argue that SFAS No. 109 made the measurement and evaluation of deferred tax assets more subjective. If this results in inconsistent application of SFAS No. 109 provisions, SFAS No. 109 may not provide a more value-relevant measure of deferred tax amounts.

On the other hand, Ayers (1998) compares SFAS No. 109 and APB No. 11 amounts to determine whether SFAS No. 109 provides additional relevant information regarding a firm's net deferred tax liabilities. The results suggest that separate recognition of deferred tax assets, the existence of valuation allowances and SFAS No. 109 adjustments for tax law changes are all associated with firm value.

2.2.3 Taxes and Firm Value

In extant literature about financing decisions, the tax disadvantage or advantage of debt depends on expected interest and dividends. To understand the inference, assume that corporate tax rate is 35% and the debt ratio is 50%, then the contribution of taxes to firm value should equal 17.5% (Corporate tax x debt ratio). This calculation, however, ignores costs and other factors like interest deductibility, nontax costs of debt etc.

MM (1963) establishes that the tax benefit provided by the interest expense deduction reduces the equity risk premium from leverage and increases firm value. On the other hand, Miller and Scholes (1978) posit that investors can avoid personal taxes on all investment returns and corporate securities are priced without taking taxes into consideration. Fama and French (1998) find that leverage decreases firm value due to non-tax reasons while investigating whether leverage increases firm value consistent with the existence of a tax benefit to debt.

Masulis (1980) found that leverage-decreasing transactions decrease value by 5.4% and leverage-increasing exchange offers increase equity value by 7.6%. However, Myers (1984) and Cornett and Travlos (1989) argue otherwise contending that if firms optimize, they adjustment in capital structure should be towards an optimal debt ratio, by either increasing debt or equity. Therefore, non-tax reasons might also explain Masulis' (1980) results. Exchange offers may convey nontax information that affects security prices due to the asymmetric information problem (Myers and Majluf 1984) or signaling. Cornett and Travlos (1989) provide evidence that the positive stock price reaction is associated with the optimistic information conveyed by the exchange offers and not due to tax benefits.

Finally, Graham (2000) reports that ignoring all costs, 9 – 10% of increase in firm value may be attributed to the tax benefit of debt during 1980-1994. The fact that this figure is less than the 17.5% calculated above reflects the reduced value of interest deductions in some states of the world. He concludes that the tax benefit of debt falls to 7-8% of firm value, when personal taxes are considered.

2.3 Hypotheses Development

Most tax aggressiveness measures are derived from financial statement data because tax returns are not publicly available. Outsiders want to know taxable income for a variety of reasons including using it as a benchmark for accounting earnings, to evaluate corporate tax aggressiveness and/or corporate tax citizenship (Hanlon 2003; Lenter et al. 2003). However, studies (Chen et al. 2010) still use GAAP ETR to proxy for tax aggressiveness.

McGill and Outslay (2002) emphasized the limits of using financial statement information to decipher a publicly traded company's tax status. Estimating the "true" tax status requires a sophisticated understanding of Statement of Financial Accounting Standards (SFAS) 109. However, most tax shelters reduce the corporation's tax liability thereby, increasing its earnings per share.

Most measures in the literature capture only non-conforming tax aggressiveness; that is, tax aggressive transactions are accounted for differently for book and tax purposes. Conforming tax aggressiveness, in which financial accounting income is reduced when the tax strategy is employed, is not captured by most measures (Hanlon & Heitzman 2010). Most effective tax rates use pre-tax GAAP earnings as the denominator and thus can capture only non-conforming tax aggressiveness (e.g., ETRs will not reflect the tax benefits of interest deductibility).

There are several differences in Cash ETR and GAAP ETR and what they measure. A tax strategy that defers taxes (e.g., more accelerated depreciation for tax purposes) will not alter the GAAP ETR. In addition, several items that are not tax planning strategies, such as changes in the valuation allowance or changes in the tax contingency reserve could affect the GAAP ETR. The GAAP ETR is the rate that affects accounting earnings. The Cash ETR, on the other hand, is computed using cash taxes paid in the numerator and is affected by tax deferral strategies, but is not affected by changes in the tax accounting accruals. The annual Cash ETR could mismatch the numerator and denominator if the cash taxes paid includes taxes paid on earnings in a different period (e.g., from an IRS audit completed in the current year) while the denominator includes only current period earnings. This leads us to the first hypothesis, where the differences in proxies are emphasized.

2.3.1 Hypothesis 1: GAAP ETR, Cash ETR and Book-tax Differences measure different constructs of tax aggressiveness.

Taxes represent a significant cost to the company as well as a reduction in cash flows available to the firm and shareholders, leading to firms' and shareholders' incentives to reduce taxes through tax aggressive activities. Major theories on capital structure — tradeoff, market timing, stakeholder co-investment and pecking order — only consider the tax advantage of debt since the interest on debt is tax deductible but do not model available tax avoidance schemes. On the other hand, DeAngelo and Masulis (1980) and Mackie-Mason (1990) argue that in the presence of non-debt tax shields, firms take lower debt. Trade-off theory also includes models such as Stulz (1990) in which agency costs play a crucial role. The agency costs of managerial discretion and stockholder-bondholder conflicts are also likely to play an important role relative to taxes.

Prior research (Graham and Tucker 2006; Wilson 2009; Lisowski 2010) has shown that firms involved with tax shelters have lower debt. This relationship might hold because the debt covenants are often indirectly restrictive by expecting the firm to maintain certain balance sheet ratios (Beneish and Press 1993). Tax shelters provide better tax savings than debt making debt costlier in the absence of the tax advantage (substitution hypothesis). Debt holders are not as interested in the operational efficiency of the firms as equity holders (Jensen and Meckling 1976). Finally, debt holders are more risk averse as evidenced by the nature of their investment. This leads us to the second hypothesis.

2.3.2 Hypothesis 2: Leverage is less sensitive to an increase in tax rate for tax aggressive firms.

MM (1963) establishes that the tax benefit provided by the interest expense deduction reduces the equity risk premium from leverage and increases firm value. Fama and French (1998) find that leverage decreases firm value due to non-tax reasons while investigating whether leverage increases firm value consistent with the existence of a tax benefit to debt. If the tax benefits of debt do in fact add to firm value, an important unanswered question is why firms do not use more debt, especially large, profitable firms. Therefore:

2.3.3 Hypothesis 3: Firm value increases for tax aggressive firms with lower debt.

2.4 Data and Methodology

2.4.1 Sample Data

This study's sample data are taken from all companies in Compustat from 2000 - 2012. Firms with market capitalization of over $1 billion and domiciled in the US are chosen because this study is focused on the tax avoidance activities of large US firms. Further, negative earnings before interest and taxes and financial firms (SIC 6000 – 6999) are taken out. A sample description is included in Table 1.

TABLE 1
Sample Selection

Criteria	Firms
All US firms with over $1b in market capitalization from 2000 - 2012	2,305
Less: Firms with negative EBIT	(636)
Less: Financial firms	(522)
Less: Firms with missing values	(46)
Total number of firms	1,101
Total number of firm-year observations	10,802

The descriptive are presented in Table 2.

TABLE 2 (a)
Descriptive Statistics

Variable	Mean	Std Dev	Lower Quartile	Median	Quartile
LEV	0.221	0.192	0.085	0.201	0.315
Cash ETR	0.149	0.128	0.063	0.143	0.223
GAAP ETR	0.177	0.158	0.115	0.193	0.258
Book-Tax Difference	0.028	0.154	-0.014	0.031	0.088
Tobin's Q	2.041	1.389	1.250	1.618	2.312
MTB	3.166	14.957	1.614	2.420	3.777
Change in Sales	0.098	0.200	0.016	0.088	0.173
CAPEX	0.058	0.054	0.024	0.042	0.073
TANG	0.329	0.237	0.132	0.261	0.509
Size	8.101	1.572	7.027	7.964	9.141
Profit	0.121	0.075	0.071	0.105	0.153
Inflation	2.485	1.079	1.740	2.805	3.339
Altman Z	4.118	3.281	1.987	3.517	5.378
Industry	0.403	0.168	0.272	0.425	0.545

The sample is selected using the following three criteria: (1) fiscal year end, (2)market capitalization > 1bn, and (3) domiciled in the US. LEV, is calculated by dividing Total long term debt by total assets. GAAP ETR is calculated as the total income tax expense divided by the total pretax accounting income whereas the cash ETR is calculated as the total cash taxes paid divided by the total pretax accounting income. Book-Tax difference is the difference between Cash ETR and GAAP ETR scaled over EBIT. Tobin's Q is the sum of market value add total liabilities scaled over total assets. MTB is the market-to-book ratio used to proxy for growth. Two other proxy for growth include Change in Sales and CAPEX. Change in Sales is the change in log of sales and CAPEX is the ratio of capital expenditure to assets.Tangibility is operationalized by dividing net property, plant, and equipment, to total assets. Log of assets is used as a proxy for firm size. Profitability (Profit) is calculated as operating income before depreciation, interest and taxes scaled over assets. Expected inflation rate (Inflation) is defined in this study as the expected change in the consumer price index over the coming year using data from the Livingston Survey. Altman Z proxies for the bankruptcy risk of the firm. Industry median leverage is used to proxy for the industry effect (Industry).

TABLE 2 (b)
Descriptive Statistics

Variable	Conservative Quartile Mean	Conservative Quartile Std Dev	Aggressive Quartile Mean	Aggressive Quartile Std Dev	Difference in Means
LEV	0.139	0.160	0.310	0.201	-0.171
Cash ETR	0.303	0.116	0.009	0.069	0.294
GAAP ETR	0.268	0.112	0.083	0.173	0.184
Book-Tax Difference	0.074	0.141	-0.035	0.175	0.109
Tobin's Q	2.514	1.594	1.713	1.387	0.802
MTB	3.843	11.171	2.303	17.328	1.540
Change in Sales	0.094	0.164	0.104	0.266	-0.010
CAPEX	0.052	0.043	0.070	0.072	-0.018
TANG	0.251	0.189	0.445	0.262	-0.193
Size	7.820	1.700	8.116	1.493	-0.296
Profit	0.164	0.095	0.084	0.053	0.080
Inflation	2.511	1.132	2.458	1.015	0.054
Altman Z	1.506	0.853	0.815	0.563	0.692
Industry	0.375	0.168	0.430	0.167	-0.055

2.4.2 Research Design

To test hypothesis 1, all the firms were divided into quartiles based on cash ETR, GAAP ETR and BTD. Firms falling in the first quartile were coded aggressive, whereas firms in the fourth quartile were coded conservative. The numbers of firms common in the quartiles were tabulated to determine the percentage of firms that fall in the aggressive or conservative quartile using any measure.

To test hypothesis 2, the effect of ETR on leverage was measured based on the regression model discussed in section 4.3.

For hypothesis 3, the effect of firm value on leverage is measured based on the same regression model.

2.4.3 Regression Equation

An OLS regression model is also developed based on Frank and Goyal (2009) results because they examined the relative importance of 39 factors in the leverage decisions of publicly traded American firms from 1950 to 2003. This study adds ETR and firm value as other determinants of leverage. The models are presented below:

$$LEV_{it} = \alpha_0 + \alpha_1\ CETR_{it} + \alpha_2\ Cons_{it} + \alpha_3\ Aggr_{it} + \alpha_4\ Cons_{it} * CETR_{it} + \alpha_5\ Aggr_{it} * CETR_{it} + \alpha_6\ MTB_{it} + \alpha_7\ Tang_{it} + \alpha_8\ Size_{it} + \alpha_9\ Profit_{it} + \alpha_{10}\ Inflation_t + \alpha_{11}\ Industry_i + \alpha_{12}\ Z_{it} \quad (3)$$

$$LEV_{it} = \alpha_0 + \alpha_1\ TQ_{it} + \alpha_2\ Cons_{it} + \alpha_3\ Aggr_{it} + \alpha_4\ Cons_{it} * TQ_{it} + \alpha_5\ Aggr_{it} * TQ_{it} + \alpha_6 MTB_{it} + \alpha_7\ Tang_{it} + \alpha_8\ Size_{it} + \alpha_9\ Profit_{it} + \alpha_{10}\ Inflation_t + \alpha_{11}\ Industry_i + \alpha_{12}\ Z_{it} \quad (4)$$

measures of variables. Leverage: The proxy for leverage is long-term debt divided by the book value of assets.

ETR: The three measures of ETR used are GAAP ETR, Cash ETR and BTD. GAAP ETR is calculated as the total income tax expense divided by the total pretax accounting income, whereas the cash ETR is calculated as the total cash taxes paid divided by the total pretax accounting income. BTD is calculated as the difference between income tax expense and cash tax paid divided by the pretax accounting income.

Firm Value: Firm value is measured by Tobin's Q. Tobin’s Q is measured as the ratio of total market value and liabilities of the firm to total asset value.

Industry: Firms tend to benchmark their capital structure in accordance with the industry average (Hovakimian et al. 2001). Industry median leverage is used to proxy for the industry effect in this study. It is measured as the median of total debt to book value of assets by SIC code at the four-digit level.

Growth: Growth reduces free cash flow problems, and exacerbates debt-related agency problems like overcapitalization etc. Growing firms place a greater value on stakeholder co-investment. Adam and Goyal (2008) show that market-to-book ratio is the most reliable proxy for growth. Alternate proxies to measure growth are change in sales and capital expenditures.

Tangibility: Tangible assets are directly related to leverage. Tangibility (tang) is operationalized by dividing net property, plant, and equipment, to total assets.

Firm size: Large firms may face lower default risk due to diversification. The tradeoff theory predicts that firms that are large tend to have higher leverage. Log of assets is used as a proxy for firm size.

Profitability: Leverage is inversely related to profitability because of passively accumulated profits (Kayhan and Titman 2007). This is also supported by the pecking order theory. Profitability (Profit) is calculated as operating income before depreciation, interest and taxes scaled over assets.

Expected inflation: When expected inflation is high, the real value of tax deductions on debt is higher. Further, studies show that firms have higher debt when current interest rates are low. Liang and Zhang (2008) also conclude that an information environment with higher uncertainty regarding future cash inflows has an effect on expected debt financing. Expected inflation rate (Inflation) is defined in this study as the expected change in the consumer price index over the coming year using data from the Livingston Survey.[5]

Altman's Z: Altman's Z is a multiple discriminant analysis bankruptcy model that is a useful tool to predict financial distress in firms operating in a wide variety of industries. It is calculated by taking into account the working capital, retained earnings, earnings before interest and taxes and stockholder's equity scaled by total assets.

2.5 Empirical Results

To get insight into the data, the correlations of all variables involved were observed and it is determined that there is not a multicollinearity problem. Since a panel data was employed, there are some heteroschedasticity issues but regression is robust to that. Further checks were done related for independence, normality, linearity and potentially influential outliers. The correlations are mostly low except for the correlation between size and profitability.

To test Hypothesis 1, a count is taken of the firms that are identified in all the measures. In the aggressive quartile, only 57.98% and 45.64% of the firms are identified as common in both cash ETR and GAAP ETR and cash ETR and BTD respectively. Similarly, in the conservative quartile, only 61.74% and 44.40% of the firms are identified as common in both cash ETR and GAAP ETR and cash ETR and BTD respectively.

[5] http://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey/historical-data/

TABLE 3

Correlations

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. *LEV*	1.000												
2. *Cash ETR*	-0.256	1.000											
3. *GAAP ETR*	-0.249	0.396	1.000										
4. *Book-Tax Difference*	-0.037	-0.426	0.663	1.000									
5. *Tobin's Q*	-0.210	0.200	0.238	0.072	1.000								
6. *MTB*	-0.062	0.042	0.081	0.045	0.136	1.000							
7. *Change in Sales*	-0.057	0.014	0.099	0.086	0.188	0.030	1.000						
8. *CAPEX*	-0.005	-0.064	0.005	0.057	0.053	0.001	0.103	1.000					
9. *TANG*	0.210	-0.214	-0.132	0.045	-0.216	-0.040	-0.044	0.653	1.000				
10. *Size*	0.156	-0.118	-0.132	-0.034	-0.274	-0.019	-0.095	-0.017	0.182	1.000			
11. *Profit*	-0.127	0.349	0.358	0.068	0.691	0.085	0.154	0.068	-0.196	-0.244	1.000		
12. *Inflation*	-0.032	0.016	0.054	0.040	0.089	0.040	0.025	-0.007	-0.005	0.000	0.001	1.000	
13. *Altman Z*	-0.551	0.313	0.295	0.036	0.451	0.050	0.092	-0.040	-0.297	0.460	0.460	0.012	1.000
14. *Industry*	0.188	-0.096	-0.079	0.001	-0.175	-0.016	-0.059	0.219	0.365	-0.127	-0.127	0.004	-0.239

A step-wise regression and hausman tests are run for each regression. The hausman test is used to determine whether the random effects should be shown along with the fixed effects. Table 4 shows that firms in the conservative quartile have lower leverage than the firms in the aggressive quartile. In univariate tests (Model I), firms in the conservative quartile take on an average of 7.9% lower debt while firms in the aggressive quartile are associated with a higher leverage of 9.1% as compared to the average firm. The difference between the two quartiles is less pronounced in Model IV which includes all the control variables and fixed effects even though the direction is still the same. Firms in the aggressive quartile are associated with 1.5% higher debt whereas firms in the conservative quartile have 1.1% less debt than the average firm.

TABLE 4
Mean Coefficient Estimates for Regressions of Leverage on Cash ETR Quartiles for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I*	*II*	*III*	*IV*
Constant	Intercept	0.218**	0.047**	0.33**	0.382**
		(0.002)	(0.013)	(0.013)	(0.021)
Cons	Conservative Quartile	-0.079**	-0.0679**	-0.037**	-0.011**
		(0.004)	(0.004)	(0.004)	(0.003)
Aggr	Aggressive Quartile	0.091**	0.071**	0.041**	0.015**
		(0.004)	(0.004)	(0.004)	(0.003)
Growth	Market-to-Book Ratio		-0.000*	-0.001**	-0.000*
			(0.000)	(0.000)	(0.000)
Tang	Tangibility		0.106**	0.022**	-0.065**
			(0.009)	(0.008)	(0.019)
Size	Log of Assets		0.0113**	-0.008**	-0.003
			(0.001)	(0.001)	(0.002)
Profit	Profitability		0.055*	0.506**	0.006
			(0.001)	(0.026)	(0.024)
Inflation	Inflation		-0.003*	-0.003*	-0.004**
			(0.002)	(0.001)	(0.001)
Industry	Median Industry Leverage		0.122**	0.058**	
			(0.012)	(0.010)	
Altman Z	Likelihood of Bankruptcy			-0.033**	-0.028**
				(0.001)	(0.001)
Fixed Effects		No	No	No	Yes
R^2	R Square	0.098	0.149	0.350	0.299
Adj R^2	Adjusted R Square	0.098	0.148	0.350	
n	Total number of firms	10,802	9,261	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_i$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_i + \alpha_9 Z_{it}$

Model IV: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_i + \alpha_9 Z_{it} +$ Yearly Fixed Effects

TABLE 5
Mean Coefficient Estimates for Regressions of Leverage on Cash ETR
for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I*	*II*	*III*	*IV*
Constant	Intercept	0.293**	0.106**	0.372**	0.393**
		(0.008)	(0.015)	(0.014)	(0.021)
CETR	Cash ETR	-0.528**	-0.432**	-0.314**	-0.107**
		(0.055)	(0.056)	(0.049)	(0.031)
Cons	Conservative Quartile	-0.149**	-0.1316**	-0.090	-0.033**
		(0.013)	(0.014)	(0.012)	(0.007)
Aggr	Aggressive Quartile	0.017*	0.012	-0.002**	0.002
		(0.009)	(0.009)	(0.008)	(0.005)
*Cons*CETR*	Interaction Term	0.510**	0.432**	0.333**	0.127**
		(0.062)	(0.065)	(0.057)	(0.035)
*Aggr*CETR*	Interaction Term	0.367**	0.288**	0.255**	0.105**
		(0.075)	(0.076)	(0.065)	(0.040)
Growth	Market-to-Book Ratio		0.000*	-0.001**	-0.000*
			(0.000)	(0.000)	(0.000)
Tang	Tangibility		0.102**	0.019*	-0.067**
			(0.009)	(0.008)	0.019
Size	Log of Assets		0.011**	-0.008**	-0.002
			(0.001)	(0.001)	(0.002)
Profit	Profitability		0.088**	0.527**	-0.004
			(0.028)	(0.026)	(0.001)
Inflation	Inflation		-0.004*	-0.003*	-0.004**
			(0.002)	(0.001)	(0.001)
Industry	Median Industry Leverage		0.124**	0.060**	
			(0.012)	(0.010)	
Altman Z	Likelihood of Bankruptcy			-0.033**	-0.028**
				(0.000)	(0.001)
Fixed Effects		No	No	No	Yes
R^2	R Square	0.107	0.155	0.353	0.301
Adj R^2	Adjusted R Square	0.107	0.154	0.352	
n	Total number of firms	10,802	9,261	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 CETR_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * CETR_{it} + \alpha_5 Aggr_{it} * CETR_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 CETR_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * CETR_{it} + \alpha_5 Aggr_{it} * CETR_{it} + \alpha_6 MTB_{it} + \alpha_7 Tang_{it} + \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 CETR_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * CETR_{it} + \alpha_5 Aggr_{it} * CETR_{it} + \alpha_6 MTB_{it} + \alpha_7 Tang_{it}$
$+ \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i + \alpha_{12} Z_{it}$

Model IV: $LEV_{it} = \alpha_0 + \alpha_1 CETR_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * CETR_{it} + \alpha_5 Aggr_{it} * CETR_{it} + \alpha_6 MTB_{it} + \alpha_7 Tang_{it}$
$+ \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i + \alpha_{12} Z_{it}$ + Fixed Effects

To test hypothesis 2, the aggressive and conservative quartiles are interacted with the cash ETR. Table 5 shows the effect on leverage by a change in tax rates in the conservative and aggressive quartile.

The results show that an increase in tax rate is associated with a higher increase in leverage in the conservative quartile as compared to the aggressive quartile. Model IV shows that 1% increase in tax rate is associated with a 12.7% increase in leverage in the conservative quartile whereas it is only associated with a 10.5% increase in the aggressive quartile. This statistic shows that firms with non-debt tax shields have a lower sensitivity to an increase in tax rates relative to leverage. Thus, hypothesis 2 is supported for cash ETR.

The third hypothesis relates to the effects of leverage on firm value. In Table 6, tobin's Q is used to proxy for firm value and firms are not divided into quartiles.

The coefficient on Tobin's Q is negative and significant in all models. This implies that an increase in firm value is associated with a decrease in leverage. Model IV, which includes all the controls and fixed effects has a coefficient of -0.004. This implies that a unit increase in Tobin's Q is associated with a decrease in leverage of 0.4%.

Table 7 parses out the effects of tobin's Q by aggressive and conservative quartiles.

Tobin's Q is interacted with the aggressive and conservative quartile to understand the effects of firm value on leverage. This reveals a positive relationship rather than the negative relationship identified in Table 6.

TABLE 6
Mean Coefficient Estimates for Regressions of Leverage on Tobin's Q for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I*	*II*	*III*	*IV*
Constant	Intercept	0.280**	0.096**	0.359**	0.410**
		(0.003)	(0.013)	(0.013)	(0.021)
TQ	Tobin's Q	-0.030**	-0.022**	-0.008**	-0.004**
		(0.001)	(0.002)	(0.002)	(0.001)
Growth	Market-to-Book Ratio		0.000*	0.000**	0.000
			(0.000)	(0.000)	(0.000)
Tang	Tangibility		0.148**	0.039**	-0.062**
			(0.008)	(0.008)	(0.019)
Size	Log of Assets		0.009**	-0.009**	-0.005*
			(0.001)	(0.001)	(0.002)
Profit	Profitability		0.071*	0.485**	0.007
			(0.033)	(0.030)	(0.025)
Inflation	Inflation		-0.002	-0.003	-0.004**
			(0.002)	(0.001)	(0.001)
Industry	Median Industry Leverage		0.105**	0.050**	
			(0.012)	(0.011)	
Altman Z	Likelihood of Bankruptcy			-0.0341**	-0.028**
				(0.001)	(0.001)
Fixed Effects		No	No	No	Yes
R^2	R Square	0.049	0.109	0.335	0.069
Adj R^2	Adjusted R Square	0.049	0.109	0.334	
n	Total number of firms	9,261	9,261	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 TQ_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 TQ_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_i$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 TQ_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_{i} + \alpha_9 Z_{it}$

Model IV: $LEV_{it} = \alpha_0 + \alpha_1 TQ_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_{i} + \alpha_9 Z_{it} +$ Yearly Fixed Effects

TABLE 7
Mean Coefficient Estimates for Regressions of Leverage on Tobin's Q
for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I*	*II*	*III*	*IV*
Constant	Intercept	0.263**	0.085**	0.337**	0.404**
		(0.004)	(0.013)	(0.013)	0.021
TQ	Tobin's Q	-0.024**	-0.028**	-0.011**	-0.008**
		(0.002)	(0.002)	(0.002)	(0.001)
Cons	Conservative Quartile	-0.099**	-0.086**	-0.041**	-0.018**
		(0.008)	(0.008)	(0.007)	(0.005)
Aggr	Aggressive Quartile	0.105**	0.088**	0.053**	0.002
		(0.008)	(0.008)	(0.006)	(0.004)
*Cons*TQ*	Interaction Term	0.013**	0.006*	0.000	0.003*
		(0.003)	(0.003)	(0.002)	(0.002)
*Aggr*TQ*	Interaction Term	-0.013**	-0.006	-0.004	0.008**
		(0.003)	(0.003)	(0.002)	(0.002)
Growth	Market-to-Book Ratio		0.000	0.000**	0.000
			(0.000)	(0.000)	(0.000)
Tang	Tangibility		0.091**	0.018*	-0.066**
			(0.009)	(0.007)	(0.019)
Size	Log of Assets		0.009**	-0.008**	-0.005*
			(0.001)	0.001	(0.002)
Profit	Profitability		0.363**	0.634**	0.045
			(0.035)	(0.032)	(0.026)
Inflation	Inflation		-0.001	-0.002	-0.003**
			(0.006)	(0.001)	0.000
Industry	Median Industry Leverage		0.107**	0.053**	
			(0.012)	(0.010)	
Altman Z	Likelihood of Bankruptcy			-0.032**	-0.028**
				0.000	0.000
Fixed Effects		No	No	No	Yes
R^2	R Square	0.131	0.172	0.354	0.299
Adj R^2	Adjusted R Square	0.130	0.171	0.353	
n	Total number of firms	9,261	9,261	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 TQ_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * TQ_{it} + \alpha_5 Aggr_{it} * TQ_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 TQ_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * TQ_{it} + \alpha_5 Aggr_{it} * TQ_{it} + \alpha_6 MTB_{it} + \alpha_7 Tang_{it} + \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 TQ_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * TQ_{it} + \alpha_5 Aggr_{it} * TQ_{it} + \alpha_6 MTB_{it} + \alpha_7 Tang_{it}$

$+ \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i + \alpha_{12} Z_{it}$

Model IV: $LEV_{it} = \alpha_0 + \alpha_1 TQ_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * TQ_{it} + \alpha_5 Aggr_{it} * TQ_{it} + \alpha_6 MTB_{it} + \alpha_7 Tang_{it}$

$+ \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i + \alpha_{12} Z_{it}$ + Fixed Effects

The coefficient on the interaction term between conservative quartile and firm value is 0.003 and the coefficient on the interaction term between aggressive quartile and firm value is 0.008. So, for firms in the aggressive quartile, a unit increase in firm value is associated with a 0.8% increase in leverage. This implies that compared to the conservative quartile, firm value in the aggressive quartile is not impacted as much by an increase in leverage. This supports the third hypothesis.

2.5.1 Sensitivity and Robustness Tests

2.5.1.1 alternate proxy for ETR. Table 8 and Table 9 use GAAP ETR instead of cash ETR to see if the results hold. As tested in hypothesis 1, GAAP ETR and cash ETR measure different constructs. Therefore, the results are not expected to be replicated. In Table 8, Model IV shows that the conservative quartile does have lower leverage compared to the average and the aggressive quartile carries more leverage. This is similar to the results with cash ETR. Table 9 looks at the interactions between GAAP ETR and the conservative and aggressive quartile. While Model I – Model III has the coefficient for the aggressive quartile lower than the conservative quartile, Model IV has the opposite relationship with the interaction between GETR and aggressive quartile higher.

Table 10 use book-tax differences to proxy for ETR with just the quartiles. The results follow the same signs as in previous proxies but are not significant except in Model III. There is no significant relationship between leverage and interactions between aggressive and book-tax differences (Table 11) except in Model 1.

TABLE 8
Mean Coefficient Estimates for Regressions of Leverage on GAAP ETR Quartiles for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I*	*II*	*III*	*IV*
Constant	Intercept	0.224**	0.053**	0.329**	0.395**
		(0.004)	(0.103)	(0.012)	(0.021)
Cons	Conservative Quartile	-0.100**	-0.092**	-0.061**	-0.019**
		(0.004)	(0.005)	(0.004)	(0.003)
Aggr	Aggressive Quartile	0.090**	0.084**	0.052**	0.015**
		(0.004)	(0.005)	(0.004)	(0.003)
Growth	Market-to-Book Ratio		0.000	-0.001**	-0.000*
			(0.000)	(0.000)	(0.000)
Tang	Tangibility		0.114**	0.028**	-0.069**
			(0.008)	0.008	(0.019)
Size	Log of Assets		0.009**	-0.009**	-0.005*
			(0.001)	(0.001)	(0.002)
Profit	Profitability		0.182**	0.594**	0.039
			(0.028)	(0.026)	(0.025)
Inflation	Inflation		-0.001	-0.002	-0.004**
			(0.002)	(0.001)	0.000
Industry	Median Industry Leverage		0.116**	0.056**	
			(0.011)	(0.102)	
Altman Z	Likelihood of Bankruptcy			-0.032**	-0.027**
				0.000	0.000
Fixed Effects		No	No	No	Yes
R^2	R Square	0.122	0.175	0.366	0.307
Adj R^2	Adjusted R Square	0.122	0.170	0.366	
n	Total number of firms	10,802	9,261	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_i$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_{i} + \alpha_9 Z_{it}$

Model IV: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_{i} + \alpha_9 Z_{it} +$ Yearly Fixed Effects

TABLE 9
Mean Coefficient Estimates for Regressions of Leverage on GAAP ETR for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I*	*II*	*III*	*IV*
Constant	Intercept	0.370**	0.193**	0.450**	0.449**
		(0.012)	(0.018)	(0.016)	(0.022)
GETR	GAAP ETR	-0.767**	-0.7391**	-0.636**	-0.271**
		(0.061)	(0.064)	(0.056)	(0.037)
Cons	Conservative Quartile	-0.255**	-0.257**	-0.197**	-0.075**
		(0.017)	(0.018)	(0.016)	(0.011)
Aggr	Aggressive Quartile	-0.056**	-0.054**	-0.067**	-0.032**
		(0.012)	(0.013)	(0.011)	(0.007)
*Cons*GETR*	Interaction Term	0.795**	0.799**	0.669**	0.270**
		(0.070)	(0.075)	(0.065)	(0.043)
*Aggr*GETR*	Interaction Term	0.740**	0.676**	0.633**	0.283**
		(0.064)	(0.067)	(0.058)	(0.039)
Growth	Market-to-Book Ratio		0.000	-0.001**	-0.000*
			(0.000)	(0.000)	(0.000)
Tang	Tangibility		0.110**	0.025**	-0.075**
			(0.008)	(0.008)	(0.019)
Size	Log of Assets		0.008**	-0.010**	-0.006**
			(0.001)	(0.001)	(0.002)
Profit	Profitability		0.244**	0.643**	0.072**
			(0.028)	(0.026)	(0.025)
Inflation	Inflation		-0.001	-0.002	-0.003**
			(0.002)	(0.001)	0.000
Industry	Median Industry Leverage		0.115**	0.054**	
			(0.011)	(0.010)	
Altman Z	Likelihood of Bankruptcy			-0.032**	-0.027**
				0.000	0.000
Fixed Effects		No	No	No	Yes
R^2	R Square	0.135	0.189	0.375	0.315
Adj R^2	Adjusted R Square	0.134	0.188	0.374	
n	Total number of firms	10,802	9,261	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1\, GETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * GETR_{it} + \alpha_5\, Aggr_{it} * GETR_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1\, GETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * GETR_{it} + \alpha_5\, Aggr_{it} * GETR_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it} + \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i$

Model III: $LEV_{it} = \alpha_0 + \alpha_1\, GETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * GETR_{it} + \alpha_5\, Aggr_{it} * GETR_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$

$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

Model IV: $LEV_{it} = \alpha_0 + \alpha_1\, GETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * GETR_{it} + \alpha_5\, Aggr_{it} * GETR_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$

$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$ + Fixed Effects

TABLE 10

Mean Coefficient Estimates for Regressions of Leverage on Book-Tax Differences Quartiles for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I*	*II*	*III*	*IV*
Constant	Intercept	0.222**	0.070**	0.353**	0.398**
		(0.003)	(0.014)	(0.013)	(0.021)
Cons	Conservative Quartile	-0.010*	-0.011*	-0.010*	-0.002
		(0.005)	(0.005)	(0.004)	(0.002)
Aggr	Aggressive Quartile	0.006	0.007	0.011**	0.003
		(0.005)	(0.005)	(0.004)	(0.002)
Growth	Market-to-Book Ratio		0.000	0.001**	-0.000*
			(0.000)	(0.000)	(0.000)
Tang	Tangibility		0.158**	0.043**	-0.060**
			(0.009)	(0.008)	(0.019)
Size	Log of Assets		0.011**	-0.009**	-0.004*
			(0.001)	(0.001)	(0.002)
Profit	Profitability		-0.180**	0.404**	-0.018
			(0.027)	(0.025)	(0.024)
Inflation	Inflation		-0.004*	-0.003*	-0.004**
			(0.002)	(0.001)	(0.001)
Industry	Median Industry Leverage		0.115**	0.053**	
			(0.012)	(0.011)	
Altman Z	Likelihood of Bankruptcy			-0.035**	-0.028**
				(0.001)	(0.001)
Fixed Effects		No	No	No	Yes
R^2	R Square	0.001	0.095	0.335	0.290
Adj R^2	Adjusted R Square	0.001	0.095	0.333	
n	Total number of firms	10,802	9,261	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_i$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_{i} + \alpha_9 Z_{it}$

Model IV: $LEV_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 Aggr_{it} + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_{it} + \alpha_7 Inflation_t + \alpha_8 Industry_{i} + \alpha_9 Z_{it} +$ Yearly Fixed Effects

TABLE 11
Mean Coefficient Estimates for Regressions of Leverage on Book-Tax Differences Quartiles for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	Definition	I	II	III	IV
Constant	Intercept	0.230**	0.075**	0.356**	0.403**
		(0.004)	(0.014)	0.013	(0.021)
BTD	Book-Tax Difference	-0.223*	-0.185*	-0.066	-0.094*
		0.093	(0.093)	(0.083)	(0.049)
Cons	Conservative Quartile	-0.014	-0.014	-0.007	-0.006
		(0.008)	(0.008)	(0.007)	(0.004)
Aggr	Aggressive Quartile	-0.006	-0.004	0.009	0.001
		(0.006)	(0.006)	(0.005)	(0.003)
*Cons*BTD*	Interaction Term	0.199*	0.164	0.033	0.093
		(0.100)	(0.100)	(0.088)	(0.052)
*Aggr*BTD*	Interaction Term	0.187*	0.143	0.067	0.103*
		(0.095)	(0.095)	(0.084)	(0.050)
Growth	Market-to-Book Ratio		0.000	-0.001**	-0.000*
			(0.000)	(0.000)	(0.000)
Tang	Tangibility		0.157**	0.043**	-0.060**
			(0.009)	(0.008)	(0.019)
Size	Log of Assets		0.011**	-0.009**	-0.005*
			(0.001)	(0.001)	(0.002)
Profit	Profitability		-0.177**	0.401**	-0.020
			(0.027)	(0.025)	(0.024)
Inflation	Inflation		-0.004*	-0.003*	-0.004**
			(0.002)	(0.001)	(0.001)
Industry	Median Industry Leverage		0.115**	0.052**	
			(0.012)	(0.011)	
Altman Z	Likelihood of Bankruptcy			-0.035**	-0.028**
				(0.001)	(0.001)
Fixed Effects		No	No	No	Yes
R^2	R Square	0.002	0.097	0.335	0.290
Adj R^2	Adjusted R Square	0.001	0.096	0.334	
n	Total number of firms	10,802	9,261	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1\, BTD_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * BTD_{it} + \alpha_5\, Aggr_{it} * BTD_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1\, BTD_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * BTD_{it} + \alpha_5\, Aggr_{it} * BTD_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it} + \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i$

Model III: $LEV_{it} = \alpha_0 + \alpha_1\, BTD_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * BTD_{it} + \alpha_5\, Aggr_{it} * BTD_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$

$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

Model IV: $LEV_{it} = \alpha_0 + \alpha_1\, BTD_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * BTD_{it} + \alpha_5\, Aggr_{it} * BTD_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$

$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$ + Fixed Effects

2.5.1.2 alternate proxy for growth. MTB is used to proxy for growth but has a very low coefficient. The regressions are run again using change in sales (Table 12) and the results are comparable.

The first column presents cash ETR and the coefficient on the interaction term for the conservative quartile is 0.311 and 0.256 for the aggressive quartile. GAAP ETR and BTD still provide the same results as using MTB.

In Table 13, capital expenditures are used to proxy for growth. An expense is considered to be a capital expenditure when the asset is a newly purchased capital asset or an investment that improves the useful life of an existing capital asset. The amount of capital expenditures a company is likely to have depends on the industry it occupies. But this type of outlay is made by companies to mostly increase the scope of their operations and therefore should proxy for growth.

The results still hold with the coefficient of the interaction between conservative quartile and cash ETR higher than the interaction between aggressive quartile and cash ETR.

TABLE 12
Mean Coefficient Estimates for Regressions of Leverage on ETR Using a Different Proxy of Growth for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I - CETR*	*II - GETR*	*III - BTD*
Constant	Intercept	0.389**	0.456**	0.376**
		(0.013)	(0.016)	(0.012)
ETR	Effective Tax Rate	-0.324**	-0.576**	-0.050
		(0.048)	(0.055)	(0.081)
Cons	Conservative Quartile	-0.080**	-0.170**	-0.006
		(0.011)	(0.015)	(0.007)
Aggr	Aggressive Quartile	-0.002	-0.057**	0.009
		(0.064)	(0.011)	(0.005)
*Cons*ETR*	Interaction Term	0.311**	0.580**	0.017
		(0.055)	(0.062)	(0.087)
*Aggr*ETR*	Interaction Term	0.256**	0.586**	0.071
		(0.064)	(0.057)	(0.083)
l(sales)	Change in Sales	-0.045**	-0.031**	-0.034**
	(Alternative proxy for growth)	(0.008)	(0.008)	(0.009)
Tang	Tangibility	0.011	0.016*	0.037**
		(0.007)	(0.007)	(0.007)
Size	Log of Assets	-0.008**	-0.010**	-0.010**
		(0.001)	(0.001)	(0.001)
Profit	Profitability	0.525**	0.618**	0.398**
		(0.025)	(0.026)	(0.024)
Inflation	Inflation	-0.004**	-0.003*	-0.004**
		(0.001)	(0.001)	(0.001)
Industry	Median Industry Leverage	0.057**	0.055**	0.053**
		(0.010)	(0.009)	(0.010)
Altman Z	Likelihood of Bankruptcy	-0.034**	-0.034**	-0.036**
		(0.001)	(0.001)	(0.001)
R^2	R Square	0.360	0.376	0.341
Adj R^2	Adjusted R Square	0.359	0.375	0.340
n	Total number of firms	9,299	9,299	9,299

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 CETR_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * CETR_{it} + \alpha_5 Aggr_{it} * CETR_{it} + \alpha_6 l(sales)_{it} + \alpha_7 Tang_{it} + \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i + \alpha_{12} Z_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 GETR_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * GETR_{it} + \alpha_5 Aggr_{it} * GETR_{it} + \alpha_6 l(sales)_{it} + \alpha_7 Tang_{it} + \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i + \alpha_{12} Z_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 BTD_{it} + \alpha_2 Cons_{it} + \alpha_3 Aggr_{it} + \alpha_4 Cons_{it} * BTD_{it} + \alpha_5 Aggr_{it} * BTD_{it} + \alpha_6 l(sales)_{it} + \alpha_7 Tang_{it} + \alpha_8 Size_{it} + \alpha_9 Profit_{it} + \alpha_{10} Inflation_t + \alpha_{11} Industry_i + \alpha_{12} Z_{it}$

TABLE 13

Mean Coefficient Estimates for Regressions of Leverage on ETR Using a Different Proxy of Growth for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	Definition	I - CETR	II - GETR	III - BTD
Constant	Intercept	0.392**	0.458**	0.383**
		(0.013)	(0.015)	(0.012)
ETR	Effective Tax Rate	-0.319**	-0.574**	-0.034
		(0.046)	(0.053)	(0.078)
Cons	Conservative Quartile	-0.083**	-0.169**	-0.007
		(0.011)	(0.014)	(0.008)
Aggr	Aggressive Quartile	0.001	-0.055**	0.010*
		(0.007)	(0.010)	(0.005)
*Cons*ETR*	Interaction Term	0.316**	0.578**	0.002
		(0.053)	(0.060)	(0.083)
*Aggr*ETR*	Interaction Term	0.265**	0.596**	0.060
		(0.063)	(0.054)	(0.079)
CapEx	Capital Expenditures	-0.653**	-0.633**	-0.645**
	(Alternative proxy for growth)	(0.040)	(0.040)	(0.041)
Tang	Tangibility	0.105**	0.107**	0.130**
		(0.009)	(0.009)	(0.009)
Size	Log of Assets	-0.009**	-0.011**	-0.011**
		(0.001)	(0.001)	(0.001)
Profit	Profitability	0.568**	0.657**	0.444**
		(0.024)	(0.024)	(0.024)
Inflation	Inflation	-0.004**	-0.003*	-0.005**
		(0.001)	(0.001)	(0.001)
Industry	Median Industry Leverage	0.061**	0.057**	0.054**
		(0.009)	(0.010)	(0.009)
Altman Z	Likelihood of Bankruptcy	-0.033**	-0.033**	-0.0353**
		(0.001)	(0.001)	(0.001)
R^2	R Square	0.368	0.383	0.348
Adj R^2	Adjusted R Square	0.367	0.382	0.347
n	Total number of firms	10,141	10,141	10,141

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1\, CETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * CETR_{it} + \alpha_5\, Aggr_{it} * CETR_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$
$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1\, GETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * GETR_{it} + \alpha_5\, Aggr_{it} * GETR_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$
$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1\, BTD_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * BTD_{it} + \alpha_5\, Aggr_{it} * BTD_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$
$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

2.5.1.3 alternate quintile specifications. Quartiles are the most common form of division used in the literature. Therefore the data is split into three (Table 14) and 10 quintiles (Table 15). This robustness test relates to justifying the stratifications used.

When the data is partitioned into three quintiles (Table 14), cash ETR loses significance for the aggressive quartile but GAAP ETR supports the second hypothesis while the effects on BTD are still statistically insignificant. However, Table 14 shows that when data is divided into three quintiles, the results are not statistically significant.

The data is also partitioned into 10 quintiles in Table 15 and both cash ETR and GAAP ETR supports the hypothesis. The results for BTD are still statistically insignificant. The coefficient for Cash ETR is 0.379 for the conservative quintile and 0.299 for the aggressive quintile.

These alternate quintile specifications ensure that the results are not spurious and increase our understanding of the relevant parameters.

TABLE 14

Mean Coefficient Estimates for Regressions of Leverage on ETR by Dividing the Population into Three Quintiles for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	*Definition*	*I - CETR*	*II - GETR*	*III - BTD*
Constant	Intercept	0.368**	0.429**	0.356**
		(0.018)	(0.024)	(0.014)
ETR	Effective Tax Rate	-0.262**	-0.502**	-0.253
		(0.091)	(0.104)	(0.152)
Cons	Conservative Quartile	-0.072**	-0.155**	0.002
		(0.015)	(0.022)	(0.007)
Aggr	Aggressive Quartile	-0.002	-0.050*	0.009
		(0.014)	(0.020)	(0.007)
*Cons*ETR*	Interaction Term	0.253**	0.491**	0.190
		(0.095)	(0.108)	(0.154)
*Aggr*ETR*	Interaction Term	0.145	0.485**	0.256
		(0.099)	(0.105)	(0.153)
Growth	Market-to-Book Ratio	-0.001**	-0.001**	-0.001**
		(0.000)	(0.000)	(0.000)
Tang	Tangibility	0.021**	0.026**	0.042**
		(0.008)	(0.008)	(0.008)
Size	Log of Assets	-0.008**	-0.010**	-0.009**
		(0.001)	(0.001)	(0.001)
Profit	Profitability	0.520**	0.630**	0.405**
		(0.026)	(0.026)	(0.025)
Inflation	Inflation	-0.003*	-0.002	-0.004*
		(0.001)	(0.001)	(0.001)
Industry	Median Industry Leverage	0.060**	0.054**	0.052**
		(0.010)	(0.010)	(0.011)
Altman Z	Likelihood of Bankruptcy	-0.033**	-0.032**	-0.035**
		(0.001)	(0.001)	(0.001)
R^2	R Square	0.352	0.374	0.335
Adj R^2	Adjusted R Square	0.351	0.374	0.334
n	Total number of firms	8,781	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1\,CETR_{it} + \alpha_2\,Cons_{it} + \alpha_3\,Aggr_{it} + \alpha_4\,Cons_{it} * CETR_{it} + \alpha_5\,Aggr_{it} * CETR_{it} + \alpha_6\,MTB_{it} + \alpha_7\,Tang_{it}$
$+ \alpha_8\,Size_{it} + \alpha_9\,Profit_{it} + \alpha_{10}\,Inflation_t + \alpha_{11}\,Industry_i + \alpha_{12}\,Z_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1\,GETR_{it} + \alpha_2\,Cons_{it} + \alpha_3\,Aggr_{it} + \alpha_4\,Cons_{it} * GETR_{it} + \alpha_5\,Aggr_{it} * GETR_{it} + \alpha_6\,MTB_{it} + \alpha_7\,Tang_{it}$
$+ \alpha_8\,Size_{it} + \alpha_9\,Profit_{it} + \alpha_{10}\,Inflation_t + \alpha_{11}\,Industry_i + \alpha_{12}\,Z_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1\,BTD_{it} + \alpha_2\,Cons_{it} + \alpha_3\,Aggr_{it} + \alpha_4\,Cons_{it} * BTD_{it} + \alpha_5\,Aggr_{it} * BTD_{it} + \alpha_6\,MTB_{it} + \alpha_7\,Tang_{it}$
$+ \alpha_8\,Size_{it} + \alpha_9\,Profit_{it} + \alpha_{10}\,Inflation_t + \alpha_{11}\,Industry_i + \alpha_{12}\,Z_{it}$

TABLE 15

Mean Coefficient Estimates for Regressions of Leverage on ETR by Dividing the Population into Ten Quintiles for Large Firms between 2000-2012

Dependent Variable - Leverage

Variable	Definition	I - CETR	II - GETR	III - BTD
Constant	Intercept	0.376**	0.422**	0.356**
		(0.013)	(0.013)	(0.013)
ETR	Effective Tax Rate	-0.338**	-0.548**	-0.074*
		(0.024)	(0.027)	(0.033)
Cons	Conservative Quartile	-0.103**	-0.212**	-0.018
		(0.014)	(0.016)	(0.010)
Aggr	Aggressive Quartile	0.000	-0.029**	0.015*
		(0.007)	(0.008)	(0.007)
*Cons*ETR*	Interaction Term	0.379**	0.651**	0.069
		(0.042)	(0.047)	(0.049)
*Aggr*ETR*	Interaction Term	0.299**	0.574**	0.084*
		(0.057)	(0.033)	(0.038)
Growth	Market-to-Book Ratio	-0.001**	-0.001**	-0.001**
		0.000	0.000	0.000
Tang	Tangibility	0.019*	0.026**	0.044**
		(0.008)	(0.008)	(0.008)
Size	Log of Assets	-0.008**	-0.009**	-0.009**
		(0.001)	(0.001)	(0.001)
Profit	Profitability	0.529**	0.653**	0.404**
		(0.026)	(0.026)	(0.025)
Inflation	Inflation	-0.003*	-0.002	-0.003*
		(0.001)	(0.001)	(0.001)
Industry	Median Industry Leverage	0.060**	0.056**	0.052**
		(0.010)	(0.010)	(0.011)
Altman Z	Likelihood of Bankruptcy	-0.033**	-0.032**	-0.035**
		(0.001)	(0.001)	(0.001)
R^2	R Square	0.353	0.376	0.335
Adj R^2	Adjusted R Square	0.353	0.376	0.334
n	Total number of firms	8,781	8,781	8,781

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1\, CETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * CETR_{it} + \alpha_5\, Aggr_{it} * CETR_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$
$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1\, GETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * GETR_{it} + \alpha_5\, Aggr_{it} * GETR_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$
$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1\, BTD_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * BTD_{it} + \alpha_5\, Aggr_{it} * BTD_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$
$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

2.5.1.4 Differences pre- and post-recession. To understand the relative impact of the financial collapse of 2007, the regressions are run separately for four separate time periods within the data in Table 16.

In Column 1, only the pre-recession time period (2000-2006) is taken into account to measure the impact of tax aggressiveness on leverage. The results hold with the conservative quartile being more sensitive to changes in leverage compared to the aggressive quartile. Column 2 presents the data for 2007-2012 and the results do hold again but the magnitude is significantly smaller. The post-recession period is further parsed into the recession period (2007-2009) in column 3 with similar results but the results are insignificant for 2010-2012 (Column 4).

The effect of tax aggressiveness on firm value is presented in Table 17.

Column 1, which shows the results for 2000-2006 show significant results similar to the prediction in hypothesis 3. However, the results are insignificant for the later periods.

TABLE 16
Mean Coefficient Estimates for Regressions of Leverage on Cash ETR for Large Firms in Different Time Periods

Dependent Variable - Leverage

Variable	Definition	2000-2006	2007-2012	2007-2009	2010-2012
Constant	Intercept	0.381**	0.371**	0.419**	0.300**
		(0.018)	(0.023)	(0.033)	(0.034)
CETR	Cash ETR	-0.350**	-0.284**	-0.316**	-0.188
		(0.059)	(0.080)	(0.108)	(0.118)
Cons	Conservative Quartile	-0.092**	-0.094**	-0.103**	-0.086**
		(0.015)	(0.018)	(0.024)	(0.033)
Aggr	Aggressive Quartile	-0.002	-0.004	0.001	-0.001
		(0.010)	(0.013)	(0.019)	(0.018)
*Cons*CETR*	Interaction Term	0.413**	0.274**	0.312**	0.190
		(0.071)	(0.089)	(0.117)	(0.153)
*Aggr*CETR*	Interaction Term	0.349**	0.207*	0.214**	0.169
		(0.080)	(0.104)	(0.137)	(0.164)
Growth	Market-to-Book Ratio	-0.001**	-0.001**	0.000*	-0.001**
		(0.000)	(0.000)	(0.000)	(0.000)
Tang	Tangibility	0.033**	0.010	0.013	0.007
		(0.010)	(0.012)	(0.017)	(0.017)
Size	Log of Assets	-0.007**	-0.009**	-0.013**	-0.003
		(0.001)	(0.002)	(0.003)	(0.003)
Profit	Profitability	0.303**	0.786**	0.804**	0.783**
		(0.031)	(0.041)	(0.058)	(0.059)
Inflation	Inflation	-0.006*	0.000	0.000	-0.001
		(0.003)	(0.002)	(0.002)	(0.005)
Industry	Median Industry Leverage	0.058**	0.067**	0.059*	0.073**
		(0.013)	(0.017)	(0.023)	(0.023)
Altman Z	Likelihood of Bankruptcy	-0.029**	-0.038**	-0.040**	-0.035**
		(0.001)	(0.001)	(0.001)	(0.001)
R^2	R Square	0.377	0.354	0.354	0.362
Adj R^2	Adjusted R Square	0.375	0.352	0.350	0.358
n	Total number of firms	4,685	4,096	2,300	1,796

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model: $LEV_{it} = \alpha_0 + \alpha_1\, CETR_{it} + \alpha_2\, Cons_{it} + \alpha_3\, Aggr_{it} + \alpha_4\, Cons_{it} * CETR_{it} + \alpha_5\, Aggr_{it} * CETR_{it} + \alpha_6\, MTB_{it} + \alpha_7\, Tang_{it}$

$+ \alpha_8\, Size_{it} + \alpha_9\, Profit_{it} + \alpha_{10}\, Inflation_t + \alpha_{11}\, Industry_i + \alpha_{12}\, Z_{it}$

TABLE 17
Mean Coefficient Estimates for Regressions of Leverage on Tobin's Q for Large Firms in Different Time Periods

Dependent Variable - Leverage

Variable	*Definition*	*2000-2006*	*2007-2012*	*2007-2009*	*2010-2012*
Constant	Intercept	0.441**	0.133**	0.162	-0.111
		(0.036)	(0.049)	(0.095)	(0.097)
TQ	Tobin's Q	-0.008**	-0.002	-0.001	-0.006
		(0.002)	(0.002)	(0.003)	(0.005)
Cons	Conservative Quartile	-0.018**	-0.012*	-0.012	-0.014
		(0.006)	(0.006)	(0.007)	(0.009)
Aggr	Aggressive Quartile	0.002	0.009	0.027**	-0.010
		(0.005)	(0.006)	(0.009)	(0.009)
*Cons*TQ*	Interaction Term	0.005*	0.002	0.003	0.004
		(0.002)	(0.002)	(0.003)	(0.004)
*Aggr*TQ*	Interaction Term	0.006**	-0.002	-0.012**	0.005
		(0.002)	(0.003)	(0.005)	(0.004)
Growth	Market-to-Book Ratio	0.000*	0.000**	0.000	0.000
		0.000	0.000	0.000	0.000
Tang	Tangibility	-0.035	0.031	0.136**	0.087
		(0.030)	(0.034)	(0.049)	(0.063)
Size	Log of Assets	-0.009*	0.024**	0.011	0.048
		(0.004)	(0.005)	(0.011)	(0.011)
Profit	Profitability	0.054	-0.068	0.020	-0.130
		(0.037)	(0.036)	(0.042)	(0.066)
Inflation	Inflation	-0.008**	-0.002**	-0.003**	0.000
		(0.002)	(0.001)	(0.001)	(0.001)
Altman Z	Likelihood of Bankruptcy	-0.028**	-0.025**	-0.016**	-0.016
		(0.001)	(0.001)	(0.002)	(0.002)
R^2	R Square	0.344	0.225	0.217	0.152
Adj R^2	Adjusted R Square	0.344	0.225	0.217	0.152
n	Total number of firms	4,685	4,096	2,300	1,796

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model: $LEV_{it} = \alpha_0 + \alpha_1\ TQ_{it} + \alpha_2\ Cons_{it} + \alpha_3\ Aggr_{it} + \alpha_4\ Cons_{it} * TQ_{it} + \alpha_5\ Aggr_{it} * TQ_{it} + \alpha_6\ MTB_{it} + \alpha_7\ Tang_{it}$

$+ \alpha_8\ Size_{it} + \alpha_9\ Profit_{it} + \alpha_{10}\ Inflation_t + \alpha_{11}\ Industry_i + \alpha_{12}\ Z_{it}$

2.6 Conclusion

This study examines the effect of tax aggressiveness on the financing decision of a firm. A regression model is presented based on Frank and Goyal (2009) to understand the determinants of leverage for a firm. This study underscores the difference between GAAP ETR and Cash ETR as a proxy for tax aggressiveness. The results also predicts that tax aggressive firms use less debt and firm value does impact financing decision. These results shed light on an unresolved issue in extant research.

This study is important to a variety of stakeholders. It informs the interested users of financial statements the financing effect to the tax aggressive behavior. It emphasizes the importance of distinguishing between Cash ETR and GAAP ETR. It adds another statistically significant determinant of leverage to aid academic researchers with the omitted variable bias problem. Shareholders and executives could also use this study to craft the right incentives, ensure proper implementation and make them understand all the risks and rewards of tax aggressiveness. The study may also help researchers investigating tax aggressiveness and/or financing decisions. Furthermore, analyzing the extent to which empirical proxies for tax aggressiveness represent underlying tax shelter transactions answers the call in Hanlon and Heitzman (2010) for researchers to develop a better understanding on the usefulness of such measures in various contexts.

There are two known limitations of this paper. First, effective tax rates are noisy proxies to measure tax aggressiveness. These measures can only provide information on non-conforming tax differences but since public companies usually want to report higher GAAP profit, this may not be a major constraint. Second, there isn’t a unified theory of market leverage that has gained general consensus which makes it difficult to conclusively predict capital structure decisions. Although, Frank and Goyal (2009) show that the pecking order theory was much more descriptive in the 1970s and the 1980s, it performed progressively worse after the 1990s favoring the tradeoff theory.

The avenues for future research include looking at the cost of equity and cost of debt of firms that are tax aggressive. Another interesting future research could be to determine the behavioral impact of tax aggressiveness on financial reporting.

CHAPTER 3

THE EFFECT OF JOBS ACT ON FIRM RISK AND FINANCING DECISION OF SMALL IPO FIRMS

3.1 Introduction

On April 5 2012, the President signed the Jump-Start Our Business Startups Act (JOBS Act) into law, which both the U.S. House of Representatives and U.S. Senate passed by wide margins. The JOBS Act creates a subcategory of issuers called Emerging Growth Companies (EGCs)[6], which are intended to have an easier access to sources of capital. JOBS Act exempts EGCs from certain of the more burdensome regulatory requirements including auditor attestation of the company's internal control [SOX404 (b)]. "Accelerated filers"[7] are already exempt from SOX 404(b) attestations since it was argued that the regulatory cost and burden of having the assessment outweighs the benefit to investors of small firms (U.S. Congress [2009] and [2010]). Extant research (Kinney and Shephardson 2011) support no SOX404 (b) attestations for smaller firms as the costs imposed on them are disproportionately larger and do not outweigh the benefits. The purpose of this paper is to study the effect of SOX 404 (b) on the idiosyncratic risk, cost of debt and the financing decision to understand the role of audit quality and JOBS Act on EGCs.

The SEC survey of financial executives show that more than half of the respondents from non-accelerated filers believe that SOX404 (b) has a positive effect on the quality of internal control structure and audit committee confidence in Internal

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[6] EGCs are generally small companies with less than one billion dollars in revenue. Specific criteria to become an EGC are discussed in section 2.

[7] Accelerated filers are issuers that (1) have a public float of at least $75 million, (2) have been subject to the Exchange Act's reporting requirements for at least 12 calendar months, (3) previously have filed at least one annual report, and (4) are not eligible to file their quarterly and annual reports on Forms 10-Q and 10-K using scaled disclosure requirements.

Control over Financial Reporting (ICFR), and close to half believe it led to an improvement in the ability to raise capital, investor confidence, operating efficiency, financial reporting quality, or firm value (SEC 2009). Studies on the impact of auditors assurance about earnings forecast in an IPO offering prospectus suggest that an audit helps improve the quality of the information by reducing optimistic bias and increasing accuracy in management earnings forecasts (Clarkson 2000; McConomy 1998). However, the market does not appear to perceive this increased accuracy to be valuable (Bédard et al. 2010). Dye (1993) shows a dual characterization of the audit as both enhancing resource allocation (an informational role) and providing investors with a claim on the auditor in the event of an audit failure (an insurance role). The informational role relies on audit quality differences, whereas a liability role relies on differences in quasi-insurance coverage provided in the event of securities litigation. Willenborg (1999) support both roles but there is a higher insurance-based demand for IPO audits in the small-deal segment of the IPO market.

IPOs offer a natural setting for studying the importance of auditing. The asymmetries in the IPO market create a demand for credible information to help establish equity values and for market signaling to mitigate adverse selection. While theory suggests that auditors enhance the credibility of financial reports, empirical research has provided surprisingly little evidence to substantiate it (Healy and Palepu 2001). However, it is common practice for banks to require firms to present audited financial information, even for private companies. This implies that capital providers regard auditors as enhancing credibility. However, whether this enhanced credibility affects financing decisions is an unresolved question.

Extant literature overwhelmingly supports discontinuing SOX404 (b) attestations especially for smaller issuers. There are two ways why SOX404 (b) may be redundant, especially for EGCs. One, the requirements in SOX302 and AU550 provide the market with sufficient assurance regarding the internal controls. Two, auditors may omit control testing for smaller firms due to the inherent problems (collusion and management override) and rely exclusively on substantive testing. On the other hand, Lambert, Leuz, and Verrecchia (2007) show that low quality information increases market participants' assessed variance of a firm's cash flows and the assessed covariances with other firms' cash flows, leading to a higher cost of capital. SOX404 (b) has been shown to improve the quality of information and firm risk (Ashbaugh-Skaife et al. 2007). JOBS Act provides an ideal setting where the absence of SOX404 (b) attestations lets us compare the impact of such evaluations.

Based on the theoretical framework provided in Lambert, Leuz, and Verrecchia (2007), idiosyncratic risk may be most efficient in capturing the incremental effect of increased credibility provided by SOX 404(b) attestations. Idiosyncratic risk has little or no correlation with market risk, and captures the risk that is specific to an asset. Goyal and Santa-Clara (2003) suggest that idiosyncratic risk, rather than market risk (systematic risk), accounts for most of the variation in the risk of an individual stock over time. However, much of the prior accounting research that investigates the effect of information quality on cost of capital assess this effect after controlling for systematic risk (Botosan and Plumlee 2002; Bhattacharya, Daouk, and Welker 2003; Francis et al.2005) while the effect on idiosyncratic risk is largely ignored (Ashbaugh-Skaife et al. 2009). To further measure the economic impact of the SOX 404(b) attestation and its effect on leverage, the effect on cost of debt is also calculated.

It is hypothesized that firms with no SOX404 (b) attestations may have no effect on the cost of debt if the market does not value the value of the attestation. The theoretical groundwork of the link between cost of debt and leverage called the 'market timing hypothesis' which suggests that that capital structure is the cumulative outcome of past attempts to time the equity market. Baker and Wurgler (2002) claimed that market timing is the first order determinant of a corporation's capital structure. According to this theory, firms prefer equity when they perceive the relative cost of equity as low and prefer debt otherwise. It is also proposed that eliminating the SOX404 (b) attestations may not provide enough of an impetus for firms to go public. Therefore, we posit that firms with no SOX 404 (b) attestations will have no effect on debt.

The study's data is divided into two samples – pre-JOBS Act (control sample) and post-JOBS Act (treatment sample). The control sample consists of issuers that would be classified as EGC under the JOBS Act if the law was in effect as of 12/31/2006. The results indicate that there was a negative effect on the idiosyncratic risk post-JOBS Act. The idiosyncratic risk actually decreased by 90.41 units after the JOBS Act suggesting the lack of SOX404(b) attestations did not have any impact on firm risk. Further, the results show that the JOBS Act increased the cost of debt by 0.4% possibly causing the firms to issue more equity. Finally, the leverage decreased by 3.6% after JOBS Act showing that the JOBS Act has been successful in incentivizing EGCs to use public funds rather than rely on long-term debt for financing.

The study is organized as follows. Section 2 presents background on JOBS Act and SOX and Section 3 presents the literature review. Section 4 explains the hypotheses development and section 5 describes the data and methodology. Section 6 reports the empirical results and section 7 concludes.

3.2 Background

The President signed the Jumpstart our Business Startups (JOBS) Act into law on April 5, 2012. The objective is to stimulate the growth of smaller companies by facilitating easier access to capital and reduced regulatory reporting requirements thereby creating jobs via expanded operations. The JOBS Act implementation period varies; for example, the provisions relating to a new class of reporting company - the Emerging Growth Company - are effective immediately as is the ability for companies (other than banks and bank holding companies) to have up to 2,000 shareholders, including up to 500 non-accredited investors, without triggering registration with the SEC. Banks and bank holding companies now also can have up to 2,000 shareholders but are not subject to the 500 non-accredited investor limit. Other provisions require the SEC to formulate rules and conduct studies to effect the provisions of the legislation.

Title I of the JOBS Act creates a new class of company - the Emerging Growth Company (EGC) - effective immediately. EGCs are small companies that:

1. Report less than $1 billion in revenue; (inflation adjusted by CPI)
2. Issue less than $1 billion in non-convertible debt in the last 3 years;
3. Are NOT a large accelerated filer; or

4. Had a sale of common equity securities pursuant to an effective registration statement under the Securities Act of 1933 occurred on or before December 8, 2011.

As discussed earlier, EGCs are not required to get SOX 404(b) attestations. In an effort to reduce disclosure requirements in registration statements, many provisions founded in the Sarbanes-Oxley Act of 2002 are eliminated for EGCs. The provisions are listed below:

1. Reduced disclosure about the company's executive compensation arrangements pursuant to the rules applicable to smaller reporting companies;
2. A requirement to present only two years of audited financial statements and two years of related Management's Discussion and Analysis (MD&A);
3. A exemption from the auditor attestation requirement in the assessment of the company's internal controls over financial reporting;
4. An exemption to provide less than five years of selected financial data;
5. An exemption from compliance with any new requirements adopted by the Public Company Accounting Oversight Board requiring mandatory audit firm rotation or a supplement to the auditor's report in which the auditor would be required to provide additional information about the audit and the financial statements of the issuer;
6. An exemption from the adoption of new or revised financial accounting standards until they would apply to private companies; and
7. No requirement to seek non-binding advisory votes on executive compensation or golden parachute arrangements

The Sarbanes-Oxley Act of 2002 was passed by Congress on July 25, 2002 (Congress 2002). This bill was legislated largely in response to the financial scandals that were discovered in late 2001, the most significant of which was Enron. With regard to auditors and auditing, this Act changed the landscape of public accounting. Section 101 establishes the PCAOB to "oversee the audits of public companies in order to protect investors and the public interest by promoting informative, accurate, and independent audit reports". As a result of SOX, top management must now individually certify the accuracy of financial information. In addition, penalties for fraudulent financial activity are much more severe. Also, SOX increased the independence of the outside auditors who review the accuracy of corporate financial statements, and increased the oversight role of boards of directors.

AS 2 was issued by the PCAOB on March 9, 2004 to provide specific guidance to auditors implementing SOX 404 (PCAOB 2004). AS 2 required auditors to issue an independent opinion on management's assessment of internal controls, as well as an independent opinion on the adequacy of the firm's internal control structure and procedures. Due to the detailed and specific testing guidance in AS 2, the PCAOB considered the approach of this standard to be a bottom-up coverage-based approach. This standard was approved by the SEC on June 17, 2004. It became effective for firms with fiscal years ended November 15, 2004 or later (PCAOB 2004). Auditing Standard (AS) No. 2 added requirement for the auditor to express a separate opinion on the ICFR based on their own review (PCAOB [2004]). In a speech by the PCAOB Chairman at the time, William McDonough stated that the SOX 404 audits under AS 2 were "excessive".

Auditing Standard No. 5 (AS 5) was issued by the PCAOB in 2007 to replace AS 2 and is the current guidance on the implementation of SOX 404(b). The PCAOB's main goal of this regulation was to increase the efficiency of the internal control audit while maintaining its effectiveness. However, there was significant concern regarding a new internal control audit regulation, specifically among investors and investor advocates. Doogar et al. (2010) found that the efficiency of internal control audits was increased under AS 5 (audit fees decreased).

3.3 Literature Review

3.3.1 Internal Controls

Lambert, Leuz, and Verrecchia (2007) [hereafter referred to as LLV (2007)] show that low quality information increases market participants' assessed variance of a firm's cash flows and the assessed covariance's with other firms' cash flows, leading to a higher cost of equity capital. LLV (2007) develop a model in a single-period multisecurity CAPM setting that links the quality of accounting disclosures and information systems to firm risk and cost of equity. Their framework specifically includes the internal control systems of the firm. There are two ways to affect a firm's cost of capital: (1) direct effects—where higher quality accounting information affect market participants' assessments of the future cash flows and (2) indirect effects—where higher quality information affect the quality of the real decisions within the firm.

Doyle et al. (2007) and Ashbaugh-Skaife et al. (2008) show that effective internal control increases the quality of accruals and thus enhance the reliability of financial reporting. Ashbaugh-Skaife et al. (2008) report that firms reporting internal control deficiencies are associated with lower quality accruals and absolute abnormal accruals. They also find that firms that remediate their internal control issues exhibit changes in accrual quality consistent with changes in internal control quality indicating that a consistent application of SOX404(b) may be required every year. Finally and most importantly, their finding suggests unintentional errors are more likely to be associated with internal control weaknesses which may bias earnings consistent with LLV (2007) prediction. In a similar vein, Doyle et al. (2007) examine the relation between accruals quality and internal controls and find that internal control weaknesses are generally associated with poorly estimated accruals that are not realized as cash flows. Further, they find that this relation is driven by overall company-level controls and not account-specific weaknesses.

Ashbaugh-Skaife et al. (2009) take the reliability issue one step further and hypothesize that the increase in reliability of financial reporting decreases the information risk to investors and thus reduces the risk (both idiosyncratic and systematic) and the cost of equity capital. They use unaudited pre–SOX 404 disclosures and SOX 404 audit opinions to assess how changes in internal control quality affect firm risk (idiosyncratic) and cost of equity. After controlling for other risk factors, they find that firms with internal control deficiencies have significantly higher idiosyncratic risk and cost of capital. Their results reveal that internal control deficient firms have an increase in market-adjusted cost of equity of 93 basis points, around the first disclosure. They also observe a significant decrease in the average market-adjusted cost of equity of 116 basis points around the release of an unqualified SOX 404 opinion for firms most likely to report internal control deficiencies. Collectively, the cross-sectional and inter-temporal tests present consistent evidence that information risk, as proxied by ineffective internal control, is an important determinant of idiosyncratic risk that affects the market's assessment of firms' cost of capital. On the other hand, Ogneva et al. (2007) conclude that there is no consistent association between internal control deficiencies and cost of equity after controlling for primitive firm characteristics and analyst forecast bias.

Other research (De Franco et al. 2005; Cheng et al. 2006; Beneish et al. 2008) examine market reaction to the disclosure of internal control weaknesses under Section 404. De Franco et al. (2005) and Cheng et al. (2006) find a negative market reaction to reporting of internal control weaknesses. Cheng et al. (2006) also find that the market reacts more negatively when managers indicate that the material weaknesses cannot be fixed by fiscal year-end or when firms simultaneously announce a restatement. In contrast, Beneish et al. (2008) find no market response to Section 404 disclosures. Rezaee et al. (2012) investigate the stock market reaction for three groups of firms: those that delayed reporting on their internal control, those reporting ineffective internal control, and those reporting effective internal control. They find that stock returns are most negative for firms that delay filing of their internal control reports, negative for firms with ineffective internal controls, and positive for firms with effective internal controls. They suggest that these results indicate that the market values and rewards effective internal control.

Kinney and Shepardson (2011) specifically examine internal control reporting by small firms. Using incremental and joint implementation of multiple SOX-based control effectiveness disclosure and audit mandates, they find the increases in material weakness disclosure rates for small firms undergoing initial SOX 404(b) to be quantitatively and statistically similar to increases for initial management reports of small firms exempt from such audits; but the costs are much lower. They conclude that, for small firms, management internal control reports and traditional financial audits may be a cost effective disclosure alternative to full application of SOX 404(b). This conclusion casts doubt on the value of internal control reporting for smaller firms.

3.3.2 Financing Decisions

The modern theory of capital structure began with the seminal paper of Modigliani and Miller (MM) (1958). They showed that if a firm had no taxes, agency costs, bankruptcy costs, or information asymmetries, the choice between debt and equity would not affect firm value. MM (1963) recognized that corporate interest deductions can create incentives for firms to use debt. Their ideas evolved into the trade-off theory which says that capital structure is determined by a trade-off between the benefits of debt and the costs of debt. The "tax-bankruptcy trade-off' perspective is that firms balance the tax benefits of debt against the deadweight costs of bankruptcy.

Another theory closely related to the trade-off theory is the stakeholder co-investment theory. This theory implies that for a firm to be successful over any extended period, all of the stakeholders must find it in their interests to continue participating in the firm. In order to insure the willingness of stakeholders, such as employees and business partners to make valuable co-investments, some firms prefer to use little debt when compared to other firms.

The agency theory can also be used to explain the trade-off theory of capital structure. Jensen and Meckling (1976) (JM) identify conflicts between shareholders and managers and debt holders and equity holders. Conflicts between shareholders and managers arise because managers hold less than 100% of the residual claim but bear the entire cost. Conflicts between debt holders and equity holders arise because the debt contract gives equity holders an incentive to invest sub-optimally. JM argue that an optimal capital structure can be obtained by trading off the agency cost of debt against the benefit of debt.

Conversely, Miller (1977) argues that personal taxes on interest income increase pre-tax yields on debt to the point where the corporate tax advantage is completely offset. DeAngelo and Masulis (1980) (DM) propounded a compromise theory between MM (1958, 63) and Miller (1977). They showed that when firms exhaust their interest tax shields, a firm-specific optimal capital structure exists. DM argue that non-debt tax shields can be considered substitutes for the debt tax shield arising from the deductibility of interest payments allowed by the Internal Revenue Service for tax reporting. On the other hand, Boquist and Moore (1984) (BM) questions the empirical validity of DM's tax shield hypothesis. According to them, DM appeared to cite evidence on industry leverage and tax shield differences rather than evidence at the firm level, where the ultimate leverage decision resides. Their results also rejected DM's theory by changing the proxies for leverage and the standardizing variable. BM used only interest bearing debt to proxy for leverage and operating income as a method of standardizing the measure of the non-debt tax shelter. In addition, Bradley et al. (1984) found that leverage is positively associated with non-debt tax shields. This seemingly anomalous finding is due to the fact that firms with high depreciation costs and investment tax credits likely have more assets in place and fewer growth options, and hence are more likely to finance with debt.

Titman and Wessels (1988) observed that the empirical work in capital structure has lagged behind the theoretical research because the relevant firm attributes are expressed in terms of fairly abstract concepts that are not directly observable. They took issue with the basic approach to estimate regression equations with proxies for the unobservable theoretical attributes. They suggest that there may be no unique representation of the attributes and measurement errors in the proxy variables may be correlated with measurement errors in the dependent variables, creating spurious correlations. They used a factor-analytic technique that mitigates the measurement problems encountered when working with proxy variables. Their results indicate that firms with unique or specialized products have relatively low debt ratios.

While the pecking order theory has long roots in the descriptive literature (Donaldson 1961), it was clearly articulated by Myers (1984) calling it a modified pecking order theory. He also compared the static tradeoff theory and the pecking order theory. His theory stated that firms have good reasons to avoid having to finance real investment by issuing common stock or other risky securities. Firms then set target dividend payout ratios and plans to cover part of normal investment outlays with new borrowing while making sure the debt is default-risk free. If and when the firm exhausts its ability to issue safe debt, it turns to less risky securities going from regular debt to convertible debt and lastly equity.

Recent literature seems to favor the 'market timing hypothesis' which suggests that that capital structure is the cumulative outcome of past attempts to time the equity market. Baker and Wurgler (2002) claimed that market timing is the first order determinant of a corporation's capital structure. According to this theory, firms prefer equity when they perceive the relative cost of equity as low and prefer debt otherwise.

Fama and French (2002) did an in depth evaluation of both trade-off and pecking order models. They identified a minor flaw in the trade-off model (the negative relation between leverage and profitability), one major flaw in the pecking order model (the large equity issues of small low-leverage growth firms), and one area of conflict (the mean reversion of leverage) on which the data was inconclusive. They conclude that the many shared predictions of the two models tend to do well but when shared predictions are confirmed, attributing causation is elusive.

Liang and Zhang (2006) looked at the accounting treatment of uncertainty and its effect on capital structure. Their analysis distinguishes between incentive uncertainty and inherent uncertainty. While inherent uncertainty relates to the raw information quality about future cash flows, the incentive uncertainty refers to the accounting numbers quality conveying the raw information. They conclude that when information about future cash outflows is more difficult to obtain than future cash inflows, debt financing is preferred and vice versa due to the assessed default risk.

Huang and Ritter (2009) present empirical evidence regarding the relative importance of three of the capital structure hypotheses – static trade-off, pecking order, and market timing. Their evidence implies that both the static trade-off model and market timing model explain capital structure decisions. When the cost of equity is high (1974-1981), pecking order model is followed by firms with a preference for debt. However, when the cost of equity is lower, the pecking order model fails as a descriptive model of how firms behave.

3.4 Hypotheses Development

Doyle et al. (2007) find internal control deficiencies (ICD) are more likely for firms that are smaller, financially weaker, more complex, growing rapidly and undergoing restructuring. Similarly, Ashbaugh-Skaife et al. (2007) finds that smaller firms, firms reporting a higher frequency of losses and firms in financial distress are more likely to disclose ICD weaknesses. Firms with concentrated institutional owner ship are more likely to disclose an internal control problem. Prior research also suggests that institutional owners monitor management and have the voting power to effect change when control problems surface (Shleifer and Vishny 1986; Jensen 1993). However, for small firms, results indicate that institutional ownership is negatively related to ICD.

With the passage of SOX, a majority of firms reporting control deficiencies in the first 3 months of 2005 previously certified their controls as effective under SOX 302. Certain systems require large upfront costs and are costly to maintain and may lead firms to make differential investments. The paper posits that smaller firms may have less discretionary resources to invest in controls, and may be less likely to maintain and monitor. DeFond and Jiambalvo (1991) found that smaller firms are expected to have weaker internal controls and find an inverse relationship between firm size and accounting errors.

Therefore, the study hypothesizes the following:

3.4.1 Hypothesis 1: JOBS Act increased the idiosyncratic risk for EGCs.

3.4.2 Hypothesis 2: JOBS Act is associated with higher cost of debt for EGCs.

3.4.3 Hypothesis 3: JOBS Act is associated with higher leverage in EGCs.

3.5 Methodology

3.5.1. Sample Data

The study's data is divided into two samples – pre-JOBS Act (control sample) and post-JOBS Act (treatment sample). The control sample consists of issuers that would be classified as EGC under the JOBS Act if the law was in effect as of 12/31/2006. Table 18 presents the process of sample selection.

TABLE 18
SAMPLE SELECTION

Process	Control Group Pre-JOBS	Treatment Group Post-JOBS	Total
All IPOs			
January 2007 - November 2011	642		
December 2011 - February 2013		186	
Less: Firms not matching the criteria for EGC	195		
Less: Firms opting not to be identified as EGC		90	
Less: Missing Values	67	37	
Total number of firms	380	59	439
Total number of firm-quarter observations	760	118	878

To isolate the effects of the financing decision of the firm, only the first two quarters are considered since it is documented that firms frequently use IPO to reduce debt (Mikkelson et al. 1997). Further, a percentage change in leverage is calculated to see if there was a significant difference between pre- and post-JOBS Act IPOs. Tables 19(a) and 19(b) present the descriptive statistics.

TABLE 19a
DESCRIPTIVE STATISTICS

Variable	Definition	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
I_Risk	*Idiosyncratic Risk*	56.976	92.139	12.802	28.479	58.665
ChgLev	*% Change in Leverage*	-0.330	2.181	-0.076	0.000	0.000
Lev	*Leverage*	0.123	0.243	0.000	0.008	0.159
CFO	*Cash Flows from Operations*	-0.070	0.448	-0.063	0.010	0.079
BM	*Book-to-Market Ratio*	0.607	0.600	0.241	0.429	0.847
Size	*Log of Assets*	4.798	1.661	4.137	4.982	5.732
COD	*Cost of Debt*	0.057	0.348	0.012	0.019	0.032
Infl	*Inflation*	2.601	1.648	1.417	2.644	3.970
Sales	*Sales*	35.114	46.943	4.045	18.676	47.493
ROA	*Return on Assets*	-0.074	0.648	-0.029	0.002	0.024
StdROA	*Standard Deviation of ROA*	0.204	2.041	0.009	0.022	0.057
MTB	*Market-to-Book Ratio*	2.941	9.402	1.070	2.125	3.822
Ind	*Industry*	0.387	0.196	0.219	0.398	0.636
Times	*EBITDA/Interest Expense*	107.002	805.411	-0.720	6.490	28.732
Profitability	*EBITDA/Total Assets*	-0.028	0.288	-0.004	0.014	0.045
StdCFO	*Standard Deviation of CFO*	0.106	0.234	0.012	0.035	0.097
Tang	*Tangibility*	0.166	0.233	0.018	0.062	0.199

The sample is drawn using the first two quarters after the IPO for both control and treatment firms. I_Risk is calculated as the standard deviation of the residuals of the CAPM model. ChgLev is the percentage change in leverage over the two quarters. LEV, is calculated by dividing Total long term debt by total assets. CFO is the cash flow from operations scaled over total assets. BM is the book-to-market ratio. Log of assets is used as a proxy for firm size. COD is the cost of debt calculated by dividing interest expense by the sum of short term and long term liabilities. Expected inflation rate (Inflation) is defined in this study as the expected change in the consumer price index over the coming year using data from the Livingston Survey. Industry median leverage is used to proxy for the industry effect (Industry). MTB is the market-to-book ratio used to proxy for growth. Tangibility is operationalized by dividing net property, plant, and equipment, to total assets. Profitability (Profit) is calculated as operating income before depreciation, interest and taxes scaled over assets.

TABLE 19b
DESCRIPTIVE STATISTICS

		Control Group (Pre-JOBS)		Treatment Group (Post-JOBS)	
Variable	Definition	Mean	Std Dev	Mean	Std Dev
I_Risk	*Idiosyncratic Risk*	63.202	97.407	16.720	13.153
ChgLev	*% Change in Leverage*	-0.248	1.717	-0.864	4.025
Lev	*Leverage*	0.119	0.248	0.147	0.207
CFO	*Cash Flows from Operations*	-0.075	0.459	-0.043	0.380
BM	*Book-to-Market Ratio*	0.626	0.608	0.410	0.469
Size	*Log of Assets*	4.776	1.512	4.944	2.417
COD	*Cost of Debt*	0.047	0.194	0.124	0.806
Infl	*Inflation*	2.694	1.747	2.007	0.398
Sales	*Sales*	31.332	42.663	61.204	64.061
ROA	*Return on Assets*	-0.075	0.684	-0.062	0.286
StdROA	*Standard Deviation of ROA*	0.222	2.170	0.066	0.201
MTB	*Market-to-Book Ratio*	2.275	7.362	9.639	19.822
Ind	*Industry*	0.393	0.198	0.350	0.186
Times	*EBITDA/Interest Expense*	123.160	861.544	0.628	148.450
Profitability	*EBITDA/Total Assets*	-0.028	0.291	-0.025	0.265
StdCFO	*Standard Deviation of CFO*	0.112	0.242	0.072	0.181
Tang	*Tangibility*	0.156	0.222	0.224	0.287

I_Risk is calculated as the standard deviation of the residuals of the CAPM model. LEV, is calculated by dividing Total long term debt by total assets. CFO is the cash flow from operations scaled over total assets. BM is the book-to-market ratio. Log of assets is used as a proxy for firm size. COD is the cost of debt calculated by dividing interest expense by the sum of short term and long term liabilities. Expected inflation rate (Inflation) is defined in this study as the expected change in the consumer price index over the coming year using data from the Livingston Survey. Industry median leverage is used to proxy for the industry effect (Industry). MTB is the market-to-book ratio used to proxy for growth. Tangibility is operationalized by dividing net property, plant, and equipment, to total assets. Profitability (Profit) is calculated as operating income before depreciation, interest and taxes scaled over assets.

3.5.2 Research Design

All the firms are coded as either 0 if they are from the control sample (pre-JOBS Act) or 1 for the treatment sample (post-JOBS Act). All other quarterly financial variables are collected from Compustat.

To test hypothesis 1, the study follows the methodology used by Ashbaugh-Skaife et al. (2009). First, Idiosyncratic risk (I_RISK) is measured as the standard deviation of the residuals from the following model:

$$EXRET_{it} = \beta_0 + \beta_1 RMRF_t + \varepsilon, \qquad (5)$$

Where,

- EXRET is the firm's monthly return minus the risk-free rate and
- RMRF is the excess return on the market

Systematic risk (β_1) is measured as the coefficient on RMRF. To see if lower disclosures result in higher firm's idiosyncratic risk, we use the following model:

$$I\_RISK = \gamma_0 + \gamma_1 JOBS + \gamma_2 LEV + \gamma_3 CFO + \gamma_4 STD\_CFO + \gamma_5 BM + \gamma_6 SIZE + \gamma_7 DIVPAYER + \gamma_8 RET + \varepsilon \qquad (6)$$

Where,

- JOBS is a binary variable with 0 being before the JOBS Act and 1 being after the JOBS Act;
- Leverage (LEV), is defined as total long-term debt divided by total assets;
- Cash flow from operations (CFO), is defined as cash flow from operations divided by total assets;

- Standard deviation of CFO (STD_CFO) is the standard deviation of CFO divided by total assets;
- Book-to-market (BM), is defined as book value of equity divided by market value of equity;
- Firm size (SIZE), is defined as the natural log of market value of equity;
- Dividend distribution (DIVPAYER), is defined as one if the firm pays dividends, and zero otherwise;
- Return (RET), is defined as the return on asset calculated as EBITDA/Total Assets;

To test hypothesis 2, the cost of debt is regressed on JOBS and other controls. The regression equation is as follows:

$$COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CFO_{it} + \alpha_4 BM_{it} + \alpha_5 SIZE_{it} + \varepsilon \qquad (7)$$

Where,

- COD is the cost of debt calculated as interest expense divided by both long term liabilities and short-term liabilities;
- JOBS is a binary variable with 0 being before the JOBS Act and 1 being after the JOBS Act;
- Leverage (LEV), is defined as total long term debt divided by total assets;
- Cash flow from operations (CFO), is defined as cash flow from operations divided by total assets;
- Book-to-market (BM), is defined as book value of equity divided by market value of equity;
- Firm size (SIZE), is defined as the natural log of market value of equity;

To test hypothesis 3, An OLS regression model is also developed based on Frank and Goyal (2009) results because they examined the relative importance of 39 factors in the leverage decisions of publicly traded American firms from 1950 to 2003. This study adds audit of ICFR (SOX) as another determinant of leverage. The following model is used:

$$Lev = \alpha + \beta_1 JOBS_i + \beta_2 COD_{it} + \beta_3\ JOBS_i * COD_{it} + \beta_4 Ind_i + \beta_5\ Growth_{it} + \beta_6 tang_{it} + \beta_7\ Size_{it} + \beta_8 Profit_{it} + \beta_9\ Infl_t + \varepsilon \quad (8)$$

Where,

- Leverage: The proxy for leverage is long-term debt divided by the book value of assets.
- JOBS is a binary variable with 0 being before the JOBS Act and 1 being after the JOBS Act;
- COD is the cost of debt calculated as interest expense divided by both long term liabilities and short-term liabilities;
- Industry: Firms tend to benchmark their capital structure in accordance with the industry average (Hovakimian et al. 2001). Industry median leverage is used to proxy for the industry effect in this study. It is measured as the median of total debt to book value of assets by SIC code at the four-digit level.
- Growth: Growth reduces free cash flow problems, and exacerbates debt-related agency problems like overcapitalization etc. Growing firms place a greater value on stakeholder co-investment. Adam and Goyal (2008) show that market-to-book ratio is the most reliable proxy for growth. Alternate proxies to measure growth are change in sales and capital expenditures.

- Tangibility: Tangible assets are directly related to leverage. Tangibility (tang) is operationalized by dividing net property, plant, and equipment, to total assets.
- Firm size: Large firms may face lower default risk due to diversification. The tradeoff theory predicts that firms that are large tend to have higher leverage. Log of assets is used as a proxy for firm size.
- Profitability: Leverage is inversely related to profitability because of passively accumulated profits (Kayhan and Titman 2007). This is also supported by the pecking order theory. Profitability (Profit) is calculated as operating income before depreciation, interest and taxes scaled over assets.
- Expected inflation: When expected inflation is high, the real value of tax deductions on debt is higher (Taggart 1985). Further, Barry et al. (2008) show that firms have higher debt when current interest rates are low. Liang and Zhang (2008) also conclude that an information environment with higher uncertainty regarding future cash inflows has an effect on expected debt financing. Expected inflation rate (Inflation) is defined in this study as the expected change in the consumer price index over the coming year using data from the Livingston Survey.[8]

3.6 Empirical Results

Before running the regressions, the correlations of the variables involved were run in Table 20 and it is indicated that there is not a multicollinearity problem. Since a panel data was employed, there are some heteroschedasticity issues but regression is robust to

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[8] http://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey/historical-data/

that. Further checks were done related for independence, normality, linearity and potentially influential outliers. A step-wise regression and hausman tests are also run for each regression. The hausman test is used to determine whether the random effects should be shown along with the fixed effects. The correlations are mostly low except for the correlation between cash flow from operations and profitability.

TABLE 20

CORRELATIONS

#	Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1.	*I_Risk*	1.000																
2.	*ChgLev*	0.156	1.000															
3.	*Lev*	0.097	0.114	1.000														
4.	*CFO*	-0.384	-0.120	-0.705	1.000													
5.	*BM*	-0.183	0.102	-0.053	0.321	1.000												
6.	*Size*	-0.450	-0.072	-0.283	0.764	0.476	1.000											
7.	*COD*	-0.067	-0.727	-0.085	0.043	-0.045	0.029	1.000										
8.	*Infl*	0.229	0.137	0.048	-0.105	-0.135	-0.052	0.000	1.000									
9.	*Sales*	-0.085	0.025	-0.006	0.217	0.223	0.508	0.054	0.075	1.000								
10.	*ROA*	-0.217	-0.049	-0.161	0.550	0.213	0.495	0.013	0.073	0.126	1.000							
11.	*StdROA*	0.024	0.067	0.157	-0.430	-0.430	-0.394	-0.021	0.097	-0.153	-0.210	1.000						
12.	*MTB*	-0.309	-0.137	-0.317	0.633	0.089	0.542	0.033	-0.052	0.106	0.338	-0.326	1.000					
13.	*Ind*	-0.066	0.129	-0.014	0.060	0.138	0.110	-0.086	-0.103	0.052	0.018	-0.104	0.051	1.000				
14.	*Times*	-0.155	-0.076	-0.120	0.347	0.217	0.357	0.061	-0.087	0.207	0.179	-0.637	0.412	0.028	1.000			
15.	*Profitability*	-0.606	-0.097	-0.321	0.775	0.344	0.793	0.026	-0.042	0.218	0.504	-0.312	0.818	0.125	0.400	1.000		
16.	*StdCFO*	0.369	0.113	0.525	-0.896	-0.335	-0.844	-0.034	0.027	-0.233	-0.509	0.418	-0.753	-0.043	-0.391	-0.853	1.000	
17.	*Tang*	0.216	0.104	0.048	0.023	0.060	0.040	-0.006	-0.235	0.100	-0.060	-0.122	0.015	-0.010	0.124	-0.132	-0.043	1.000

To test Hypothesis 1, the idiosyncratic risk is first calculated for each firm by regressing excess return on market return and taking the standard deviation of the residuals thus obtained. This idiosyncratic risk is then regressed on the dummy variable for JOBS Act in Table 21 Model I. Model II presents the regression results with the control variables presented in Ashbaugh-Skaife et al. (2009) and Model III further includes the yearly fixed effects. Surprisingly, the relationship between idiosyncratic risk and EGCs is negative and gets stronger as control variables and fixed effects are added. In model III, the coefficient on the dummy variable JOBS is -90.41 which is statistically significant at the 1% level. This means that firms without SOX404(b) attestations after the JOBS Act have lower idiosyncratic risk as compared to the firms with SOX404(b) attestations pre-JOBS Act. This result support rejecting the hypothesis that SOX404 (b) attestations have no effect on the idiosyncratic risk of the firm.

To test hypothesis 2, the cost of debt is regressed on the dummy variable for the JOBS Act in Table 22. The results show that there is a statistically significant difference between the cost of debt pre-JOBS Act and post-JOBS Act. The coefficient on JOBS in model II is 0.398 which is significant at the 5% confidence level. Therefore, we reject the second hypothesis that the JOBS Act has no effect on the cost of debt.

Finally, hypothesis 3 states that the JOBS Act has a significant effect on the financing decision of the firm. As discussed earlier, the raison d'être for JOBS Act is to improve the access to capital for smaller firms. This would require EGCs to rely less on debt and meet its financing needs by issuing equity. Table 23 shows that there was no significant effect on leverage post-JOBS Act.

Model III in table 23 presents the effect of JOBS act on leverage as -3.632 which is statistically significant with t-statistic of 0.614. This means that there was a statistically significant difference between leverage pre-JOBS and post-JOBS.

TABLE 21

Mean Coefficient Estimates for Regressions of Idiosyncratic Risk on EGCs during the First Two Quarter after an IPO

Dependent Variable - I_Risk

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	63.202**	192.135**	162.544**
		(3.316)	(37.981)	(36.771)
JOBS	*Pre- and Post-JOBS Act*	-46.481**	-61.814**	-90.4067**
		(9.061)	(23.484)	(26.525)
Lev	*Leverage*		-41.245	-49.644
			(49.389)	(32.374)
CFO	*Cash Flows from Operations*		-81.534*	-57.880
			(33.049)	(32.374)
StdCFO	*Standard Deviation of CFO*		-29.678	28.698
			(45.351)	(46.842)
BM	*Book-to-Market Ratio*		-12.280	-18.211
			(13.825)	(13.751)
Size	*Log of Assets*		-18.977*	-13.025
			(7.949)	(7.692)
DivPayer	*Dividend Payer*		56.788*	89.470**
			(22.421)	(22.370)
ROA	*Return on Assets*		4.048	-1.877
			(8.346)	(8.478)
Fixed Effects		No	No	Yes
R^2	R Square	0.030	0.190	0.175
Adj R^2	Adjusted R Square	0.028	0.167	0.175
n	Total number of observations	866	298	298

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CFO_{it} + \alpha_4 StdCFO + \alpha_5 BM_{it} + \alpha_6 Size_{it} + \alpha_7 DivPayer_{it} + \alpha_8 ROA$

Model III: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CFO_{it} + \alpha_4 StdCFO + \alpha_5 BM_{it} + \alpha_6 Size_{it} + \alpha_7 DivPayer_{it} + \alpha_8 ROA + Fixed\ Effects$

TABLE 22
Mean Coefficient Estimates for Regressions of Cost of Debt on EGCs during the First Two Quarters of an IPO

Dependent Variable - COD

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	0.047**	0.041	0.076
		(0.018)	(0.257)	(0.266)
JOBS	*Pre- and Post-JOBS Act*	0.077	0.398*	-0.011
		(0.048)	(0.171)	(0.204)
Lev	*Leverage*		-0.329	-0.367
			(0.285)	(0.298)
CFO	*Cash Flows from Operations*		-0.098	-0.108
			(0.167)	(0.173)
BM	*Book-to-Market Ratio*		-0.036	-0.152
			(0.098)	(0.107)
Size	*Log of Assets*		0.019	0.032
			(0.055)	(0.058)
Fixed Effects		No	No	Yes
R^2	R Square	0.006	0.049	0.009
Adj R^2	Adjusted R Square	0.004	0.015	0.009
n	Total number of observations	439	148	148

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CF_{it} + \alpha_4 BM_{it} + \alpha_5 Size_{it}$

Model III: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CF_{it} + \alpha_4 BM_{it} + \alpha_5 Size_{it}$ + Fixed Effects

TABLE 23
Mean Coefficient Estimates for Regressions of Leverage on EGCs using Interaction between Cost of Debt and JOBS

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.367**	-1.346	0.573
		(0.102)	(1.017)	(1.884)
JOBS	*Pre- and Post-JOBS Act*	-0.158	-0.937	-2.668
		(0.273)	(0.672)	(1.356)
COD	*Cost of Debt*	-0.892	-0.844	0.811
		(0.512)	(0.515)	(0.501)
JOBS_COD	Interaction Term	-3.879**	-3.668**	-3.632**
		(0.600)	(0.605)	(0.614)
Industry	Median Industry Leverage		1.467	1.371
			(0.868)	(0.893)
MTB	Market-to-Book Ratio		-0.043	0.007
			(0.031)	(0.034)
Tang	Tangibility		1.396	1.506
			(0.728)	(0.792)
Size	Log of Assets		-0.066	-0.081
			(0.178)	(0.182)
Profit	Profitability		0.423	-0.597
			(0.796)	(0.863)
Inflation	Inflation		0.166	-0.382
			(0.111)	(0.431)
Fixed Effects		No	No	Yes
R^2	R Square	0.359	0.681	0.609
Adj R^2	Adjusted R Square	0.355	0.658	0.609
n	Total number of firms	439	136	136

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha 2\ COD_{it} + \alpha_4\ COD*JOBS_{it} + \alpha 5\ Ind_i + \alpha 6\ MTB_{it} + \alpha 7\ Tang_{it} + \alpha 8\ Size_{it} + \alpha 9\ Profit_{it} + \alpha 10\ Infl_t$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha 2\ COD_{it} + \alpha_4\ COD*JOBS_{it} + \alpha 5\ Ind_i + \alpha 6\ MTB_{it} + \alpha 7\ Tang_{it} + \alpha 8\ Size_{it} + \alpha 9\ Profit_{it} + \alpha 10\ Infl_t + FE$

2.6.1 Sensitivity and Robustness Tests

For further robustness tests, a regression is run including EBITDA as a control variable as well as other significant variables in Table 24.

The coefficient on EBITDA is insignificant but all others are significant at the 5% level. The idiosyncratic risk decreases after JOBS Act and the results hold across all specifications.

Table 25 presents all the available quarter information and the results are consistent with the ones discussed earlier. Size is also determined as a variable that has a significant effect on the idiosyncratic risk of the firm. The coefficient on JOBS is -95.050 after including fixed effects and it is significant at the 1% alpha level.

To understand the role of idiosyncratic risk in the IPO market, Table 26 presents a model of the statistically significant variables. The variables included are cash flow from operations, whether the firm is a dividend payer, profitability and tangibility. JOBS Act also had a significant effect on the idiosyncratic risk of the firm and the coefficient associated with it is -106.796, which is statistically significant at the 1% level.

Table 27 follows Callahan et al. (2012) model to assess the effects of JOBS Act on the cost of debt. This model uses variables employed in accounting and finance literature. Model II presents a significant positive relationship between cost of debt and the JOBS Act at the 10% level. However, the results are not statistically significant after controlling for fixed effects.

TABLE 24
Mean Coefficient Estimates for Regressions of Idiosyncratic Risk on EGCs including EBITDA

Dependent Variable - I_Risk

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	63.202**	86.113**	105.225**
		(3.316)	(16.325)	(15.158)
JOBS	*Pre- and Post-JOBS Act*	-46.481**	-44.138**	-96.790**
		(9.061)	(12.064)	(12.887)
CFO	*Cash Flows from Operations*		-43.908**	-37.068**
			(10.534)	(9.748)
Size	*Log of Assets*		-5.058	-8.044*
			(3.481)	(3.222)
DivPayer	*Dividend Payer*		55.717**	75.973**
			(15.268)	(14.185)
EBITDA	*Earnings before int, tax and depn*		-0.130	0.013
			(16.325)	(0.339)
Fixed Effects		No	No	Yes
R^2	R Square	0.030	0.108	0.097
Adj R^2	Adjusted R Square	0.028	0.100	0.097
n	Total number of observations	866	562	562

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 CFO_{it} + \alpha_3 Size_{it} + \alpha_4 DivPayer_{it} + \alpha_5 EBITDA_{it}$

Model III: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 CFO_{it} + \alpha_3 Size_{it} + \alpha_4 DivPayer_{it} + \alpha_5 EBITDA_{it}$ + Fixed Effects

TABLE 25
Mean Coefficient Estimates for Regressions of Idiosyncratic Risk on EGCs pre- and post-JOBS Act

Dependent Variable - I_Risk

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	61.555**	164.154**	158.772**
		(1.145)	(7.260)	(7.146)
JOBS	*Pre- and Post-JOBS Act*	-44.342**	-65.766**	-95.050**
		(3.125)	(12.751)	(13.784)
Lev	*Leverage*		-1.856	-2.474
			(8.833)	(8.664)
CFO	*Cash Flows from Operations*		-0.352	-0.116
			(0.994)	(0.979)
BM	*Book-to-Market Ratio*		1.959	0.223
			(1.885)	(1.878)
Size	*Log of Assets*		-15.280**	-13.898**
			(1.493)	(1.472)
DivPayer	*Dividend Payer*		-2.970	2.003
			(5.805)	(5.712)
Fixed Effects		No	No	Yes
R^2	R Square	0.028	0.061	0.058
Adj R^2	Adjusted R Square	0.028	0.058	0.058
n	Total number of observations	6,930	2,542	2,542

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CF_{it} + \alpha_4 BM_{it} + \alpha_5 Size_{it} + \alpha_6 DivPayer_{it}$

Model III: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CF_{it} + \alpha_4 BM_{it} + \alpha_5 Size_{it} + \alpha_6 DivPayer_{it}$ + Fixed Effects

TABLE 26

Mean Coefficient Estimates for Regressions of Idiosyncratic Risk on EGCs including All Significant Variables

Dependent Variable - I_Risk

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	63.202** (3.316)	60.467** (5.258)	63.048** (4.832)
JOBS	*Pre- and Post-JOBS Act*	-46.481** (9.061)	-51.924** (11.301)	-106.796** (12.050)
CFO	*Cash Flows from Operations*		32.970** (12.524)	30.401** (11.513)
DivPayer	*Dividend Payer*		37.064* (14.883)	51.750** (13.654)
Profitability	*EBITDA/Total Assets*		-167.480** (17.897)	-158.383** (16.488)
Tang	*Tangibility*		16.207 (17.395)	38.704* (16.066)
Fixed Effects		No	No	Yes
R^2	R Square	0.030	0.231	0.207
Adj R^2	Adjusted R Square	0.028	0.224	0.207
n	Total number of observations	866	558	558

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 CFO_{it} + \alpha_3 DivPayer_{it} + \alpha_4 Profitability_{it} + \alpha_5 Tang_{it}$

Model III: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 CFO_{it} + \alpha_3 DivPayer_{it} + \alpha_4 Profitability_{it} + \alpha_5 Tang_{it}$ + Fixed Effects

TABLE 27

Mean Coefficient Estimates for Regressions of Cost of Debt on EGCs following Callahan et al. (2012) Model

Dependent Variable - COD

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	0.047**	0.095	0.106
		(0.018)	(0.088)	(0.091)
JOBS	*Pre- and Post-JOBS Act*	0.077	0.121*	-0.024
		(0.048)	(0.065)	(0.078)
ROA	*Return on Assets*		-0.007	-0.009
			(0.024)	(0.024)
StdROA	*Standard Deviation of ROA*		0.001	0.000
			(0.007)	(0.008)
Size	*Log of Assets*		0.007	0.005
			(0.016)	(0.017)
2Lev	*2*Leverage*		-0.045	-0.033
			(0.034)	(0.035)
Times	*EBITDA/Interest Expense*		0.000	0.000
			(0.000)	(0.000)
Ind	*Industry*		-0.174	-0.141
			(0.125)	(0.127)
Fixed Effects		No	No	Yes
R^2	R Square	0.006	0.021	0.006
Adj R^2	Adjusted R Square	0.004	0.021	0.006
n	Total number of observations	439	337	337

**, ** Denotes significance at the 0.10 and 0.05 levels, respectively.*

Standard Errors are in parenthesis

Model I: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 ROA_{it} + \alpha_3 StdROA_{it} + \alpha_4 Size_{it} + \alpha_5 2Lev_{it} + \alpha_6 Times_{it} + \alpha_7 Ind_i$

Model III: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 ROA_{it} + \alpha_3 StdROA_{it} + \alpha_4 Size_{it} + \alpha_5 2Lev_{it} + \alpha_6 Times_{it} + \alpha_7 Ind_i$ + Fixed Effects

Profitability is included as a control variable in Table 28. The coefficient on JOBS is 0.503 significant at the 5% level. The relatively weaker results may be attributed to the low number of firms.

A regression is also run using all available quarterly information. Table 29 shows that there are no significant results associated with the JOBS Act. The model also has very low explanatory power.

Table 30 has the change in leverage as a dependent variable and shows a significant effect after the JOBS Act only in Model II. The coefficient on JOBS is negative, as expected but is significant only at the 10% level.

The paper posits that the effect on the financing decision of a firm after the JOBS Act is due to the market timing hypothesis. The theory claims that firms time the market and issue equity when there is relatively easier access to capital or the cost of debt is higher. Therefore, an interaction term is used with an interaction between JOBS and COD. The coefficient on the interaction term is statistically significant in all the models. Table 31 includes several liquidity measures as controls.

All variables presented in equation (2) and the liquidity controls presented in Table 31 are included in Table 32. The results show that the interaction term is significant across all models with the coefficient being -3.546 in Model III which further controls for fixed effects.

TABLE 28
Mean Coefficient Estimates for Regressions of Cost of Debt on EGCs including Profitability

Dependent Variable - COD

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	0.047**	0.071	-0.209
		(0.018)	(0.410)	(0.419)
JOBS	*Pre- and Post-JOBS Act*	0.077	0.503*	0.017
		(0.048)	(0.223)	(0.245)
Lev	*Leverage*		-0.497	-0.471
			(0.409)	(0.414)
CFO	*Cash Flows from Operations*		-0.180	-0.095
			(0.278)	(0.292)
StdCFO	*Standard Deviation of CFO*		0.187	0.646
			(0.556)	(0.673)
BM	*Book-to-Market Ratio*		-0.011	-0.256
			(0.141)	(0.154)
Size	*Log of Assets*		0.035	0.110
			(0.083)	(0.086)
Times	*EBITDA/Interest Expense*		0.001	0.001
			(0.001)	(0.001)
Ind	*Industry*		-0.348	-0.228
			(0.385)	(0.394)
Profitability	*EBITDA/Total Assets*		0.096	0.150
			(0.226)	(0.261)
Fixed Effects		No	No	Yes
R^2	R Square	0.006	0.072	0.021
Adj R^2	Adjusted R Square	0.004	0.008	0.021
n	Total number of observations	439	114	114

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CFO_{it} + \alpha_4 StdCFO_{it} + \alpha_5 Bm_{it} + \alpha_6 Size_{it} + \alpha_7 Times_{it} + \alpha_8 Ind_{it} + \alpha_9 Profit_{it}$

Model III: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CFO_{it} + \alpha_4 StdCFO_{it} + \alpha_5 Bm_{it} + \alpha_6 Size_{it} + \alpha_7 Times_{it} + \alpha_8 Ind_{it} + \alpha_9 Profit_{it} + FE$

TABLE 29
Mean Coefficient Estimates for Regressions of Cost of Debt on EGCs pre- and post-JOBS Act

Dependent Variable - COD

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	0.139*	0.342	0.302
		(0.069)	(0.349)	(0.352)
JOBS	*Pre- and Post-JOBS Act*	-0.035	0.086	0.156
		(0.340)	(0.696)	(0.767)
Lev	*Leverage*		-0.314	0.311
			(0.340)	(0.340)
CFO	*Cash Flows from Operations*		0.003	0.000
			(0.036)	(0.036)
BM	*Book-to-Market Ratio*		-0.052	-0.050
			(0.083)	(0.084)
Size	*Log of Assets*		-0.052	-0.008
			(0.083)	(0.069)
Fixed Effects		No	No	Yes
R^2	R Square	0.000	0.001	0.001
Adj R^2	Adjusted R Square	0.000	0.000	0.001
n	Total number of observations	1,854	1,326	1,326

*, ** *Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CF_{it} + \alpha_4 BM_{it} + \alpha_5 Size_{it}$

Model III: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CF_{it} + \alpha_4 BM_{it} + \alpha_5 Size_{it}$ + Fixed Effects

TABLE 30
Mean Coefficient Estimates for Regressions of Leverage on EGCs during the First Two Quarters of an IPO

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.248**	-1.548*	-0.744
		(0.079)	(0.826)	(1.717)
JOBS	*Pre- and Post-JOBS Act*	-0.616**	-1.024*	-1.012
		(0.215)	(0.559)	(1.219)
Industry	Median Industry Leverage		1.171	1.124
			(0.751)	(0.735)
MTB	Market-to-Book Ratio		0.008	0.010
			(0.019)	(0.018)
Tang	Tangibility		0.471	0.144
			(0.707)	(0.710)
Size	Log of Assets		0.009	0.007
			(0.131)	(0.128)
Profit	Profitability		-0.521	-0.756
			(0.600)	(0.590)
Inflation	Inflation		0.167	-0.037
			(0.116)	(0.399)
Fixed Effects		No	No	Yes
R^2	R Square	0.009	0.044	0.031
Adj R^2	Adjusted R Square	0.008	0.022	0.031
n	Total number of firms	878	322	322

*, ** *Denotes significance at the 0.10 and 0.05 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_3 Ind_i + \alpha_4 MTB_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 Profit_t + \alpha_8 Infl_t$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_3 Ind_i + \alpha_4 MTB_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 Profit_t + \alpha_8 Infl_t$ + Fixed Effects

TABLE 31
Mean Coefficient Estimates for Regressions of Leverage on EGCs using Interactions and Liquidity

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.367**	-0.394**	-0.344**
		(0.102)	(0.125)	(0.130)
JOBS	*Pre- and Post-JOBS Act*	-0.158	-0.252	-0.537
		(0.273)	(0.306)	(0.372)
COD	*Cost of Debt*	-0.892	-0.909	-0.974
		(0.512)	(0.537)	(0.547)
JOBS_COD	Interaction Term	-3.879**	-3.832**	-3.785**
		(0.600)	(0.629)	(0.644)
CFO	*Cash Flows from Operations*		-0.470	-0.520
			(0.282)	(0.299)
StdCFO	*Standard Deviation of CFO*		-0.350	-0.452
			(0.539)	(0.575)
ROA	*Return on Assets*		0.072	0.070
			(0.128)	(0.133)
StdROA	*Standard Deviation of ROA*		0.011	0.004
			(0.036)	(0.037)
Fixed Effects		No	No	Yes
R^2	R Square	0.359	0.370	0.369
Adj R^2	Adjusted R Square	0.355	0.359	0.369
n	Total number of firms	439	393	393

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 \, JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 \, JOBS_{it} + \alpha_2 \, COD_{it} + \alpha_3 \, JOBS*COD_{it} + \alpha_4 \, CFO_{it} + \alpha_5 \, StdCFO_{it} + \alpha_6 \, ROA_{it} + \alpha_7 \, StdROA_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 \, JOBS_{it} + \alpha_2 \, COD_{it} + \alpha_3 \, JOBS*COD_{it} + \alpha_4 \, CFO_{it} + \alpha_5 \, StdCFO_{it} + \alpha_6 \, ROA_{it} + \alpha_7 \, StdROA_{it}$ + Fixed Effects

TABLE 32
Mean Coefficient Estimates for Regressions of Leverage on EGCs using All Variables

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.367**	-2.280	0.375
		(0.102)	(1.464)	(2.283)
JOBS	*Pre- and Post-JOBS Act*	-0.158	-1.037	-2.710
		(0.273)	(0.720)	(1.494)
COD	*Cost of Debt*	-0.892	-0.922	-0.862
		(0.512)	(0.547)	(0.538)
JOBS_COD	Interaction Term	-3.879**	-3.572**	-3.546**
		(0.600)	(0.643)	(0.668)
Industry	Median Industry Leverage		1.313	1.143
			(1.095)	(1.182)
MTB	Market-to-Book Ratio		-0.036	0.012
			(0.038)	(0.040)
Tang	Tangibility		1.968*	1.830
			(0.872)	(0.934)
Size	Log of Assets		0.070	-0.059
			(0.245)	(0.250)
Profit	Profitability		0.750	-0.711
			(0.919)	(1.127)
Inflation	Inflation		0.209	-0.363
			(0.129)	(0.476)
CFO	*Cash Flows from Operations*		-0.063	0.107
			(0.631)	(0.667)
StdCFO	*Standard Deviation of CFO*		1.178	0.369
			(1.808)	(2.049)
ROA	*Return on Assets*		-0.010	0.049
			(0.140)	(0.161)
StdROA	*Standard Deviation of ROA*		0.013	0.008
			(0.039)	(0.039)
Fixed Effects		No	No	Yes
R^2	R Square	0.359	0.698	0.622
Adj R^2	Adjusted R Square	0.355	0.661	0.622
n	Total number of firms	439	118	118

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_2 Ind_i + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_t + \alpha_7 Infl_t + \alpha_8 CFO_{it} + \alpha_9 StdCFO_{it} + \alpha_{10} ROA_{it} + \alpha_{11} StdROA_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_2 Ind_i + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_t + \alpha_7 Infl_t + \alpha_8 CFO_{it} + \alpha_9 StdCFO_{it} + \alpha_{10} ROA_{it} + \alpha_{11} StdROA_{it} + FE$

TABLE 33
Mean Coefficient Estimates for Regressions of Leverage on EGCs pre- and post-JOBS Act

Dependent Variable - Leverage

Variable	Definition	I	II	III
Constant	Intercept	0.111**	0.082**	0.102*
		(0.004)	(0.014)	(0.041)
JOBS	*Pre- and Post-JOBS Act*	0.032	0.004	-0.038
		(0.022)	(0.025)	(0.053)
Industry	Median Industry Leverage		0.134**	0.133**
			(0.019)	(0.019)
MTB	Market-to-Book Ratio		0.000*	0.000*
			(0.000)	(0.000)
Tang	Tangibility		0.146**	0.146**
			(0.016)	(0.016)
Size	Log of Assets		-0.013**	-0.013**
			(0.003)	(0.003)
Profit	Profitability		0.003**	0.003**
			(0.001)	(0.001)
Inflation	Inflation		0.000	-0.010
			(0.002)	(0.018)
Fixed Effects		No	No	Yes
R^2	R Square	0.001	0.049	0.043
Adj R^2	Adjusted R Square	0.000	0.047	0.043
n	Total number of firms	4,148	3,125	3,125

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_3 Ind_i + \alpha_4 MTB_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 Profit_t + \alpha_8 Infl_t$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_3 Ind_i + \alpha_4 MTB_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 Profit_t + \alpha_8 Infl_t$ + Fixed Effects

Lastly, Table 33 presents the effect on leverage and not the change in leverage. The coefficient on JOBS is insignificant. As discussed earlier, it is documented that firms frequently use IPO to reduce debt (Mikkelson et al. 1997) and therefore, a crude measure of liability may not be sufficient to understand the effect of JOBS Act on the financing decision of the firm

7. Conclusion

When SOX sections 404(a) for management and 404(b) for auditors were implemented in late 2004, internal control information for investors substantially increased and audit fees typically doubled. Over time, audit fee increases have subsided, but relatively little is known about how the SOX 404(b) mandate effects the real decisions of firms. This study shows that JOBS Act actually decreases the perception of firm risk by investors of IPOs. This could be due to other provisions included in the JOBS Act like allowing EGCs to engage in oral or written "test-the-waters" communications with eligible institutions to determine their investment interest and submitting the documents to the SEC for confidential review instead of filing it publicly. Further, the results show that the JOBS Act has a statistically significant effect on the cost of debt and the financing decision of the firm. This shows that the JOBS Act has been successful in incentivizing EGCs to use public funds rather than rely on long-term debt for financing.

This research contributes to the existing knowledge by providing more information about the nature of audits over internal control, EGCs and financing decisions while quantifying the benefits of regulation, defining the parameters for auditing regulation, and assisting the audit committee in making optimal decision. Future research may include observing how auditing may affect the process of price formation for IPOs. Related research may also include how investors react to a more opaque process like "test-the-waters" communications in the perceived risk of securities.

CHAPTER 4

THE EFFECTS OF REDUCED DISCLOSURES ON THE FINANCING DECISION OF SMALL IPO FIRMS

4.1 Introduction

On April 5 2012, the President signed the Jump-Start Our Business Startups Act (JOBS Act) into law, which the U.S. House of Representatives and U.S. Senate had passed by wide margins. The JOBS Act makes it easier for small, early-stage companies[9] to access sources of capital by exempting these companies from certain of the more burdensome regulatory requirements. Among the more significant changes, the JOBS Act introduced compliance with the more limited compensation disclosure requirements available to a smaller reporting company (generally, less than $75 million in market capitalization). It also included exemption from certain current and prospective compensation disclosures such as advisory votes on say-on-pay and golden parachute provisions, among others. They also need not comply with any new or revised financial accounting standard. Such lowered disclosure requirements clearly increases the information asymmetry between investors and management.

Information asymmetry is an important issue in the theoretical (e.g., Diamond and Verrecchia 1991; Easley and O’Hara 2004; Christensen et al. 2010; Bloomfield and Fischer 2011) and empirical literature (e.g., Brennan and Subrahmanyam 1996; Easley et al. 2002; Duarte and Young 2009; Mohanram and Rajgopal 2009). Healy and Palepu (2001) argue that demand for financial reporting and disclosure arises from information asymmetry and agency conflicts between managers and outside investors. While both

[9] The Act classifies these companies as "Emerging Growth Companies" or EGCs and the specific criteria are discussed later.

savers and entrepreneurs would like to do business with each other, matching savings to business investment opportunities is complicated. It is so because entrepreneurs typically have better information than savers about the value of business investment opportunities and have incentives to overstate their value. Savers, therefore, face an ‘‘information problem’’ when they make investments in business ventures. This information or ‘‘lemons’’ problem arises from information differences and conflicting incentives between entrepreneurs and savers and is also called adverse selection costs. It has also been shown that differences in the composition of information between public and private information affect the cost of capital, with investors demanding a higher return to hold stocks with greater private information (Easley and O'Hara 2004). However, this study focuses on the IPO market which is documented to be anomalous.

There is potentially greater uncertainty associated with the valuation of IPO firms (Weber and Willenborg 2003). Lower first day returns are associated with prestigious underwriters due to lower level of risk and information asymmetry (Carter and Manaster 1990, Megginson and Weiss (1991). Fama and French (2005) find that between 1973 and 1982, on average 67% of the firms in their sample issued some equity each year; while the proportion rose to 74% between 1983 and 1992, and to 86% between 1993 and 2002. Similarly, Frank and Goyal (2009) show that a large and increasing portion of external financing took the form of equity during the 1990s. Overall, this evidence indicates that in the presence of financing needs, U.S. firms display greater preference for debt, both statistically and economically, when plagued with greater extent of and change in adverse selection costs. However, the setting provided by the JOBS Act focuses on EGCs which may be smaller (no more than a billion dollars in revenue).

The pecking order theory should perform well for EGCs since their information costs are likely to be the largest but the financing deficit is increasing (rather than decreasing) in firm size (Frank and Goyal 2003). Yet, this evidence cannot be directly attributed to the extent of firms' adverse selection, since firm size likely captures other firm characteristics as well. Therefore, this research uses the "natural experiment" setting to tease out the effects of information asymmetry while simultaneously controlling for other firm characteristics associated with size.

The study's data is divided into two samples – pre-JOBS Act (control sample) and post-JOBS Act (treatment sample). The control sample consists of issuers that would be classified as EGC under the JOBS Act if the law was in effect as of 12/31/2006. The results indicate that there was a negative effect on the idiosyncratic risk post-JOBS Act. The idiosyncratic risk actually decreased by 89.75 units after the JOBS Act suggesting the lack of disclosures did not have any impact on firm risk. The results also indicate that the cost of debt increased post JOBS Act and the EGCs are associated with 3.67% lower change in debt.

The study is organized as follows. Section 2 presents background on JOBS Act and SOX and Section 3 presents the literature review. Section 4 explains the hypotheses development and section 5 describes the data and methodology. Section 6 reports the empirical results and section 7 concludes.

4.2 JOBS Act

The President signed the Jumpstart our Business Startups (JOBS) Act into law on April 5, 2012. The objective is to stimulate the growth of smaller companies by facilitating easier access to capital and reduced regulatory reporting requirements thereby creating jobs via expanded operations. The JOBS Act implementation period varies; for example, the provisions relating to a new class of reporting company - the Emerging Growth Company - are effective immediately as is the ability for companies (other than banks and bank holding companies) to have up to 2,000 shareholders, including up to 500 non-accredited investors, without triggering registration with the SEC. Banks and bank holding companies now also can have up to 2,000 shareholders but are not subject to the 500 non-accredited investor limit. Other provisions require the SEC to formulate rules and conduct studies to effect the provisions of the legislation.

Title I of the JOBS Act creates a new class of company - the Emerging Growth Company (EGC) - effective immediately. EGCs are small companies that:

[1] Report less than $1 billion in revenue; (inflation adjusted by CPI)

[2] Issue less than $1 billion in non-convertible debt in the last 3 years;

[3] Are NOT a large accelerated filer; or

[4] Had a sale of common equity securities pursuant to an effective registration statement under the Securities Act of 1933 occurred on or before December 8, 2011.

U.S. public companies (including those that recently completed an IPO) have been subject to a rigorous executive compensation disclosure regime under Item 402 of Regulation S-K, which has expanded over the last several years to include a detailed Compensation Discussion and Analysis (or CD&A), which is the compensation analog to a Management Discussion and Analysis (or MD&A), and multiple tables reporting compensation of the CEO, CFO and at least three other executive officers. Under the JOBS Act, EGCs will be able to meet the Item 402 disclosure requirements by providing the shorter disclosure required of a "smaller reporting company." This means EGCs will not be required to present a CD&A and will be required to provide in their registration statement on Form S-1 and annual proxy statement (or Form 10-K) only:

- Compensation of three (rather than five) executive officers, consisting of the CEO and two other most highly compensated executive officers (i.e., not automatically the CFO);
- The Summary Compensation Table and related narrative disclosure, reporting full compensation for up to the last two (rather than three) completed fiscal years;
- The Outstanding Equity Awards at Fiscal Year-End table;
- The Director Compensation table; and
- Additional narrative disclosure (e.g., material terms of retirement plans, termination payments and change in control arrangements).

EGCs will also be exempt from the following compensation-related requirements under Dodd-Frank, of which the first currently applies to most public companies and the latter two are awaiting rulemaking by the SEC:

- Shareholder Votes on Compensation: EGCs are exempt from the requirements to conduct shareholder advisory votes on say-on-pay, the frequency of say-on-pay and say-on-golden parachutes. Say-on-pay is an advisory vote whereby shareholders vote on whether to approve the compensation of named executive officers every one to three years. The frequency vote is an advisory vote whereby shareholders vote on whether the say-on-pay vote should be held every one, two or three years. The say-on-golden parachutes vote arises in the event of an M&A transaction and requires an advisory vote of the shareholders on payments made to any named executive officer in connection with such transaction.

Generally, a former EGC must hold a say-on-pay vote no later than one year after it ceases to be an EGC (for example, if an EGC IPOs in 2012, but in 2015 ceases to be an EGC because it becomes a large accelerated filer due to its public equity float, then it must hold a say-on-pay vote in 2016). However, if a company was an EGC for less than two years after the company's IPO, it has up to three years after the IPO to hold the vote.

- Pay for Performance: Under Dodd-Frank, public companies will be required to disclose the relationship between the company's executive compensation actually paid and its financial performance. This requirement has been on hold pending SEC rulemaking. When it becomes effective, EGCs will be exempt.
- Internal Pay Equity: Dodd-Frank mandates that public companies will be required to disclose: (i) the median annual total compensation of all employees other than the CEO, (ii) the annual total compensation of the CEO and (iii) the ratio of the median employee annual compensation to that of the CEO. This requirement has also been on hold pending SEC rulemaking. When and if it becomes effective, EGCs will be exempt.

SEC issued a set of "frequently asked questions" that explains further on how to be exempt from following new or revised accounting standards. Section 107(b)(1) of the JOBS Act provides that an emerging growth company "must make such choice at the time the company is first required to file a registration statement, periodic report, or other report with the Commission" and to notify the Commission of such choice. Further, Section 107(b)(3) provides that any decision to opt out of the extended transition period provided in Securities Act Section 7(a)(2)(B) for complying with new or revised accounting standards is irrevocable.

4.3 Literature Review

Healy and Palepu (1993, 1995) hypothesize that investors' perceptions of a firm are important to corporate managers expecting to issue public debt or equity or to acquire another company in a stock transaction. Managers who anticipate making capital market transactions have incentives to provide voluntary disclosure to reduce the information asymmetry problem, thereby reducing the firm's cost of external financing. Barry and Brown (1985, 1986) and Merton (1987) reach a similar conclusion by modeling the premium that investors demand for bearing information risk when there is an information asymmetry between managers and outside investors. Managers can reduce their cost of capital by reducing information risk through increased voluntary disclosure. A corner solution is not possible because of costs associated with credible voluntary disclosure. Lang and Lundholm (1997) analyze disclosures specifically for firms that make equity offerings and find that there is a significant increase in disclosure beginning six months before the offering, particularly for the categories of disclosure over which firms have the most discretion. However, several studies document a decline in the level of relevance of earnings and other financial statement items over the last 20 years. Using a variety of different research designs, Lev and Zarowin (1999) find that, in the US, the relations between stock returns and earnings, and between stock prices, earnings and book values have deteriorated over time.

Bharath et al. (2009) found that using pecking order theory, for every dollar of financing deficit to cover, firm in the highest adverse selection decile issue 30 cents of debt more than firms in the lowest decile. They conclude that information asymmetry is an important determinant of a firm's capital structure choice in response to each of its funding needs, including when those needs are driven by that firm's real investments.

Going public, though costly, not only allows a firm to raise external capital cheaply, but also enables it to grab market share from its private competitors. In equilibrium, even firms with sufficient internal capital to fund their new investment may go public, driven by the possibility of their product market competitors going public (Chemmanur and He 2011).

There are two theoretical models of IPO waves which can make the financing decision exogenous:

1. Pastor and Veronesi (2005) argue that IPO waves are generated due to the ‘‘real option’’ effect of going public: When stock market conditions are sufficiently favorable (expected market return is low, expected aggregate profitability is high, and prior uncertainty is high), many entrepreneurs exercise their options to go public, thus generating an IPO wave.
2. Alti (2006) focuses instead on information spillovers across IPOs to generate IPO waves. Since IPO offer prices are set based on investors' indications of interest, the outcome of an IPO (a high versus low IPO offer price) reflects information that was previously private, reducing information asymmetry across investors and reducing valuation uncertainty for future issuers, thereby triggering an IPO wave.

Consistent with the theory of IPO waves, Baker and Wurgler (2000) who show that firms issue relatively more equity around market peaks, just prior to periods of low market returns. They examine several potential explanations for this phenomenon and conclude that it reflects market timing. If investor optimism does affect market-wide returns and firms can successfully go public during high optimism periods, then IPO volume should be negatively correlated with future market returns. However, one of the most popular models of corporate financing decisions in the literature is the pecking order theory of Myers (1984).

On the other hand, the pecking order theory is based on the argument in Myers and Majluf (1984) that asymmetric information problems drive the capital structure of firms. The higher the levels of firm's information asymmetry, the more of its financing needs are satisfied by the issuance of debt.

A modified pecking order theory finds the greatest support, both statistically and economically, when its basic assumption—severe adverse selection—holds the most in the data. Myers (1984) argues that if managers know more than the rest of the market about their firm's value (information asymmetry), the market penalizes the issuance of security (like equity) whose expected payoffs are crucially related to the assessment of such a value. In other words, increased information asymmetry increases the cost of equity capital.

Most of the existing theory of executive compensation has been cast in a framework where an all-equity firm provides incentives to a CEO (Holmstrom and Tirole 1993). As such this theory does not directly apply to levered firm, unless the debt is perfectly safe. For risky debt, however, shareholders have an incentive towards inefficient risk-shifting, as Jensen and Meckling (1976) have pointed out. For levered firms with risky debt, the CEO compensation problem is therefore different. The CEO's compensation for such firms ought to be structured to maximize the whole value of the firm - equity and debt value - and not just the value of equity. This obvious observation has, alas, not filtered through to practice. Executive compensation is still mostly viewed through the lens of shareholder value maximization, whether the firm is levered or not.

Since Jensen and Meckling (1976), the problem of managerial power and discretion has been analyzed in modern finance as an "agency problem." Managers may use their discretion to benefit their private interests by engaging in empire building, fail to distribute excess cash when the firm does not have profitable investment opportunities and may entrench themselves in their positions, making it difficult to oust them when they perform poorly (Shleifer and Vishny 1989). Among financial economists, the dominant approach to the study of executive compensation views these pay arrangements as a (partial) remedy to the agency problem.

4.4 Hypotheses Development

Information asymmetry denotes that market participants have unequal information sets. Unlike information uncertainty, information asymmetry indicates that some market participants know more about a firm's fundamental value because they have private information. Ball and Shivakumar (2005) hypothesize that listed companies meet a higher reporting standard due to enhanced market demand and regulatory incentives and Ball and Shivakumar (2008) show that for that reason, initial public offering (IPO) firms do report more conservatively contrary to popular belief.

Investors with access to different information (i.e., information asymmetry) will anticipate different expected returns, and imperfect distribution of information amongst market participants causes increased volatility - as compared to the situation in which investors are perfectly (and evenly) informed. Less-informed investors face adverse selection and, accordingly, demand a risk premia resulting in increasing price elasticity to shocks in supply and price volatility. As the proportion of uninformed investors rises relative to informed investors, such risk premia correspondingly increases. Therefore, the first hypothesis is:

4.4.1 Hypothesis 1: Lower disclosures increase the idiosyncratic risk for EGCs.

Graham and Harvey (2001) show equity market prices are regarded as more important than 9 out of 10 other factors considered in the decision to issue common stock, and more important than all 4 other factors considered in the decision to issue convertible debt. Mikkelson et al. (1997) (p284) shows that 85% of firms state that they have an IPO to raise working capital, 58% to retire debt and 64% to raise money for new investments. Further, the modified pecking order theory shows that in situations where adverse selection costs are high, firms will issue more debt to cover the financing deficit. Therefore, the second hypothesis is:

4.4.2 Hypothesis 2: Lower disclosure is associated with higher cost of debt for EGCs.

4.4.3 Hypothesis 3: Lower disclosure is associated with higher leverage in EGCs.

4.5 Methodology

4.5.1 Sample Data

The study's data is divided into two samples – pre-JOBS Act (control sample) and post-JOBS Act (treatment sample) and presented in Table 34. The control sample consists of issuers that would be classified as EGC under the JOBS Act if the law was in effect as of 12/31/2006. EGCs that disclose executive compensation related items and/or have "opted out" of the reduced compliance with financial statement standards are discarded. To isolate the effects of the financing decision of the firm, only the first two quarters are considered since it is documented that firms frequently use IPO to reduce debt (Mikkelson et al. 1997). Further, a percentage change in leverage is calculated to see if there was a significant difference between pre- and post-JOBS Act IPOs.

TABLE 34
SAMPLE SELECTION

Process	Control Group Pre-JOBS	Treatment Group Post-JOBS	Total
All IPOs			
January 2007 - November 2011	642		
December 2011 - February 2013		186	
Less: Firms not matching the criteria for EGC	195	90	
Less: Firms with reduced disclosures		22	
Less: Missing Values	67	37	
Total number of firms	380	37	417
Total number of firm-quarter observations	760	74	834

The descriptive statistics are presented in Table 35a and 35b.

4.5.2 Research Design

All the firms are coded as either 0 if they are from the control sample (pre-JOBS Act) or 1 for the treatment sample (post-JOBS Act). All other quarterly financial variables are collected from Compustat.

To test hypothesis 1, the study follows the methodology used by Ashbaugh-Skaife et al. (2009). First, Idiosyncratic risk (I_RISK) is measured as the standard deviation of the residuals from the following model:

$$EXRET_{it} = \beta_0 + \beta_1 RMRF_t + \varepsilon, \quad (9)$$

Where,

- EXRET is the firm's monthly return minus the risk-free rate and
- RMRF is the excess return on the market

TABLE 35a
DESCRIPTIVE STATISTICS

Variable	Definition	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
I_Risk	*Idiosyncratic Risk*	58.688	93.446	14.171	29.731	60.221
ChgLev	*% Change in Leverage*	-0.332	2.210	-0.073	0.000	0.000
Lev	*Leverage*	0.122	0.244	0.000	0.008	0.157
CFO	*Cash Flows from Operations*	-0.066	0.444	-0.063	0.011	0.080
BM	*Book-to-Market Ratio*	0.602	0.597	0.243	0.426	0.843
Size	*Log of Assets*	4.801	1.493	4.142	4.965	5.691
COD	*Cost of Debt*	0.058	0.353	0.012	0.019	0.031
Infl	*Inflation*	2.622	1.674	1.417	2.644	3.970
Sales	*Sales*	33.843	45.720	4.045	18.360	45.484
ROA	*Return on Assets*	-0.072	0.653	-0.029	0.002	0.024
StdROA	*Standard Deviation of ROA*	0.206	2.070	0.009	0.022	0.057
MTB	*Market-to-Book Ratio*	2.877	9.376	1.078	2.134	3.821
Ind	*Industry*	0.385	0.196	0.219	0.398	0.636
Times	*EBITDA/Interest Expense*	110.042	813.635	-0.673	6.519	28.286
Profitability	*EBITDA/Total Assets*	-0.025	0.279	-0.004	0.014	0.045
StdCFO	*Standard Deviation of CFO*	0.108	0.237	0.012	0.035	0.098
Tang	*Tangibility*	0.164	0.229	0.018	0.062	0.197

The sample is drawn using the first two quarters after the IPO for both control and treatment firms. I_Risk is calculated as the standard deviation of the residuals of the CAPM model. ChgLev is the percentage change in leverage over the two quarters. LEV, is calculated by dividing Total long term debt by total assets. CFO is the cash flow from operations scaled over total assets. BM is the book-to-market ratio. Log of assets is used as a proxy for firm size. COD is the cost of debt calculated by dividing interest expense by the sum of short term and long term liabilities. Expected inflation rate (Inflation) is defined in this study as the expected change in the consumer price index over the coming year using data from the Livingston Survey. Industry median leverage is used to proxy for the industry effect (Industry). MTB is the market-to-book ratio used to proxy for growth. Tangibility is operationalized by dividing net property, plant, and equipment, to total assets. Profitability (Profit) is calculated as operating income before depreciation, interest and taxes scaled over assets.

TABLE 35b
DESCRIPTIVE STATISTICS

		Control Group (Pre-JOBS)		Treatment Group (Post-JOBS)	
Variable	Definition	Mean	Std Dev	Mean	Std Dev
I_Risk	*Idiosyncratic Risk*	63.202	97.407	18.388	13.703
ChgLev	*% Change in Leverage*	-0.248	1.717	-1.076	4.650
Lev	*Leverage*	0.119	0.248	0.152	0.202
CFO	*Cash Flows from Operations*	-0.075	0.459	-0.006	0.305
BM	*Book-to-Market Ratio*	0.626	0.608	0.284	0.259
Size	*Log of Assets*	4.776	1.512	5.020	1.300
COD	*Cost of Debt*	0.047	0.194	0.156	0.921
Infl	*Inflation*	2.694	1.747	1.993	0.387
Sales	*Sales*	31.332	42.663	57.148	63.591
ROA	*Return on Assets*	-0.075	0.684	-0.038	0.179
StdROA	*Standard Deviation of ROA*	0.222	2.170	0.045	0.134
MTB	*Market-to-Book Ratio*	2.275	7.362	10.957	22.056
Ind	*Industry*	0.393	0.198	0.318	0.174
Times	*EBITDA/Interest Expense*	123.160	861.544	3.760	33.325
Profitability	*EBITDA/Total Assets*	-0.028	0.291	0.007	0.093
StdCFO	*Standard Deviation of CFO*	0.112	0.242	0.075	0.200
Tang	*Tangibility*	0.156	0.222	0.226	0.275

Systematic risk (β_1) is measured as the coefficient on RMRF. To see if lower disclosures result in higher firm's idiosyncratic risk, we use the following model:

$$I\_RISK = \gamma_0 + \gamma_1 JOBS + \gamma_2 LEV + \gamma_3 CFO + \gamma_4 STD\_CFO + \gamma_5 BM + \gamma_6 SIZE + \gamma_7 DIVPAYER + \gamma_8 RET + \varepsilon \quad (10)$$

Where,

- JOBS is a binary variable with 0 being before the JOBS Act and 1 being after the JOBS Act;
- Leverage (LEV), is defined as total long term debt divided by total assets;

- Cash flow from operations (CFO), is defined as cash flow from operations divided by total assets;
- Standard deviation of cash flow from operations (STD_CFO) is defined as the five-year standard deviation of cash flow from operations divided by total assets, requiring a minimum of three years of data;
- Book-to-market (BM), is defined as book value of equity divided by market value of equity;
- Firm size (SIZE), is defined as the natural log of market value of equity;
- Dividend distribution (DIVPAYER), is defined as one if the firm pays dividends, and zero otherwise;
- Return (RET), is defined as the return on asset calculated as EBITDA/Total Assets;

To test hypothesis 2, the cost of debt is regressed on JOBS and other controls. The regression equation is as follows:

$$COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 LEV_{it} + \alpha_3 CFO_{it} + \alpha_4 BM_{it} + \alpha_5 SIZE_{it} + \varepsilon \qquad (11)$$

Where,

- COD is the cost of debt calculated as interest expense divided by both long term liabilities and short-term liabilities;
- JOBS is a binary variable with 0 being before the JOBS Act and 1 being after the JOBS Act;
- Leverage (LEV), is defined as total long term debt divided by total assets;
- Cash flow from operations (CFO), is defined as cash flow from operations divided by total assets;

- Book-to-market (BM), is defined as book value of equity divided by market value of equity;
- Firm size (SIZE), is defined as the natural log of market value of equity;

To test hypothesis 3, An OLS regression model is also developed based on Frank and Goyal (2009) results because they examined the relative importance of 39 factors in the leverage decisions of publicly traded American firms from 1950 to 2003. This study adds audit of ICFR (SOX) as another determinant of leverage. The following model is used:

$$Lev = \alpha + \beta_1 JOBS_i + \beta_2 COD_{it} + \beta_3 JOBS_i * COD_{it} + \beta_4 Ind_i + \beta_5 Growth_{it} + \beta_6 tang_{it} + \beta_7 Size_{it} + \beta_8 Profit_{it} + \beta_9 Infl_t + \varepsilon \quad (12)$$

Where,

- Leverage: The proxy for leverage is long-term debt divided by the book value of assets.
- JOBS is a binary variable with 0 being before the JOBS Act and 1 being after the JOBS Act;
- COD is the cost of debt calculated as interest expense divided by both long term liabilities and short-term liabilities;
- Industry: Firms tend to benchmark their capital structure in accordance with the industry average (Hovakimian et al. 2001). Industry median leverage is used to proxy for the industry effect in this study. It is measured as the median of total debt to book value of assets by SIC code at the four-digit level.
- Growth: Growth reduces free cash flow problems, and exacerbates debt-related agency problems like overcapitalization etc. Growing firms place a greater value

on stakeholder co-investment. Adam and Goyal (2008) show that market-to-book ratio is the most reliable proxy for growth. Alternate proxies to measure growth are change in sales and capital expenditures.

- Tangibility: Tangible assets are directly related to leverage. Tangibility (tang) is operationalized by dividing net property, plant, and equipment, to total assets.
- Firm size: Large firms may face lower default risk due to diversification. The tradeoff theory predicts that firms that are large tend to have higher leverage. Log of assets is used as a proxy for firm size.
- Profitability: Leverage is inversely related to profitability because of passively accumulated profits (Kayhan and Titman 2007). This is also supported by the pecking order theory. Profitability (Profit) is calculated as operating income before depreciation, interest and taxes scaled over assets.
- Expected inflation: When expected inflation is high, the real value of tax deductions on debt is higher (Taggart 1985). Further, Barry et al. (2008) show that firms have higher debt when current interest rates are low. Liang and Zhang (2008) also conclude that an information environment with higher uncertainty regarding future cash inflows has an effect on expected debt financing. Expected inflation rate (Inflation) is defined in this study as the expected change in the consumer price index over the coming year using data from the Livingston Survey.[10]

[10] http://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey/historical-data/

4.6 Empirical Results

Before running the regressions, the correlations of the variables involved were run and are presented in Table 36 and it is indicated that there is not a multicollinearity problem. Since a panel data was employed, there are some heteroschedasticity issues but OLS regression is robust to that. Further checks were done related for independence, normality, linearity and potentially influential outliers. A step-wise regression and hausman tests are also run for each regression. The hausman test is used to determine whether the random effects should be shown along with the fixed effects. The correlations are mostly low except for the correlation between cash flow from operations and profitability.

To test Hypothesis 1, the idiosyncratic risk is first calculated for each firm by regressing excess return on market return and taking the standard deviation of the residuals thus obtained. This idiosyncratic risk is then regressed on the dummy variable for JOBS Act in Table 37 Model I. Model II presents the regression results with the control variables presented in Ashbaugh-Skaife et al. (2009) and Model III further includes the yearly fixed effects.

TABLE 36

CORRELATIONS

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. *I_Risk*	1.000																
2. *ChgLev*	0.152	1.000															
3. *Lev*	0.098	0.115	1.000														
4. *CFO*	-0.383	-0.118	-0.706	1.000													
5. *BM*	-0.184	0.099	-0.054	0.321	1.000												
6. *Size*	-0.445	-0.065	-0.288	0.766	0.480	1.000											
7. *COD*	-0.069	-0.732	-0.085	0.044	-0.045	0.033	1.000										
8. *Infl*	0.221	0.130	0.051	-0.100	-0.138	-0.035	-0.003	1.000									
9. *Sales*	-0.077	0.033	-0.007	0.214	0.225	0.500	0.057	0.091	1.000								
10. *ROA*	-0.216	-0.048	-0.161	0.550	0.213	0.498	0.013	0.076	0.125	1.000							
11. *StdROA*	0.022	0.066	0.157	-0.430	-0.431	-0.394	-0.022	0.094	-0.151	-0.210	1.000						
12. *MTB*	-0.309	-0.135	-0.317	0.633	0.090	0.544	0.034	-0.049	0.104	0.337	-0.326	1.000					
13. *Ind*	-0.068	0.119	-0.017	0.060	0.133	0.109	-0.087	-0.106	0.052	0.019	-0.107	0.055	1.000				
14. *Times*	-0.153	-0.075	-0.121	0.346	0.217	0.356	0.062	-0.083	0.204	0.178	-0.636	0.412	0.025	1.000			
15. *Profitability*	-0.605	-0.094	-0.322	0.775	0.345	0.794	0.027	-0.036	0.214	0.504	-0.311	0.818	0.126	0.399	1.000		
16. *StdCFO*	0.367	0.110	0.526	-0.895	-0.336	-0.846	-0.035	0.020	-0.229	-0.508	0.417	-0.753	-0.044	-0.390	-0.853	1.000	
17. *Tang*	0.240	0.105	0.044	0.015	0.054	0.013	-0.001	-0.223	0.083	-0.064	-0.122	0.015	-0.057	0.119	-0.148	-0.037	1.000

TABLE 37

Mean Coefficient Estimates for Regressions of Idiosyncratic Risk on EGCs with Reduced Disclosures during the First Two Quarter after an IPO

Dependent Variable - I_Risk

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	63.202**	200.806**	168.643**
		(3.378)	(39.575)	(38.353)
JOBS	*Pre- and Post-JOBS Act*	-44.814**	-62.067**	-89.751**
		(10.645)	(26.076)	(29.713)
Lev	*Leverage*		-37.545	-47.512
			(50.252)	(48.981)
CFO	*Cash Flows from Operations*		-78.097*	-55.369
			(33.649)	(33.006)
StdCFO	*Standard Deviation of CFO*		-31.337	27.779
			(45.846)	(47.388)
BM	*Book-to-Market Ratio*		-13.366	-18.554
			(14.182)	(14.063)
Size	*Log of Assets*		-20.668*	-14.383
			(8.243)	(8.008)
DivPayer	*Dividend Payer*		57.653*	89.966
			(22.653)	(22.615)
ROA	*Return on Assets*		4.130	-1.775
			(8.426)	(8.567)
Fixed Effects		No	No	Yes
R^2	R Square	0.021	0.185	0.170
Adj R^2	Adjusted R Square	0.020	0.162	0.170
n	Total number of observations	834	292	292

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $I\_Risk_{it} = \alpha_0 + \alpha_1\ JOBS_i$

Model II: $I\_Risk_{it} = \alpha_0 + \alpha_1\ JOBS_i + \alpha_2\ LEV_{it} + \alpha_3\ CFO_{it} + \alpha_4\ StdCFO + \alpha_5 BM_{it} + \alpha_6\ Size_{it} + \alpha_7\ DivPayer_{it} + \alpha_8\ ROA$

Model III: $I\_Risk_{it} = \alpha_0 + \alpha_1\ JOBS_i + \alpha_2\ LEV_{it} + \alpha_3\ CFO_{it} + \alpha_4\ StdCFO + \alpha_5 BM_{it} + \alpha_6\ Size_{it} + \alpha_7\ DivPayer_{it} + \alpha_8\ ROA$ + Fixed Effects

Surprisingly, the relationship between idiosyncratic risk and EGCs is negative and gets stronger as control variables and fixed effects are added. In model III, the coefficient on the dummy variable JOBS is -89.75 which is statistically significant at the 1% level. This means that firms with reduced disclosures have lower idiosyncratic risk as compared to the firms with higher disclosures pre-JOBS Act. This result support rejecting the hypothesis that reduced disclosures increases the idiosyncratic risk of the firm.

To test hypothesis 2, the cost of debt is regressed on the dummy variable for the JOBS Act. The results presented in Table 38 show that there is a statistically significant difference between the cost of debt pre-JOBS Act and post-JOBS Act.

TABLE 38
Mean Coefficient Estimates for Regressions of Cost of Debt on EGCs with Reduced Disclosures during the First Two Quarters of an IPO

Dependent Variable - COD

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	0.047**	-0.087	-0.157
		(0.018)	(0.270)	(0.276)
JOBS	*Pre- and Post-JOBS Act*	0.109*	0.548**	0.097
		(0.055)	(0.192)	(0.220)
Lev	*Leverage*		-0.437	-0.580
			(0.295)	(0.304)
CFO	*Cash Flows from Operations*		-0.179	-0.264
			(0.176)	(0.180)
BM	*Book-to-Market Ratio*		-0.010	-0.100
			(0.102)	(0.107)
Size	*Log of Assets*		0.043	0.076
			(0.058)	(0.059)
Fixed Effects		No	No	Yes
R^2	R Square	0.009	0.068	0.025
Adj R^2	Adjusted R Square	0.007	0.034	0.025
n	Total number of observations	425	145	145

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $COD_{it} = \alpha_0 + \alpha_1\ JOBS_i$

Model II: $COD_{it} = \alpha_0 + \alpha_1\ JOBS_i + \alpha_2\ LEV_{it} + \alpha_3\ CF_{it} + \alpha_4\ BM_{it} + \alpha_5\ Size_{it}$

Model III: $COD_{it} = \alpha_0 + \alpha_1\ JOBS_i + \alpha_2\ LEV_{it} + \alpha_3\ CF_{it} + \alpha_4\ BM_{it} + \alpha_5\ Size_{it}$ + Fixed Effects

The coefficient on JOBS in model II is 0.548 which is significant at the 1% confidence level. However, the results are not statistically significant when the fixed effects are included. Therefore, we find support for the second hypothesis that the JOBS Act increased the cost of debt.

Finally, hypothesis 3 states that the JOBS Act has a significant effect on the financing decision of the firm. As discussed earlier, the raison d'être for JOBS Act is to improve the access to capital for smaller firms. This would require EGCs to rely less on debt and meet its financing needs by issuing equity. Table 39 shows that there was a significant reduction in the change in leverage.

TABLE 39
Mean Coefficient Estimates for Regressions of Leverage on EGCs with Reduced Disclosures using Interaction between Cost of Debt and JOBS

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.367**	-1.379	0.796
		(0.103)	(1.022)	(1.895)
JOBS	*Pre- and Post-JOBS Act*	-0.166	-0.650	-2.538
		(0.308)	(0.739)	(1.364)
COD	*Cost of Debt*	-0.892	-0.845	-0.815
		(0.515)	(0.516)	(0.503)
JOBS_COD	Interaction Term	-3.877**	-3.716**	-3.668**
		(0.603)	(0.609)	(0.616)
Industry	Median Industry Leverage		1.386	1.283
			(0.880)	(0.909)
MTB	Market-to-Book Ratio		-0.045	0.004
			(0.031)	(0.034)
Tang	Tangibility		1.382	1.482
			(0.753)	(0.830)
Size	Log of Assets		-0.051	-0.068
			(0.179)	(0.183)
Profit	Profitability		0.418	-0.574
			(0.802)	(0.869)
Inflation	Inflation		0.164	-0.452
			(0.111)	(0.438)
Fixed Effects		No	No	Yes
R^2	R Square	0.364	0.681	0.595
Adj R^2	Adjusted R Square	0.360	0.658	0.595
n	Total number of firms	425	134	134

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1\ JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1\ JOBS_{it} + \alpha 2\ COD_{it} + \alpha_4\ COD{*}JOBS_{it} + \alpha 5\ Ind_i + \alpha 6\ MTB_{it} + \alpha 7\ Tang_{it} + \alpha 8\ Size_{it} + \alpha 9\ Profit_{it} + \alpha 10\ Infl_t$

Model III: $LEV_{it} = \alpha_0 + \alpha_1\ JOBS_{it} + \alpha 2\ COD_{it} + \alpha_4\ COD{*}JOBS_{it} + \alpha 5\ Ind_i + \alpha 6\ MTB_{it} + \alpha 7\ Tang_{it} + \alpha 8\ Size_{it} + \alpha 9\ Profit_{it} + \alpha 10\ Infl_t + FE$

Model III in table 39 presents the effect of JOBS act on leverage as -3.67 which is statistically significant with t-statistic of 0.616. This means that there was a statistically significant difference between leverage pre-JOBS and post-JOBS.

4.6.1 Sensitivity and Robustness Tests

For further robustness tests, a regression is run including EBITDA as a control variable as well as other significant variables in Table 40.

The coefficient on EBITDA is insignificant but all others are significant at the 1% level. The idiosyncratic risk decreases after JOBS Act and the results hold across all specifications.

To understand the role of idiosyncratic risk in the IPO market, Table 41 presents a model of the statistically significant variables.

The variables included are cash flow from operations, whether the firm is a dividend payer, profitability and tangibility. JOBS Act also had a significant effect on the idiosyncratic risk of the firm and the coefficient associated with it is -101.81, which is statistically significant at the 1% level.

Table 42 follows Callahan et al. (2012) model to assess the effects of JOBS Act on the cost of debt.

This model uses variables employed in accounting and finance literature. Model II presents a significant positive relationship between cost of debt and the JOBS Act at the 5% level. However, the results are not statistically significant after controlling for fixed effects.

TABLE 40
Mean Coefficient Estimates for Regressions of Idiosyncratic Risk on EGCs with Reduced Disclosures including EBITDA

Dependent Variable - I_Risk

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	63.202**	91.686**	111.234**
		(3.378)	(17.716)	(16.445)
JOBS	*Pre- and Post-JOBS Act*	-44.814**	-39.534**	-90.232**
		(10.645)	(14.020)	(15.124)
CFO	*Cash Flows from Operations*		-45.906**	-38.166**
			(11.169)	(10.338)
Size	*Log of Assets*		-6.298	-9.803**
			(3.796)	(3.526)
DivPayer	*Dividend Payer*		56.943**	77.293**
			(15.525)	(14.410)
EBITDA	*Earnings before int, tax and depn*		-0.178	-0.011
			(0.408)	(0.375)
Fixed Effects		No	No	Yes
R^2	R Square	0.030	0.108	0.096
Adj R^2	Adjusted R Square	0.028	0.099	0.096
n	Total number of observations	860	542	542

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 CFO_{it} + \alpha_3 Size_{it} + \alpha_4 DivPayer_{it} + \alpha_5 EBITDA_{it}$

Model III: $I\_Risk_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 CFO_{it} + \alpha_3 Size_{it} + \alpha_4 DivPayer_{it} + \alpha_5 EBITDA_{it}$ + Fixed Effects

TABLE 41

Mean Coefficient Estimates for Regressions of Idiosyncratic Risk on EGCs with Reduced Disclosures including All Significant Variables

Dependent Variable - I_Risk

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	63.202** (3.378)	60.392** (5.337)	60.861** (4.896)
JOBS	*Pre- and Post-JOBS Act*	-44.814** (10.645)	-47.089** (12.908)	-101.809** (13.906)
CFO	*Cash Flows from Operations*		34.163** (12.794)	31.409** (11.743)
DivPayer	*Dividend Payer*		36.837* (14.996)	51.053** (13.743)
Profitability	*EBITDA/Total Assets*		-183.278** (18.587)	-173.094 (17.101)
Tang	*Tangibility*		13.651 (18.112)	38.226* (16.726)
Fixed Effects		No	No	Yes
R^2	R Square	0.030	0.245	0.222
Adj R^2	Adjusted R Square	0.028	0.238	0.222
n	Total number of observations	860	538	538

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $I\_Risk_{it} = \alpha_0 + \alpha_1\ JOBS_i$

Model II: $I\_Risk_{it} = \alpha_0 + \alpha_1\ JOBS_i + \alpha_2\ CFO_{it} + \alpha_3\ DivPayer_{it} + \alpha_4\ Profitability_{it} + \alpha_5\ Tang_{it}$

Model III: $I\_Risk_{it} = \alpha_0 + \alpha_1\ JOBS_i + \alpha_2\ CFO_{it} + \alpha_3\ DivPayer_{it} + \alpha_4\ Profitability_{it} + \alpha_5\ Tang_{it}$ + Fixed Effects

TABLE 42
Mean Coefficient Estimates for Regressions of Cost of Debt on EGCs with Reduced Disclosures following Callahan et al. (2012) Model

Dependent Variable - COD

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	0.047**	0.091	0.087
		(0.018)	(0.092)	(0.095)
JOBS	*Pre- and Post-JOBS Act*	0.109*	0.156*	-0.010
		(0.055)	(0.073)	(0.086)
ROA	*Return on Assets*		-0.009	-0.010
			(0.024)	(0.025)
StdROA	*Standard Deviation of ROA*		0.001	0.000
			(0.007)	(0.007)
Size	*Log of Assets*		0.007	0.007
			(0.017)	(0.017)
2Lev	*2*Leverage*		-0.045	-0.034
			(0.035)	(0.036)
Times	*EBITDA/Interest Expense*		0.000	0.000
			(0.000)	(0.000)
Ind	*Industry*		-0.169	-0.122
			(0.129)	(0.132)
Fixed Effects		No	No	Yes
R^2	R Square	0.009	0.025	0.008
Adj R^2	Adjusted R Square	0.007	0.003	0.008
n	Total number of observations	425	328	328

**, ** Denotes significance at the 0.10 and 0.05 levels, respectively.*

Standard Errors are in parenthesis

Model I: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i$

Model II: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 ROA_{it} + \alpha_3 StdROA_{it} + \alpha_4 Size_{it} + \alpha_5 2Lev_{it} + \alpha_6 Times_{it} + \alpha_7 Ind_i$

Model III: $COD_{it} = \alpha_0 + \alpha_1 JOBS_i + \alpha_2 ROA_{it} + \alpha_3 StdROA_{it} + \alpha_4 Size_{it} + \alpha_5 2Lev_{it} + \alpha_6 Times_{it} + \alpha_7 Ind_i$ + Fixed Effects

Profitability is included as a control variable in Table 43. The coefficient on JOBS is 0.64 significant at the 5% level. The relatively weaker results may be attributed to the low number of firms.

Table 44 has the change in leverage as a dependent variable and shows a significant effect after the JOBS Act in Model II without including the fixed effects. The coefficient on JOBS is negative, as expected and is significant only at the 5% level.

The paper posits that the effect on the financing decision of a firm after the JOBS Act is due to the pecking order theory. The theory claims that firms time the market and issue equity when there is relatively easier access to capital or the cost of debt is higher. Therefore, an interaction term is used with an interaction between JOBS and COD. The coefficient on the interaction term is statistically significant in all the models. Table 45 includes several liquidity measures as controls.

All variables presented in equation (2) and the liquidity controls presented in Table 45 are included in Table 46.

The results show that the interaction term is significant across all models with the coefficient being -3.57 in Model III which further controls for fixed effects.

Lastly, Table 47 presents the effect on change in leverage using the stepwise method.

TABLE 43
Mean Coefficient Estimates for Regressions of Cost of Debt on EGCs with Reduced Disclosuresincluding Profitability

Dependent Variable - COD

Variable	Definition	I	II	III
Constant	Intercept	0.047**	-0.010	-0.237
		(0.018)	(0.415)	(0.428)
JOBS	*Pre- and Post-JOBS Act*	0.109*	0.635**	0.080
		(0.055)	(0.243)	(0.270)
Lev	*Leverage*		-0.528	-0.483
			(0.409)	(0.418)
CFO	*Cash Flows from Operations*		-0.201	-0.102
			(0.279)	(0.295)
StdCFO	*Standard Deviation of CFO*		0.229	0.666
			(0.557)	(0.680)
BM	*Book-to-Market Ratio*		-0.013	-0.249
			(0.141)	(0.156)
Size	*Log of Assets*		0.052	0.116
			(0.084)	(0.087)
Times	*EBITDA/Interest Expense*		0.001	0.001
			(0.001)	(0.001)
Ind	*Industry*		-0.363	-0.242
			(0.392)	(0.407)
Profitability	*EBITDA/Total Assets*		0.094	0.152
			(0.226)	(0.264)
Fixed Effects		No	No	Yes
R^2	R Square	0.009	0.089	0.029
Adj R^2	Adjusted R Square	0.007	0.008	0.029
n	Total number of observations	425	112	112

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $COD_{it} = \alpha_0 + \alpha_1\ JOBS_i$

Model II: $COD_{it} = \alpha_0 + \alpha_1\ JOBS_i + \alpha_2\ LEV_{it} + \alpha_3\ CFO_{it} + \alpha_4\ StdCFO_{it} + \alpha_5\ Bm_{it} + \alpha_6\ Size_{it} + \alpha_7\ Times_{it} + \alpha_8\ Ind_{it} + \alpha_9\ Profit_{it}$

Model III: $COD_{it} = \alpha_0 + \alpha_1\ JOBS_i + \alpha_2\ LEV_{it} + \alpha_3\ CFO_{it} + \alpha_4\ StdCFO_{it} + \alpha_5\ Bm_{it} + \alpha_6\ Size_{it} + \alpha_7\ Times_{it} + \alpha_8\ Ind_{it} + \alpha_9\ Profit_{it} + FE$

TABLE 44

Mean Coefficient Estimates for Regressions of Leverage on EGCs with Reduced Disclosures during the First Two Quarters of an IPO

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.248**	-1.471	-0.657
		(0.080)	(0.857)	(1.763)
JOBS	*Pre- and Post-JOBS Act*	-0.829**	-1.251*	-1.031
		(0.250)	(0.617)	(1.229)
Industry	Median Industry Leverage		0.986	0.937
			(0.767)	(0.750)
MTB	Market-to-Book Ratio		0.006	0.008
			(0.019)	(0.019)
Tang	Tangibility		0.477	0.163
			(0.732)	(0.736)
Size	Log of Assets		0.008	-0.007
			(0.138)	(0.135)
Profit	Profitability		-0.478	-0.665
			(0.615)	(0.606)
Inflation	Inflation		0.167	-0.022
			(0.117)	(0.412)
Fixed Effects		No	No	Yes
R^2	R Square	0.013	0.044	0.032
Adj R^2	Adjusted R Square	0.012	0.022	0.032
n	Total number of firms	846	315	315

**, ** Denotes significance at the 0.10 and 0.05 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_3 Ind_i + \alpha_4 MTB_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 Profit_t + \alpha_8 Infl_t$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_3 Ind_i + \alpha_4 MTB_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 Profit_t + \alpha_8 Infl_t$ + Fixed Effects

TABLE 45

Mean Coefficient Estimates for Regressions of Leverage on EGCs with Reduced Disclosures using Interactions and Liquidity

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.367**	-0.394**	-0.354**
		(0.103)	(0.126)	(0.130)
JOBS	*Pre- and Post-JOBS Act*	-0.166	-0.221	-0.482
		(0.308)	(0.343)	(0.412)
COD	*Cost of Debt*	-0.892	-0.906	-0.975
		(0.515)	(0.540)	(0.550)
JOBS_COD	Interaction Term	-3.877**	-3.839**	-3.773**
		(0.603)	(0.632)	(0.648)
CFO	*Cash Flows from Operations*		-0.414	-0.455
			(0.295)	(0.313)
StdCFO	*Standard Deviation of CFO*		-0.301	-0.384
			(0.551)	(0.589)
ROA	*Return on Assets*		0.073	0.071
			(0.129)	(0.134)
StdROA	*Standard Deviation of ROA*		0.013	-0.005
			(0.036)	(0.037)
Fixed Effects		No	No	Yes
R^2	R Square	0.364	0.374	0.373
Adj R^2	Adjusted R Square	0.360	0.362	0.373
n	Total number of firms	425	382	382

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_2 COD_{it} + \alpha_3 JOBS*COD_{it} + \alpha_4 CFO_{it} + \alpha_5 StdCFO_{it} + \alpha_6 ROA_{it} + \alpha_7 StdROA_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_2 COD_{it} + \alpha_3 JOBS*COD_{it} + \alpha_4 CFO_{it} + \alpha_5 StdCFO_{it} + \alpha_6 ROA_{it} + \alpha_7 StdROA_{it}$ + Fixed Effects

TABLE 46
Mean Coefficient Estimates for Regressions of Leverage on EGCs with Reduced Disclosures using All Variables

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.367**	-2.383	0.565
		(0.103)	(1.479)	(2.289)
JOBS	*Pre- and Post-JOBS Act*	-0.166	-0.694	-2.556
		(0.308)	(0.788)	(1.506)
COD	*Cost of Debt*	-0.892	-0.925	-0.866
		(0.515)	(0.549)	(0.540)
JOBS_COD	Interaction Term	-3.877**	-3.626**	-3.574**
		(0.603)	(0.647)	(0.671)
Industry	Median Industry Leverage		1.235	1.021
			(1.119)	(1.227)
MTB	Market-to-Book Ratio		-0.038	0.009
			(0.038)	(0.041)
Tang	Tangibility		2.014*	1.822
			(0.916)	(1.001)
Size	Log of Assets		0.094	-0.039
			(0.247)	(0.252)
Profit	Profitability		0.781	-0.647
			(0.928)	(1.144)
Inflation	Inflation		0.210	-0.434
			(0.130)	(0.483)
CFO	*Cash Flows from Operations*		-0.081	0.094
			(0.633)	(0.670)
StdCFO	*Standard Deviation of CFO*		1.227	0.422
			(1.817)	(2.059)
ROA	*Return on Assets*		-0.014	0.046
			(0.141)	(0.162)
StdROA	*Standard Deviation of ROA*		0.013	0.007
			(0.039)	(0.039)
Fixed Effects		No	No	Yes
R^2	R Square	0.364	0.699	0.609
Adj R^2	Adjusted R Square	0.360	0.661	0.609
n	Total number of firms	425	116	116

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_2 Ind_i + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_t + \alpha_7 Infl_t + \alpha_8 CFO_{it} + \alpha_9 StdCFO_{it} + \alpha_{10} ROA_{it} + \alpha_{11} StdROA_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_2 Ind_i + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_t + \alpha_7 Infl_t + \alpha_8 CFO_{it} + \alpha_9 StdCFO_{it} + \alpha_{10} ROA_{it} + \alpha_{11} StdROA_{it} + FE$

TABLE 47

Mean Coefficient Estimates for Regressions of Leverage on EGCs with Reduced Disclosures using Stepwise Method

Dependent Variable - % Change in Leverage

Variable	*Definition*	*I*	*II*	*III*
Constant	Intercept	-0.236**	-0.367**	0.796
		(0.105)	(0.103)	(1.895)
JOBS	*Pre- and Post-JOBS Act*	-0.462	-0.166	-2.538
		(0.319)	(0.308)	(1.364)
COD	*Cost of Debt*	-3.715**	-0.892	-0.815
		(0.281)	(0.515)	(0.503)
JOBS_COD	Interaction Term		-3.877**	-3.668**
			(0.603)	(0.616)
Industry	Median Industry Leverage			1.283
				(0.909)
MTB	Market-to-Book Ratio			0.004
				(0.034)
Tang	Tangibility			1.482
				(0.830)
Size	Log of Assets			-0.068
				(0.183)
Profit	Profitability			-0.574
				(0.869)
Inflation	Inflation			-0.452
				(0.438)
Fixed Effects		No	No	Yes
R^2	R Square	0.302	0.364	0.595
Adj R^2	Adjusted R Square	0.298	0.360	0.595
n	Total number of firms	425	425	134

**, ** Denotes significance at the 0.05 and 0.01 levels, respectively.*

Standard Errors are in parenthesis

Model I: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it}$

Model II: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_2 Ind_i + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_t + \alpha_7 Infl_t + \alpha_8 CFO_{it} + \alpha_9 StdCFO_{it} + \alpha_{10} ROA_{it} + \alpha_{11} StdROA_{it}$

Model III: $LEV_{it} = \alpha_0 + \alpha_1 JOBS_{it} + \alpha_2 Ind_i + \alpha_3 MTB_{it} + \alpha_4 Tang_{it} + \alpha_5 Size_{it} + \alpha_6 Profit_t + \alpha_7 Infl_t + \alpha_8 CFO_{it} + \alpha_9 StdCFO_{it} + \alpha_{10} ROA_{it} + \alpha_{11} StdROA_{it} + FE$

Model I shows the model without including the interaction term and model II includes the interaction term. This method is used to see if the interaction term actually increases the explanatory power of the model. As presented in Table 47, the adjusted r-square went up from 29.8% to 36% when the interaction term was included suggesting that it is the interaction between the JOBS act and the cost of debt that is associated with the effect on change in leverage.

4.7 Conclusion

This study examines the impact of information asymmetry on the financing decision of a firm. Market microstructure proxies of information asymmetry are based on the notion—set forth by an extensive theoretical literature—that market liquidity in general, and transaction costs (e.g., the bid-ask spread) in particular, consist of three primary components: order processing, inventory, and adverse selection. Common measures of asymmetric information used in the finance literature include stock return volatility, analysts' earnings forecast dispersion, proportion of intangible assets, debt rating, and stock bid–ask spread (or a component) and now firm age. While heavily used in empirical analysis, none of these variables has a strong theoretical claim to being a clear or complete measure of information asymmetry between issuers and outside investors. Moreover, these measures are likely to capture other economic effects beyond asymmetric information. For example, stock return volatility is also a widespread measure of uncertainty and is influenced by industry-and economy-wide shocks (and stock market mechanical disruptions), for which firm managers are unlikely to have a significant information advantage relative to other investors. This study therefore, uses the lower disclosure requirements allowed under JOBS Act thereby, providing a better proxy for information asymmetry.

Similarly, the modified pecking order theory (Myers 1984) predicts that, the higher the level of a firm's information asymmetry, the more of its financing needs are satisfied by the issuance of debt (Bharath et al. 2009). This study sheds light on how market frictions can affect the predictions of the modified pecking order theory even when the main assumption of the theory - higher adverse selection costs is met. Future research can examine the effects of IPO waves in the financing decision of the firm. Another area of further exploration relates to the perception of firm risk altering the financing decisions of the firm.

CHAPTER 5

CONCLUSION

In most economic models, market frictions are deemed non-existent for ease of analytical calculations. However, market frictions such as regulation and taxes are becoming an increasingly important aspect of managerial decision-making. This dissertation explores the issue of whether and how market frictions affect the financing decision. The study further looks at the mechanisms that play into why management chooses a particular financing decision by exploring firm risk and firm value. The results show that market frictions indeed play a role in the financing decision of the firm. The dissertation examines the trade-off theory, market timing hypothesis, and the pecking order theory as possible explanations for the financing decision. Future research may extend the results to formulate a model that incorporates these theories to better understand the financing decision of the firm.

The first study examines the effect of tax aggressiveness on the financing decision of a firm. The results show that tax aggressive firms use less debt and firm value does impact financing decision. These results shed light on an unresolved issue in extant research. This study is important to a variety of stakeholders. It informs the interested users of financial statements the financing effect to the tax aggressive behavior. It emphasizes the importance of distinguishing between Cash ETR and GAAP ETR. It adds another statistically significant determinant of leverage to aid academic researchers with the omitted variable bias problem. Shareholders and executives could also use this study to craft the right incentives, ensure proper implementation and make them understand all the risks and rewards of tax aggressiveness. The study may also help researchers investigating tax aggressiveness and/or financing decisions. Furthermore, analyzing the extent to which empirical proxies for tax aggressiveness represent underlying tax shelter transactions answers the call in Hanlon and Heitzman (2010) for researchers to develop a better understanding on the usefulness of such measures in various contexts. The avenues for future research include looking at the cost of equity and cost of debt of firms that are tax aggressive. Another interesting future research could be to determine the behavioral impact of tax aggressiveness on financial reporting.

The second study examines the effect of audit quality on risk, cost of debt and the financing decision of emerging growth companies (EGC) as defined by the Jump-Start Our Business Startups Act (JOBS Act). When SOX sections 404(a) for management and 404(b) for auditors were implemented in late 2004, internal control information for investors substantially increased and audit fees typically doubled. Over time, audit fee increases have subsided, but relatively little is known about how the SOX 404(b) mandate effects the real decisions of firms. This study shows that JOBS Act actually decreases the perception of firm risk by investors of IPOs. This could be due to other provisions included in the JOBS Act like allowing EGCs to engage in oral or written "test-the-waters" communications with eligible institutions to determine their investment interest and submitting the documents to the SEC for confidential review instead of filing it publicly. Further, the results show that the JOBS Act has a statistically significant effect on the cost of debt and the financing decision of the firm. This shows that the JOBS Act has been successful in incentivizing EGCs to use public funds rather than rely on long-term debt for financing.

This research contributes to the existing knowledge by providing more information about the nature of audits over internal control, EGCs and financing decisions while quantifying the benefits of regulation, defining the parameters for auditing regulation, and assisting the audit committee in making optimal decision. Future research may include observing how auditing may affect the process of price formation for IPOs. Related research may also include how investors react to a more opaque process like "test-the-waters" communications in the perceived risk of securities.

The third study examines the impact of information asymmetry on the financing decision of a firm. The modified pecking order theory (Myers 1984) predicts that, the higher the level of a firm's information asymmetry, the more of its financing needs are satisfied by the issuance of debt (Bharath et al. 2009). The general consensus is that in the presence of financing needs, U.S. firms display greater preference for debt, both statistically and economically, when plagued with greater extent of and change in adverse selection costs—consistent with the main assumption of the pecking order theory, albeit seemingly less so in the 1990s (Fama and French 2005). This study sheds light on how market frictions can affect the predictions of the modified pecking order theory even when the main assumption of the theory - higher adverse selection costs is met. Future research can examine the effects of IPO waves in the financing decision of the firm. Another area of further exploration relates to the perception of firm risk altering the financing decisions of the firm.

REFERENCES

Adam, T., and V. K. Goyal. 2008. The investment opportunity set and its proxy variables. *Journal of Financial Research* 31 (1): 41-63.

Alti, A. 2006. How persistent is the impact of market timing on capital structure? *The Journal of Finance* 61 (4): 1681-710.

Ashbaugh-Skaife, H., D. W. Collins, and W. R. Kinney Jr. 2007. The discovery and reporting of internal control deficiencies prior to SOX-mandated audits. *Journal of Accounting and Economics* 44 (1): 166-92.

———, and R. LaFond. 2008. The effect of SOX internal control deficiencies and their remediation on accrual quality. *The Accounting Review* 83 (1): 217-50.

———, and R LaFond. 2009. The effect of SOX internal control deficiencies on firm risk and cost of equity. *Journal of Accounting Research* 47 (1): 1-43.

Ayers, B. 1998. Deferred tax accounting under SFAS No.109: an empirical investigation of its incremental value-relevance relative to APB No.11. *The Accounting Review 73*: 195–212.

Baker, M., and J. Wurgler. 2002. Market timing and capital structure. *The Journal of Finance* 57 (1): 1-32.

Ball, R., and L. Shivakumar. 2008. Earnings quality at initial public offerings. *Journal of Accounting and Economics* 45 (2): 324-49.

———. 2005. Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics* 39 (1): 83-128.

Barry, C. B., and S. J. Brown. 1986. Limited information as a source of risk. *The Journal of Portfolio Management* 12 (2): 66-72.

———. 1985. Differential information and security market equilibrium. *Journal of Financial and Quantitative Analysis* 20 (4): 407-22.

Bedard, J. C., K. M. Johnstone, and E. F. Smith. 2010. Audit quality indicators: A status update on possible public disclosures and insights from audit practice. *Current Issues in Auditing* 4 (1): C12-9.

Beneish, M. D., and E. Press. 1993. Costs of technical violation of accounting-based debt covenants. *Accounting Review* 68 (2): 233-57.

Beneish, M. D., M. B. Billings, and L. D. Hodder. 2008. Internal control weaknesses and information uncertainty. *The Accounting Review* 83 (3): 665-703.

Bharath, S. T., P. Pasquariello, and G. Wu. 2009. Does asymmetric information drive capital structure decisions? *Review of Financial Studies* 22 (8): 3211-43.

Bhattacharya, U., H. Daouk, and M. Welker. 2003. The world price of earnings opacity. *The Accounting Review* 78 (3): 641-78.

Bloomfield, R., and P. E. Fischer. 2011. Disagreement and the cost of capital. *Journal of Accounting Research* 49 (1): 41-68.

Botosan, C. A., and M. A. Plumlee. 2002. A re-examination of disclosure level and the expected cost of equity capital. *Journal of Accounting Research* 40 (1): 21-40.

Boquist, J. A., and W. T. Moore. 1984. Inter-industry leverage differences and the DeAngelo-masulis tax shield hypothesis. *Financial Management* (Spring) 13 (1): 5-9.

Bradley, M., G. A. Jarrell, and E. H. Kim. 1984. On the existence of an optimal capital structure: Theory and evidence. *Journal of Finance* 39 (3): 857-78.

Brennan, M. J., and A. Subrahmanyam. 1996. Market microstructure and asset pricing: On the compensation for illiquidity in stock returns. *Journal of Financial Economics* 41 (3): 441-64.

Callahan, C. M., V. P. Vendrzyk, & M. G. Butler. 2012. The impact of implied facilities cost of money subsidies on capital expenditures and the cost of debt in the defense industry. *Journal of Accounting and Public Policy* 31 (3): 301-319.

Carter, R., and S. Manaster. 1990. Initial public offerings and underwriter reputation. *The Journal of Finance* 45 (4): 1045-67.

Chaney, P. K., and D. C. Jeter. 1994. The effect of deferred taxes on security prices. *Journal of Accounting Auditing and Finance* 9 (1): 91-116.

Chemmanur, T. J., and J. He. 2011. IPO waves, product market competition, and the going public decision: Theory and evidence. *Journal of Financial Economics* 101 (2): 382-412.

Chen, S., X. Chen, Q. Cheng, and T. Shevlin. 2010. Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics* 95 (1): 41-61.

Cheng, C. S., Ho, J., & Tian, F. 2006. An empirical analysis of value-relevance of disclosure of material weaknesses under Section 404. Available at: SSRN 877015.

Christensen, P. O., L. E de la Rosa, and G. A. Feltham. 2010. Information and the cost of capital: An ex ante perspective. *The Accounting Review* 85 (3): 817-48.

Clarkson, P. M. 2000. Auditor quality and the accuracy of management earnings forecasts. *Contemporary Accounting Research* 17 (4): 595-622.

Cornett, M. M., & Travlos, N. G. 1989. Information Effects Associated with Debt-for-Equity and Equity-for-Debt Exchange Offers. *The Journal of Finance* 44 (2): 451-468.

DeAngelo, H., and R. W. Masulis. 1980. Leverage and dividend irrelevancy under corporate and personal taxation. *Journal of Finance* 35 (2): 453-64.

DeFond, M., and J. Jiambalvo. 1991. Incidence and circumstances of accounting errors. *The Accounting Review* 66 (3): 643-655.

De Franco, G., Y. Guan, and H. Lu. 2005. The wealth change and redistribution effects of Sarbanes-Oxley internal control disclosures. Available at: SSRN 706701.

Dhaliwal, D., R. Trezevant, and S. Wang. 1992. Taxes, investment related tax shields and capital structure. *Journal of the American Taxation Association* 14: 1–21.

Dhaliwal, D., S. Heitzman, and O. Z. Li. 2006. Taxes, leverage, and the cost of equity capital. *Journal of Accounting Research* 44 (4): 691-723.

Diamond, D. W., and R. E. Verrecchia. 1991. Disclosure, liquidity, and the cost of capital. *The Journal of Finance* 46 (4): 1325-59.

Donohoe, M. P. 2012. Financial Derivatives in Corporate Tax Avoidance: Why, How, and Who. *American Accounting Association*.

Donaldson, G. 1961. *Corporate debt capacity: A study of corporate debt policy and the determination of corporate debt capacity.* Division of Research, Graduate School of Business Administration, Harvard University.

Doogar, R., P. Sivadasan, and I. Solomon. 2010. The regulation of public company auditing: Evidence from the transition to AS5. *Journal of Accounting Research* 48 (4): 795-814.

Doyle, J., W. Ge, and S. McVay. 2007. Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics* 44 (1): 193-223.

Duarte, J., and L. Young. 2009. Why is PIN priced? *Journal of Financial Economics* 91 (2): 119-38.

Dye, R. A. 1993. Auditing standards, legal liability, and auditor wealth. *Journal of Political Economy*: 887-914.

Easley, D., S. Hvidkjaer, and M. O’hara. 2002. Is information risk a determinant of asset returns? *The Journal of Finance* 57 (5): 2185-221.

Easley, D., and M. O'hara. 2004. Information and the cost of capital. *The Journal of Finance* 59 (4): 1553-83.

Fama, E. F., and K. R. French 1998. Taxes, financing decisions, and firm value. *Journal of Finance* 53: 819–843.

———. 2002. Testing Trade-Off and pecking order predictions about dividends and debt. *Review of Financial Studies* 15 (1): 1.

———. 2005. Financing decisions: Who issues stock? *Journal of Financial Economics* 76 (3): 549-82.

Francis, J. R., K. Reichelt, and D. Wang. 2005. The pricing of national and city-specific reputations for industry expertise in the US audit market. *The Accounting Review* 80 (1): 113-36.

Frank, M. Z., and V. K. Goyal. 2009. Capital structure decisions: Which factors are reliably important? *Financial Management* 38 (1): 1-37.

Graham, J. 2000. How big are the tax benefits of debt? *Journal of Finance* 55: 1901–1941.

———. 2003, Taxes and corporate finance: A review, *Review of Financial Studies* 16: 1074-1128.

———, and C. R. Harvey. 2001. The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics* 60 (2-3): 187-243.

———, and A. L. Tucker. 2006. Tax shelters and corporate debt policy. *Journal of Financial Economics* 81 (3): 563-94.

Goyal, A., and P. Santa-Clara. 2003. Idiosyncratic risk matters! *The Journal of Finance* 58 (3): 975-1008.

Goldstein, R., N. Ju, and H. Leland. 2001. An EBIT-Based Model of Dynamic Capital Structure. *The Journal of Business* 74(4): 483-512.

Hanlon, M. 2003. What can we infer about a firm’s taxable income from its financial statements? *National Tax Journal* 56: 831–863.

———, and S. Heitzman. 2010. A review of tax research. *Journal of Accounting and Economics*.

Healy, P. M., and K. G. Palepu. 2001. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics* 31 (1): 405-40.

———. 1995. The challenges of investor communication the case of CUC international, inc. *Journal of Financial Economics* 38 (2): 111-40.

———. 1993. The effect of firms' financial disclosure strategies on stock prices. *Accounting Horizons* 7: 1-11.

Holmström, B., and J. Tirole. 1993. Market liquidity and performance monitoring. *Journal of Political Economy*: 678-709.

Hovakimian, A., T. Opler, and S. Titman. 2001. The debt-equity choice. *Journal of Financial and Quantitative Analysis* 36 (1): 1-24.

Huang, R., and J. R. Ritter. 2009. Testing theories of capital structure and estimating the speed of adjustment. *Journal of Financial and Quantitative Analysis* 44 (2): 237-71.

Jensen, M. C. 1993. The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance* 48 (3): 831-80.

———, and W. H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3 (4): 305-60.

———. 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* 76, 323-339.

Kayhan, A., and S. Titman. 2007. Firms' histories and their capital structures. *Journal of Financial Economics* 83 (1): 1-32.

Kinney, Jr, R. W., and M. L. Shepardson. 2011. Do control effectiveness disclosures require SOX 404 (b) internal control audits? A natural experiment with small US public companies. *Journal of Accounting Research* 49 (2): 413-48.

Kraus, A., and H. R. Litzenberger. 1973. A State-Preference Model of Optimal Financial Leverage. *The Journal of Finance* 28 (4): 911-922.

Lambert, R., C. Leuz, and R. E. Verrecchia. 2007. Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research* 45 (2): 385-420.

Lang, M. H., and R. J. Lundholm. 1996. Corporate disclosure policy and analyst behavior. *Accounting Review*: 467-92.

Lenter, D., D. Shackelford, and J. Slemrod. 2003. Public disclosure of corporate tax return information: accounting, economics, and legal perspectives. *National Tax Journal* 56: 803–830.

Lev, B., and P. Zarowin. 1999. The boundaries of financial reporting and how to extend them. *Journal of Accounting Research* 37 (2): 353-85.

Liang, P. J., and X. Zhang. 2006. Accounting treatment of inherent versus incentive uncertainties and the capital structure of the firm. *Journal of Accounting Research* 44 (1): 145-76.

Lisowsky, P. 2010. Seeking shelter: Empirically modeling tax shelters using financial statement information. *Accounting Review* 85 (5): 1693-720.

Masulis, R. W. 1980. The effects of capital structure change on security prices: A study of exchange offers. *Journal of Financial Economics* 8 (2): 139-178.

MacKie-Mason, J. K. 1990. Do firms care who provides their financing? *Journal of Finance*.

McConomy, B. J. 1998. Bias and accuracy of management earnings forecasts: An evaluation of the impact of auditing. *Contemporary Accounting Research* 15 (2): 167-95.

McGill, G., and Outslay, E. 2002. Did Enron pay taxes? Using accounting information to decipher tax status. Using accounting information to decipher tax status. *Tax Notes* 96(8).

Megginson, W. L., and K. A. Weiss. 1991. Venture capitalist certification in initial public offerings. *The Journal of Finance* 46 (3): 879-903.

Merton, R. C. 1987. A simple model of capital market equilibrium with incomplete information. *The Journal of Finance* 42 (3): 483-510.

Mikkelson, W. H., M. M. Partch, and K. Shah. 1997. Ownership and operating performance of companies that go public, *Journal of Financial Economics* 44: 281-307.

Miller, M. H. 1977. Debt and taxes. *Journal of Finance* 32 (2): 261-75.

———, and M. S. Scholes. 1978. Dividends and taxes. *Journal of financial economics* 6 (4):333-364.

Modigliani, F., and M. H. Miller. 1963. Corporate income taxes and the cost of capital: A correction. *The American Economic Review* 53 (3): 433-43.

———. 1958. The cost of capital, corporation finance and the theory of investment. *The American Economic Review* 48 (3): 261-97.

Mohanram, P., and S. Rajgopal. 2009. Is PIN priced risk? *Journal of Accounting and Economics* 47 (3): 226-43.

Myers, S. C. 1984. The capital structure puzzle. *Journal of Finance* 39 (3): 575-92.

———. 2001. Capital structure. *The Journal of Economic Perspectives* 15 (2): 81-102.

———, and N. S. Majluf. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13 (2): 187-221.

Ogneva, M., K. R. Subramanyam, and K. Raghunandan. 2007. Internal control weakness and cost of equity: Evidence from SOX section 404 disclosures. *The Accounting Review* 82 (5): 1255-97.

Pástor, Ľ., and P. Veronesi. 2005. Rational IPO waves. *The Journal of Finance* 60 (4): 1713-57.

Petree, T. R., G. J. Gregory, and R. J. Vitray, 1995. Evaluating deferred tax assets. *Journal of Accountancy* 179 (3): 71-7.

Public Company Accounting Oversight Board (PCAOB). 2003. *AU Section 550. Other Information in Documents Containing Audited Financial Statements*. Interim Auditing Standards.

Public Company Accounting Oversight Board (PCAOB). 2004. *Auditing Standard (AS) No. 2, An Audit of Internal Control over Financial Reporting Performed in Conjunction with an Audit of Financial Statements*. PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2006. *Statement Regarding the Public Company Accounting Oversight Board's Approach to Inspections of Internal Control Audits in the 2006 Inspection Cycle*. Release No. 104–2006-105. PCAOB.

Public Company Accounting Oversight Board (PCAOB). 2007. *Auditing Standard (AS) No. 5, An Audit of Internal Control over Financial Reporting That Is Integrated with an Audit of Financial Statements.* PCAOB.

Rayburn, F. R. 1986. A chronological review of the authoritative literature on interperiod tax allocation: 1940 - 1985. *Accounting Historians Journal* (Fall): 91.

Rezaee, Z., R. Espahbodi, P. Espahbodi, and H. Espahbodi. 2012. Firm characteristics and stock price reaction to SOX 404 compliance. The 10th Annual Iranian Accounting Conference, May.

Shackelford, D. A., and T. Shevlin 2001. Empirical tax research in accounting. *Journal of Accounting and Economics* 31(1): 321-387.

Shleifer, A., and R. W. Vishny. 1986. Large shareholders and corporate control. *The Journal of Political Economy* 94 (3): 461-88.

———. 1989. Management entrenchment: The case of manager-specific investments. *Journal of Financial Economics* 25 (1): 123-39.

Stulz, R. M. 1990. Managerial discretion and optimal financing policies. *Journal of Financial Economics* 26 (1): 3-27.

Titman, S. 1984. The effect of capital structure on a firm's liquidation decision* 1. *Journal of Financial Economics* 13 (1): 137-51.

———, and R. Wessels. 1988. The determinants of capital structure choice. *Journal of Finance* 43 (1): 1-19.

U.S. Congress. 2009. The Wall Street Reform and Consumer Protection Act of 2009. [H.R. 4173]. Washington, D.C.

U.S. Congress. 2010. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. Public Law No. 111–203. Washington, D.C.

U.S. Congress. 2002b. The Sarbanes-Oxley Act of 2002 (SOX). Public Law No. 107–204.Washington, D.C.: Government Printing Office.

U.S. Congress. 2009. TheWall Street Reform and Consumer Protection Act of 2009. [H.R. 4173]. Washington, D.C.

U.S. Congress. 2010. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. Public Law No. 111–203. Washington, D.C.

U.S. Government Accountability Office (GAO). 2006. *Sarbanes-Oxley Act: Consideration of Key Principles Needed in Addressing Implementation for Smaller Public Companies*. GAO-06-361. Washington, D.C: U.S. GAO

U.S. Securities and Exchange Commission (SEC). 2002. *Certification of Disclosure in Companies' Quarterly and Annual Reports*. Release Nos. 33–8124, 34–46427. Washington, D.C.: SEC.

U.S. Securities and Exchange Commission (SEC). 2007a. *Commission Guidance Regarding Management's Report on Internal Control over Financial Reporting Under Section 13(a) or 15(d) of the Securities Exchange Act of 1934*. Release Nos. 33–8810; 34–55929; FR-77; File No. S7–24-06. Washington, D.C.: SEC.

U.S. Securities and Exchange Commission (SEC). 2007b. *SEC Approves New Guidance for Compliance with Section 404 of Sarbanes-Oxley*. Press release 2007–101 (Cox, C.). Washington, D.C.: SEC.

U.S. Securities and Exchange Commission (SEC). 2007c. *Statement by SEC Staff: SEC's Proposed Interpretive Guidance to Management for Section 404 of Sarbanes-Oxley Act*. (Hewitt, C.) Washington, D.C.: SEC.

U.S. Securities and Exchange Commission (SEC). 2009a. *Study of the Sarbanes-Oxley Act of 2002 Section 404 Internal Control over Financial Reporting Requirements*. Washington, D.C.: Office of Economic Analysis

U.S. Securities and Exchange Commission (SEC). 2009b. *Internal Control over Financial Reporting in Exchange Act Periodic Reports of Non-accelerated Filers*. Release No. 33-9072. Washington D.C.: SEC.

U.S. Securities and Exchange Commission (SEC). 2009c. *Remarks Before the 2009 AICPA National Conference on Current SEC and PCAOB Developments*. (Besch, D.). Washington, D.C.: SEC.

Weber, J., and M. Willenborg. 2003. Do expert informational intermediaries add value? evidence from auditors in microcap initial public offerings. *Journal of Accounting Research* 41 (4): 681-720.

Weisbach, D. A., 2003. Ten truths about tax shelters. *Tax Law Review* 55: 215.

Willenborg, M. 1999. Empirical analysis of the economic demand for auditing in the initial public offerings market. *Journal of Accounting Research* 37 (1): 225-38.

Wilson, R. J. 2009. An examination of corporate tax shelter participants. *Accounting Review* 84 (3): 969-99.

Zhang, I. 2007. Economic Consequences of the Sarbanes-Oxley Act of 2002. *Journal of Accounting and Economics* 44: 74–115.