

UC Berkeley

UC Berkeley Electronic Theses and Dissertations

Title

The information content of the deferred tax valuation allowance for venture capital backed IPO firms.

Permalink

<https://escholarship.org/uc/item/0qz0h0kb>

Author

Allen, Eric James

Publication Date

2012

Peer reviewed|Thesis/dissertation

**The information content of the deferred tax valuation allowance for venture capital backed
IPO firms**

by

Eric James Allen

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Business Administration

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Prof. Patricia Dechow, Co-Chair

Prof. Richard G. Sloan, Co-Chair

Prof. Panos Patatoukas

Prof. Mark Gergen

Spring 2012

The information content of the deferred tax valuation allowance for venture capital backed IPO
firms

Copyright © 2012

by

Eric James Allen

Abstract

The information content of the deferred tax valuation allowance for venture capital backed IPO firms

By

Eric James Allen

Doctor of Philosophy in Business Administration

University of California, Berkeley

Prof. Patricia Dechow, and Prof. Richard G. Sloan co-chairs

In this dissertation I examine the deferred tax disclosures of a unique sample of venture capital backed firms that conducted their initial public offering (IPO) between 1996 and 2008, and generated a net operating loss (NOL) carry-forward. I find that 83% of the sample firms record an allowance fully valuing-out the carry-forward's associated deferred tax asset. This full allowance is, on average, 72% of total assets – a fact which provides strong evidence (at least in terms of this accrual) that these firms are not upwardly managing their earnings prior to IPO. I show that the size of a firm's NOL, and proxies for its expectation of future taxable income have significant predictive power for the magnitude of the valuation allowance. I also show that the allowance sends a strong negative signal about a firm's future book income. Both of these results support the contention that, though conservative, the valuation allowance does provide information about an IPO firm's economic fundamentals. Finally, I introduce a new explanation for the presence of the allowance: the ownership change limitation. This limitation can cause a firm to record an allowance independent of its expectations about future earnings. I provide evidence that firms take this limitation into account when recording the valuation allowance, and that controlling for it can enhance the allowance's signal regarding future income.

Table of Contents

Abstract	1
Table of Contents	i
List of Figures	iii
List of Tables	iv
List of Appendices	iv
Acknowledgements	vi
Chapter	
1. Introduction	1
2. Background Information, prior literature and hypothesis development	4
2.1 Deferred tax accounting	4
2.2 Prior literature & hypothesis development	6
2.2.1 IPO firm accounting	6
2.2.2 Determinants of valuation allowance	8
2.2.3 Section 382 ownership change limitation	9
2.2.4 Deferred tax valuation allowance as a signal of future performance	11
2.3 Alternative explanation – future earnings management	12
3. Testing	14
3.1 Accrual prediction testing	14
3.2 Income signal testing	15
4. Data and sample selection	17
5. Results of empirical tests	20
5.1 Descriptive statistics and correlations	20
5.2 Prediction of the magnitude of the valuation allowance	22
5.3 Income signal tests	23
5.4 Allowance reversals	23
5.5 Robustness checks	24
5.5.1 Additional explanatory variables	24
5.5.1.1 R&D Expense	24
5.5.1.2 Use of a Big 5 auditor	24
5.5.1.3 Size	25

5.5.2 Additional specifications	25
5.5.2.1 Ex-ante prediction.....	25
5.5.2.2 Remove firms that ‘fail’	25
5.5.2.3 Ex-post measure of the ownership change.....	26
5.5.2.4 Using quintiles to correct for skewness	26
5.5.2.5 Tobit specification	26
5.5.3 Out of sample tests.....	27
5.5.3.1 Non-VC backed IPO firms.....	27
5.5.3.2 Non-IPO firms	28
6. Concluding remarks and directions for future research.....	32
References.....	33
Figures.....	35
Tables.....	41
Appendix.....	75

List of Figures

Figure 1. Effect of an NOL on book and tax income for a hypothetical firm	35
Figure 2. Hypothetical timeline of a qualifying Ownership Change	39
Figure 3. Sample income tax footnote	40

List of Tables

Table 1. Descriptive statistics – full sample	41
Table 2. Mean values for the sample partitioned by the recording of a full valuation allowance.....	43
Table 3. Pair-wise correlations	45
Table 4. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance	46
Table 5. Logistic regression results of the determinants of a full valuation allowance.....	47
Table 6. OLS regression results of the signal strength of the magnitude of the valuation allowance for accumulated future income	48
Table 7. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – controlling for the presence of R&D expense	49
Table 8. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – controlling for the magnitude of R&D expense.....	50
Table 9. OLS regression results of the signal strength of the magnitude of the valuation allowance for accumulated future income – controlling for the magnitude of R&D expense.....	51
Table 10. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – controlling for use of a Big 5 auditor.....	52
Table 11. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – controlling for size	53
Table 12. OLS regression results of the signal strength of the magnitude of the valuation allowance for accumulated future income – controlling for size.....	54
Table 13. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – using only ex-ante predictors.....	55
Table 14. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – eliminating firms that delist for performance reasons	56
Table 15. OLS regression results of the signal strength of the magnitude of the valuation allowance for accumulated future income – eliminating firms that delist for performance reasons	57
Table 16. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – using whether a company merged as a measure of the ownership change.....	58
Table 17. OLS regression results of the signal strength of the magnitude of the valuation allowance for accumulated future income – using whether a company merged as a measure of the ownership change	59
Table 18. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – using quintile ranks.....	60

Table 19. OLS regression results of the signal strength of the magnitude of the valuation allowance for accumulated future income – using quintile ranks.....	61
Table 20. Descriptive statistics – non-VC backed IPO sample	62
Table 21. Mean values for the non-VC backed IPO sample partitioned by the recording of a full valuation allowance	64
Table 22. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – non-VC backed IPO sample	66
Table 23. OLS regression results of the signal strength of the magnitude of the valuation allowance for accumulated future income – non-VC backed IPO sample	67
Table 24. Descriptive statistics – non-IPO sample	68
Table 25. Mean values for the non-IPO sample partitioned by the recording of a full valuation allowance	70
Table 26. OLS regression results of the determinants of the magnitude of the deferred tax valuation allowance – non-IPO sample	72
Table 27. OLS regression results of the signal strength of the magnitude of the valuation allowance for accumulated future income – non-IPO sample	74

List of Appendices

Appendix A. Variable definitions	75
--	----

Acknowledgements

I thank the members of my dissertation committee: Patricia Dechow (co-chair), Richard Sloan (co-chair), Panos Patatoukas, and Mark Gergen – for their time and guidance. In addition I thank James Zuberi, Neil Thompson and Alastair Lawrence for their assistance. I also thank the participants in research workshops at the Haas School of Business, University of Arizona, London Business School, University of Southern California, Southern Methodist University, and Rice University for their comments. All errors are my own.

Chapter 1

Introduction

This dissertation examines the deferred tax disclosures for a sample of venture-capital backed firms that conducted their initial public offering (IPO) between 1996 and 2008. These firms are in their early stages of development and typically operate in technology-intensive industries. This means that they generally incur significant upfront expenditures (in particular R&D) without the generation of concurrent revenues. As a result, 81% of the firms generate an accumulated net operating loss (NOL) in the period leading up to the IPO. Tax law allows these companies to carry the NOL forward to reduce taxable income in future periods – up to 20 years for federal income tax purposes. This future deduction represents a significant future benefit and must be accrued on the firms' balance sheets in the period it is generated.

However this is an accrual that, given the long period of time over which the NOL may be utilized, is subject to a significant amount of uncertainty over its ultimate realization. Therefore, accounting standards dictate that firms record an allowance, reducing the asset to the value the firm determines 'it is more likely than not' will be realized. Prior research (i.e. Miller & Skinner (1998)) has shown that the magnitude of a firm's allowance is positively related to the magnitude of the NOL carry-forward. Given that the firms in my sample report a substantial deferred benefit from the NOL (on average 50% of total assets) it is then expected they will record at least a partial valuation allowance.

What is surprising is that 83% of the firms record not a partial – but a full allowance, completely valuing-out the net deferred tax benefit. This behavior not only removes a substantial asset from a firm's balance sheet, it also has a concurrent negative effect on reported book income. This runs counter to the assumed major incentive of an IPO firm, which is to present as positive a financial outlook as possible in order to maximize the firm's share price.

More importantly, given the substantial time a firm has to utilize the NOL carry-forward, it is unlikely it will not use at least a portion of the deduction – unless they cease operations. Therefore, a full allowance implies the expectation that a firm has a greater than 50% probability of not generating any taxable income. This observation is not borne out ex-post, as only 21% of the firms no longer remain going concerns at the end of the sample period. This indicates that the managers either 1) have an inaccurate, excessively pessimistic, ex-ante expectation about their firms' future survival outcomes; or 2) are conservative in their application of the allowance.

That venture backed IPO firms are conservative in their accounting is an idea that has been proposed in prior literature (i.e. Morsfield & Tan (2006)). The justification for this conservatism is not only that it is a response to the increased litigation risk managers and auditors face at IPO (Venkataraman et al. (2008)), but also that it enhances the quality of IPO firms' reported earnings (Ball & Shivakumar (2008)). If the conservative accounting actually results in higher quality earnings, then the full allowance must not just be conservative, it must also convey relevant information about a firm's actual economic fundamentals. I perform several tests, described below, to see if this is the case.

First, I ascertain the extent to which these firms' valuation allowances reflect the requirements of the accounting standard. The standard requires that the allowance be a manifestation of a firm's concerns over the generation of sufficient taxable income to utilize its deferred tax benefits. Therefore, the more the allowance reflects these concerns, the more

information it will reflect about a firm's underlying financial condition. I examine the power of proxies for firm expectations about taxable income – and the size of their NOL – to explain the magnitude of the valuation allowance. I find that consistent with the accounting rules, the lower my proxies for expected future taxable income and the larger the accumulated NOL, the larger the allowance.

Second, I examine whether establishment of the valuation allowance has predictive power for a firm's future book earnings. The lack of a valuation allowance implies that the firm believes it will generate sufficient taxable income to utilize all of its deferred tax benefits. In general, firm expectations about future taxable income should mirror expectations of book income. Therefore, if the allowance is being recorded correctly, its establishment should send a negative signal about the firm's future book earnings. I find that the magnitude of the valuation allowance is negatively related to IPO firms' accumulated earnings over the subsequent three years. This supports the hypothesis that even though it is conservative, the full allowance does contain information about an IPO firm's economic fundamentals. In addition, the strong negative signal also calls into question research proposing that the valuation allowance is used as a reserve to increase future earnings.

Third, I introduce a new explanation for the presence of a valuation allowance: a statutory restriction on the deductibility of the NOL generated by substantial changes in ownership. This explanation has not been considered in prior literature. It is unique in that it can cause a firm to record a negative accrual – the valuation allowance – regardless of the firm's actual economic situation. I show that the ownership structures of these IPO firms – particularly the percentage owned by venture capitalists – make it likely they will be subject to the ownership change limitation. Furthermore, I find evidence that the expectation of the limitation is positively related to the magnitude of the valuation allowance, incremental to previously proposed factors. I also show that the allowance is less negatively related to future income for firms that are predicted to be subject to this limitation. This supports the contention that firms record the allowance in anticipation of the limitation, even as some of them anticipate higher future income.

My study makes several contributions to the literature. This paper represents the first effort to specifically examine the deferred tax disclosures of firms at the IPO stage of development. I document the prevalence and substantial magnitude of the full allowance for these firms. This provides strong support for the existing literature, which contends that IPO managers do not upwardly manage their earnings at issuance and that their accounting is conservative.

Next, by providing a clear picture of the information conveyed by the valuation allowance, my results help resolve some of the uncertainty surrounding the interpretation of IPO firm financial statements. IPO firms generally report accumulated losses at issuance and have a more limited financial history to evaluate than mature firms. As such, financial statement users may have difficulty evaluating the information contained in the financial disclosures -- particularly in cases where there is little variation in the treatment between firms. I show that the valuation allowance is generally explained by the requirements of the accounting standard, and sends a strong negative signal about a firm's future book income.

Finally, by showing that firms are considering the ownership change limitation when recording the valuation allowance, I demonstrate the importance of taking statutory requirements into account when evaluating firms' income tax disclosures. Unlike other accounts, these disclosures are directly influenced by a set of rules determined independent of generally accepted

accounting principles (GAAP). As a result, investors may misinterpret the reported information if the firm does not explicitly disclose the reason for a particular accounting treatment. Taking these laws into account can enhance the information content of firm's financial disclosures, and potentially help explain accounting choices that, on the surface, appear to be less than optimal.

This discussion leads to a broader point: many accounting choices that initially appear extreme may be explained by the interaction of a firm's economic fundamentals, accounting standards, and legal environment. The prevalence of the full valuation allowance recorded by IPO firms is a striking example of this phenomenon. On the surface the treatment can appear excessive. Given the significant amount of discretion that managers have over the establishment of the allowance, it may cause financial statement users to over-state the importance of explanations like conservatism, or earnings management, for its presence. However, the results of this study indicate the main drivers of the allowance's magnitude are a firm's correct anticipation of poor future performance, as well as the effect of tax regulations on its accounting choices. This indicates the importance of making sure all the implications of the applicable regulations are considered before trying to attach outside stories to a treatment that is the proper manifestation of accounting rules and a firm's operating environment.

The paper is organized as follows. Chapter 2 provides background information on the relevant tax and accounting rules, discusses previous research on the topic, and introduces the hypotheses. Chapter 3 lays out the testing approach. Chapter 4 describes the data and sample selection. Chapter 5 documents the results, and Chapter 6 concludes.

Chapter 2

Background information, prior literature and hypothesis development

2.1 Deferred tax accounting

When a firm's deductions in a given year exceed taxable revenues, it incurs a net operating loss (NOL) for which a carry-back of two years, and carry-forward of 20 years, is allowed to reduce taxable income.¹ This means that for years in which the NOL carry-forward (or carry-back) is applied the actual cash taxes paid by the firm will be substantially lower than they would be without the additional deduction. For example if a firm incurs a NOL of \$100 in year 1, and generates taxable income of \$150 in year 2, they can apply the \$100 year 1 loss against year 2 income reducing taxable income to \$50. Assuming the firm is subject to a marginal tax rate of 30%, the application of the carry-forward reduces the taxes paid by the firm from \$45 ($\$150 * 30\%$) to \$15 ($\$50 * 30\%$).

The tax law determines taxable income and there are key differences from GAAP, particularly in the timing of deductions. As a result, book and taxable income will rarely be equal. (In extreme cases, it is possible to report a profit under one standard and a loss under the other). The differences between the two measures are classified as either "permanent" or "temporary." Permanent differences never reverse and are composed of non-taxable revenue (i.e. municipal bond interest) and non-deductible expenses (i.e. excess executive compensation). Temporary differences represent timing variations on items allowed for both book and tax (i.e. accelerated depreciation allowed under income tax law) whose treatment will eventually converge.

Accounting Standards Codification (ASC) 740 documents the rules that firms must follow in their accounting for income taxes.² Of particular interest for my study is the fact that the standard requires firms to book a deferred tax asset (DTA) for any future benefit they expect to receive from temporary deduction differences (expenses taken on the books not yet deducted on the tax return), and the NOL carry-forward. Firms are then required to record a valuation allowance reducing the asset if:

Based on the weight of available evidence, it is more likely than not that some portion of the deferred tax asset will not be realized (a likelihood of more than 50 percent).

Therefore, if a firm believes it will not be sufficiently profitable to utilize the carry-forward in future years, it will significantly reduce, or even eliminate, the deferred tax asset recorded on its books. Given that management expectations about future taxable income (which are difficult to verify ex-ante) are given significant weight in this determination, the allowance may be subject to a greater amount of discretion than other accruals. Additionally, since the allowance has a dollar-for-dollar effect on net income, its establishment can have a significant impact on current earnings. Also, since the NOL can be used over future periods, the allowance potentially sends a strong signal to investors about future earnings.

¹ This period applies to federal NOLs. State and foreign NOLs will be subject to the rules of their applicable jurisdictions.

² This ASC was adopted in 2008 and was formerly known as SFAS 109: Accounting for income taxes.

Figure 1 documents the various scenarios of how the valuation allowance can effect to current and future earnings for a hypothetical firm. In all scenarios, the income and expense items are immediately recognizable for both book and tax purposes. The existence of an NOL then signifies that – at least in year one – the firm has a book loss and taxable income equal to zero, or taxable income greater than book income.

In year 1 the firm generates a loss of \$100. The marginal tax rate is assumed to be 30%, yielding a future benefit from the NOL carry-forward of \$30. The firm records this amount as a deferred tax asset, and a concurrent increase to income through the deferred tax expense account. This means that the net book loss in year 1, prior to application of the allowance, is \$70 (\$100 – \$30).

Panel A shows the case where the firm generates the loss and correctly anticipates it will generate sufficient future income to utilize the NOL. As a result, it does not record a valuation allowance. The firm generates income of \$50 in each of the next two periods against which the NOL is applied. This eliminates the income tax liability in the future years, and causes the firm to record a deferred tax expense of \$15 ($\$50 * 30\%$) on the books in years 2 and 3. At the end of the third year the NOL has been fully utilized and the temporary difference between book and tax incomes has reversed. In this case, taxable income and the unreserved deferred tax asset provide a leading indicator of future book income.

Panel B shows the same income pattern as panel A, but in this case the firm does not anticipate the future profits in years 2 and 3. As a result, it records a full valuation allowance in year 1. With the generation of a profit in year 2, the firm reverses the allowance resulting in a positive charge of \$30 to book income. As result of this reversal, year 2 book income is \$65 in panel B as opposed to \$35 in panel A. This documents the significant positive effect that reversals of the allowance can have on future income.

Panel C illustrates when the firm incorrectly anticipates future profits and does not record a valuation allowance in year 1. After the initial \$100 loss the firm record losses of \$10 in each of the next two years. As the losses persist, the NOL accumulates to \$120 and the spread between retained earnings and accumulated taxable income grows. As the NOL begins to expire, or the managers revise their expectations, the firm will have to write off at least a portion of the accumulated benefit, incurring a significantly negative charge to income in the period of impairment. Conversely, panel D documents the same income stream, but shows the firm anticipating the persistent losses and recording a full valuation allowance. As the losses persist the firm increases the allowance in each of the next two years by \$3 ($\$10 * 30\%$), leaving net income equal to the before-tax loss. In this case, the incurrence of the NOL has no effect on current book income, so retained earnings equal the accumulated NOL of \$120.

Finally, panel E illustrates the case where the firm returns to profitability but is unable to fully utilize the carry-forward due to imposition of the ownership change limitation (discussed in further detail later). As the firm generates profits of \$50 in the subsequent years, it is assumed to only be able to utilize 2% of the NOL per year (as a result of the limitation) – or \$2. This means, assuming continued profitability, it will only be able to use 40% of the potential deduction by the time the carry-forward expires (20 years * 2%). As a result, the firm records an allowance of \$18 ($\$30 * 60\%$) in year 1 reducing the asset to its net realizable value in the first period when the limitation comes into play. This scenario properly reflects a case where the firm correctly records a valuation allowance, even though it anticipates the generation of future income.

2.2 Prior literature & hypothesis development

This dissertation contributes to two strands of literature. First, it addresses the literature that focuses on IPO firm accounting. Second, it contributes to the literature that examines the reasons why firms actually record the valuation allowance, and what information this conveys about a firm's future earnings.

2.2.1 IPO firm accounting

When a firm decides to perform an initial public offering (IPO), it submits a prospectus to the SEC detailing its business strategy, description of operations, and up to three years of audited financial statements. This prospectus is often the first time investors have information with which to evaluate the financial position of a firm. Compared to that of more mature firms, this data is limited. As a result, prior accounting literature (Teoh et al. (1998a & b)) has proposed that IPO managers have a unique opportunity to exploit this information asymmetry and upwardly manage their firms' reported earnings. It is also assumed the managers have the incentive to take such action, as increased earnings should increase the firm's share price allowing insiders to profit from selling their holdings at an inflated valuation. This attitude is consistent with the finding in Brau & Fawcett (2006) that CFOs consider a strong history of positive earnings to be the most important signal they can send to investors about the value of their firm. As evidence of this current earnings management, prior research finds that 1) IPO firms exhibit abnormally high positive accruals in the year of issuance (Teoh et al. (1998a)) and 2) firms with a high level of discretionary accruals have lower future stock returns (Teoh et al. (1998b)).

Recent research has called these results into question. Venkataraman et al. (2008) examines the relationship between auditor exposure to legal liability and audit quality. Unlike Teoh et al., they examine the accruals immediately prior, as opposed to the year of issuance. They find that pre-IPO accruals are consistently more negative than post-IPO and, due to the increased litigation risk generated by the issuance, auditors may be even more conservative than when auditing non-IPO firms.

Ball & Shivakumar (2008) find a similar result in their examination of how UK IPO firms change their accounting upon adoption of public accounting standards. They find that the firms report more conservatively in the period leading up to issuance and, in particular, exhibit an increased frequency of write-downs. The authors attribute this conservatism to increased monitoring on the part of market participants, auditors, and legal authorities. Both of these papers call into question the assumption that IPO managers are actively managing earnings upwards, in order to present a more positive picture to investors at issuance.

I address this literature directly in my study of IPO firms' deferred tax disclosures. Specifically, I examine how the firms record one accrual – the deferred tax valuation allowance. This allowance has a material effect on their reported net income, and has been perceived to be subject to significant management discretion (i.e. Frank & Rego (2006)). If this negative accrual is recorded at a substantial rate, it provides evidence that IPO firms are not upwardly managing their earnings. Alternatively, a general absence of this incurrence would suggest that the managers are trying to increase reported earnings prior to IPO.

More specifically, I examine not simply if these firms are recording an allowance, but if they record one that fully values out the deferred tax asset. Given the long period over which a

firms can use the carry-forward (up to 20 years for federal income tax purposes) it seems unlikely that the firm would be unable to use at least a portion of the deduction – unless it ceases to be a going concern. As such, since the accounting standard dictates that these firms record a valuation allowance for any portion of the deferred benefit that ‘it is more-likely-than-not’ will not be realized, the full allowance then implies the expectation that there is a greater than 50% likelihood the firm will cease to be viable. If the evidence indicates this expectation is not actually realized, it would suggest that the managers of firms that record a full valuation allowance either 1) have an inaccurate expectation of their firms’ future survival outcomes; or 2) are being conservative in their treatment of this accrual. Therefore, if the number of firms recording the full allowance is substantial, this would support the hypothesis (as proposed in Venkataraman et al. (2008) and Ball & Shivakumar (2008)) that IPO firms’ accounting is conservative.

The question then becomes why is such a conservative treatment so prevalent? Bauman & Das (2004) contend that a full valuation allowance is a manifestation of auditor interpretations of the accounting standards. Specifically, ‘*managers may expect future profitability, but record full allowances due to the evidence provisions of SFAS 109 and/or fear of litigation on the part of audit firms.*’ They cite as evidence a passage from the Coopers & Lybrand 1997 *Guide to Accounting for Income Taxes*:

Negative evidence can usually be objectively verified, because it is a past event. However estimates of future taxable income can rarely be objectively verified; therefore, when there is negative evidence, such estimates are assigned little weight in an entity’s assessing the need for a valuation allowance.

This approach is reinforced in the 2009 guide issued by PricewaterhouseCoopers, which states:

A projection of future taxable income is inherently subjective and generally will not be sufficient to overcome negative evidence that includes cumulative losses in recent years (page 126).³

An even stronger message is found in the KPMG guidelines for the valuation of deferred tax assets:

A cumulative loss in recent years is a significant piece of negative evidence that is difficult to overcome. In situations where a cumulative loss for recent years exists, it will be difficult to overcome a conclusion that the deferred tax asset, net of the valuation allowance, should not exceed the amounts supported by carryback availability, if any, and offsetting taxable temporary differences... it would be difficult to support a conclusion...that expected taxable income from future operations justifies recognition of deferred tax assets. (Section 4.024)

³ This attitude was confirmed with my own interviews of a Big 4 firm audit partner, venture capitalists, and the lawyers for venture capital firms. The consensus audit approach is that if a firm exhibits a history of losses in the recent past, then the auditor will record a substantial, or full, valuation allowance. Any projections of future taxable income are given little weight in the evaluation.

A review of ASC 740 (formerly SFAS 109) does not seem to support the approach described by the audit firms. It specifically states that “*All available evidence, both positive and negative, should be considered...[to determine if] a valuation allowance is needed.*” The standard goes on to state that historical information should be combined with “*all currently available information about future years*” when making the determination. This indicates that the above stated approach of putting more weight on negative evidence when determining whether to record a valuation allowance may not be wholly consistent with the accounting rules.

Given that these firms report an accumulated NOL (and often negative retained earnings) they do exhibit substantial negative evidence. Therefore, given the established audit approach of putting negligible weight on the positive, the presence of such a conservative accrual is not surprising. It also implies that there is less discretion than has been previously assumed surrounding this account. Auditors may view it as a binary choice: if a firm has a history of losses they record a substantial, or full, allowance, otherwise none at all.

Assuming this is the case, and the full allowance is a manifestation of auditor conservatism, it is still surprising that – given the strong negative implications it has for current and future income – this treatment has become widely accepted. Aside from the aforementioned increased regulatory scrutiny, prior research (e.g. Ball & Shivakumar (2008)) argues that a major reason for this conservatism is that it benefits IPO firms by increasing the quality of their reported earnings. This will reduce the information asymmetry between the firm and investors, a result that should potentially increase the proceeds from the IPO. If this is actually the case then the valuation allowance must convey information about the firms’ economic fundamentals, even if it is conservative.

2.2.2 Determinants of the valuation allowance

To evaluate whether conservative accounting increases the quality of IPO firm earnings, I examine the extent to which the valuation allowance reflects the requirements of the accounting standard. The standard requires that the allowance be a manifestation of firm concerns over the generation of sufficient taxable income to utilize the deferred benefit. The more the allowance reflects these concerns, the more information it conveys about the firm’s actual financial condition. In essence, I want to determine if the conservatism is an extension of actual firm fundamentals, or just a manifestation of auditor risk aversion.

Several papers attempt to explain why a firm records a valuation allowance. Miller and Skinner (1998) represent the first study of this subject with their examination of a sample of firms with relatively large deferred tax assets. They model the size of, and change in, the valuation allowance as a function of past performance, proxies for expected future taxable income (size of the net deferred tax asset (DTA), realized future operating performance, and IBES consensus analyst forecast of future earnings), and size of the NOL. They find that the significant predictors for magnitude of the valuation allowance are the size of the NOL, relative size of the deferred tax liability (DTL) to the DTA, recent past operating performance, and realized future operating performance (though this relation is relatively weak). They interpret this as indicating that, consistent with the accounting standard, a firm’s biggest concern when recording an allowance is whether or not it will generate sufficient taxable income to utilize their NOL carry-forward.

Other research also examines this question, and the results are generally consistent. For example, Behn et al. (1998) find that the size of a firm’s deferred tax liability and recent

operating performance is negatively related to the level of the valuation allowance. Frank & Rego (2006) find that changes in the allowance are negatively related to changes in deferred tax liabilities and historical financial performance, and positively related to the size of the NOL. Christensen et al. (2008) find similar results – though they do not examine the size of the NOL. In general, prior research consistently finds that the higher a firm’s deferred tax liability or past and future earnings, the lower the valuation allowance. Conversely, the higher the NOL, the larger the allowance.

Consistent with this literature, I examine the predictive ability of the magnitude of the NOL, and firm expectations about future taxable income for the magnitude of the IPO firms’ valuation allowance. If a substantial portion of the allowance is properly recorded in accordance with the requirements of ASC 740, and not exclusively due to conservatism, then I would expect firms with larger NOLs, and lower expectations of future taxable income, to record a larger allowance. Alternatively, if the allowance is due solely to conservatism, and has little relation to managers’ expectations about taxable income, I would expect the expectations about future income to have minimal explanatory power for the allowance’s magnitude.

Hypothesis 1A: The magnitude of the deferred tax valuation allowance will be a function of the size of a firm’s NOL carry-forward and its ability to generate sufficient taxable income to utilize the deduction.

Even though this hypothesis is similar to prior research, those papers have several gaps that my paper helps to address. First, due to their requirement of sample firms having at least two years of prior-year income for inclusion, previous studies do not include IPO firms. As such, my results help determine how well the prior findings generalize to this unique group of firms. Second, as Hanlon & Heitzman (2010) point out, the majority of tax research excludes loss firms from their analysis. As venture backed IPO firms overwhelmingly generate losses for both book and tax purposes, providing information about the information contained in their valuation allowance will help determine the information content of tax accruals for loss firms. Finally, prior research does not specifically test for whether firms consider the ownership change limitation when recording the valuation allowance. I discuss the details of the limitation in the subsequent section.

2.2.3 Section 382 ownership change limitation

As defined in the tax law, the deductibility of a NOL will generally be limited by two factors: 1) expiration of the unused deduction due to lack of future taxable income in the statutorily allowed period, and 2) a qualifying ownership change in the firm. The rules for the second restriction are defined in Section 382 of the Internal Revenue Code. This code section was first adopted in 1954, but the current rules were largely defined by a 1986 amendment. The justification for the deduction limitation is to prevent profitable taxpayers from acquiring companies with accumulated NOLs for the sole purpose of utilizing the tax losses against other taxable income.

A qualifying change is said to have occurred when, after any equity structure shift:

- i) The percentage stock of the loss corporation owned by one or more 5% shareholders has increased by more than 50 percentage points during the three-year testing period.

- ii) The corporation undergoes a reorganization as per IRC section 368 (with some exceptions). This includes most mergers and acquisitions.

The second class of change is self-explanatory. If a company undergoes a substantial reorganization, it will generally be considered to have undergone a qualifying change and the limitation will come into force. In contrast, the first class of change is broader and can be triggered by a variety of events. These could include the issuance of a new class of stock, the conversion of debt to equity, or the liquidation of holdings by existing shareholders on the public market.

In 2010, the Internal Revenue Service, with IRS Notice 2010-50, provided specific guidance for implementing the two different methods of determining the ownership changes at any testing date: Full Value Methodology (FVM), and Hold Constant Principle (HCP). Under the full value methodology, the percentage owned by each ownership group is determined by taking the relative fair market value of each owner on the testing date. Therefore, under FMV, fluctuations in the fair market value of a firm's stock could induce a qualifying ownership change. While this method is acceptable, it seems contrary to IRC section 382(i)(3)(C) which states:

Except as provided in regulations, any change in proportionate ownership which is attributable solely to fluctuations in the relative fair market values of different classes of stock shall not be taken into account.

Before notice 2010-50, there was no specific guidance about what this provision actually meant, so firms were left to determine their own methods of application. The notice gave official approval to the Hold Constant Principle, which addresses the fluctuations of fair market value by establishing the value of an ownership interest as its relative value to the total market value of the corporation on the date acquired. Thus, the percentage on the date of acquisition remains the ownership percentage until sale. Any redemption (issuance) is viewed as a pro-rata acquisition (sale) of shares by the existing shareholders.

When a firm has only one class of stock, either methodology will yield the same result. Therefore, for my sample, firms will be likely to use either approach since they will generally have only one class of stock outstanding after issuance. The preferred stockholders' shares are converted to common upon issuance, and the percentage owned by the venture capital investors at the time of their initial purchase will remain the ownership percentage until the IPO (or other issuances/sales) causes it to be diluted.

Figure 2 shows an example of this class of qualifying ownership change for a hypothetical IPO firm. The firm sells 39.4% of its shares to a venture capitalist two months after formation, and then another 19.5% in an IPO four years later. Even though the IPO causes the founder's ownership percentage to dip below 50%, it doesn't trigger the ownership change (since the venture capitalist investment had been made prior to the start of the three-year testing window). However, once the venture capitalists liquidates their shares on the open market six months later, the shift in ownership exceeds 50% for the testing period. The deductibility of the firm's NOLs, accumulated immediately prior to the change, is now subject to the section 382 limitation.⁴

⁴ It is important to note that if a 5% shareholder sells his stock on the open market, the disparate public shareholders, whose individual ownership will generally be well below 5%, will be consolidated into one group for purposes of

To determine the amount of the limitation, IRC Section 382(a) (1) states:

The section 382 limitation for any post-change year is an amount equal to:

(A) The value of the old loss corporation, multiplied by

(B) The long-term tax exempt rate

For purposes of this calculation, the IRS on a monthly basis publishes the long-term tax-exempt rate.⁵

To determine the value of the loss corporation, IRC section 382(e)(1) states that the value of the loss corporation is the value of its stock immediately prior to the ownership change (with some exceptions). In practice, this means that a company will generally multiply its fair market value preceding the ownership change by the appropriate long-term rate. For example, if a firm has a market value of \$100 million immediately prior to an ownership change – and the applicable rate is 4.3% – then the annual limitation on the deductibility of the NOLs accumulated prior to the change is \$4.3 million. If the firm does not generate enough income in a given year to utilize the allowed deduction, the unused portion accrues and carries forward to increase the limitation in the subsequent year. This example is a simplified version of the actual limitation calculation and does not consider other special issues that may have to be taken into account including, but not limited to, adjustments for ‘ownership stuffing’ or violations of the continuity of business requirement. Still, this provides a good idea of the basic framework that must be considered when making the calculation.

This discussion reinforces the idea that the deferred benefit from the NOL carry-forward will most likely be limited – but not lost – if there is a qualifying ownership change. If the firm anticipates this limitation, then the likelihood it will record a valuation allowance will increase. Therefore, controlling for this expectation should help predict the allowance’s magnitude.

Hypothesis 1B: A firm is more likely to record a valuation allowance if it is predicted to be subject to the ownership change limitation.

2.2.4 Deferred tax valuation allowance as a signal of future performance

Given that the temporary differences between taxable and book income will eventually reverse, expectations of future taxable income should also translate into expectations of future book income. Therefore it is reasonable to ask: if a firm records an allowance can it help predict future accounting performance? Evidence of signal value supports the contention that the recording the full allowance conveys information about a firm’s economic fundamentals.

Prior research on this question is limited. Jung & Pulliam (2006) test whether, ex-ante, changes in the magnitude of the valuation allowance contain predictive power for future earnings

the limitation calculations. In the above example, if one Venture Capitalist owned all 31.7% of the VC backed holdings, and sold all of his shares at once to multiple investors in less than 5% increments, the purchasing investors would all be consolidated into one ‘public group’ when evaluating future ownership changes.

⁵ For example, the applicable rate of 4.3% for an ownership change in the month of July 2011 was published in Rev. Rul. 2011-14, table 3. This rate represents the highest of the adjusted federal long-term tax exempt rate in effect for any month in the three-month calendar period ending with the calendar month in which the ownership change occurs.

and cash flows. Using a small sample of firms that disclose a change in the allowance through a news release, they find that the change has a negative relation with future income and cash flows for up to two years. However, the negative relation with future cash flows disappears after controlling for cash flows in the current period. That said, their results suggest that the deferred tax valuation allowance contains useful information, and managers could signal their beliefs about future earnings through its establishment.

In concurrent research, Dhaliwal et al. (2010) perform the first large sample test of the information contained in the tax disclosures of loss firms. They classify firms into “good” and “bad” news categories based on whether a firm has taxable income/NOL, or if it discloses a change in its valuation allowance. Given the high cost involved with hand-collecting the actual changes in the valuation allowance from the balance sheet, the authors use changes in the deferred tax expense account as a proxy.⁶ After classifying firms into the “news” groups, they find that if a firm has positive taxable income, or records a valuation allowance, it has information about financial statement loss-persistence for up to five years in the future. However, changes in the valuation allowance are a relatively weak signal.

Consistent with these papers, I predict that magnitude of the valuation allowance will be negatively related to future income for the average firm in my sample. In addition, since the IPO firms overwhelmingly book either a full valuation allowance, or a minimal one, it should be a particularly strong signal about future profitability.

Hypothesis 2A: The larger the deferred tax valuation allowance the stronger the negative signal it sends for future book earnings.

I next consider whether controlling for anticipation of the ownership change limitation can enhance the predictive ability of the valuation allowance for future income. The important aspect of this limitation is that its anticipation could cause managers to record a valuation allowance regardless of their expectations of future profitability. If financial statement users or researchers do not take this possibility into account – and the firm exhibits higher income after recording the allowance – then the previously documented negative relation between the allowance and future income will be muted. Therefore, after controlling for firms that are subject to the ownership change limitation, the negative signal conveyed by the allowance for the non-ownership change firms should be even stronger.

Hypothesis 2B: The relation between the valuation allowance and future book earnings is weaker for firms subject to the ownership change limitation.

2.3 Alternative explanation – future earnings management

An alternative explanation for the presence of the valuation allowance is that firms use it as a tool for future earnings management. Given the large amount of discretion that managers are perceived to have when recording the allowance, it could be used to create a reserve that would allow firms to smooth their earnings, as well as manage them to meet compensation targets or analysts’ forecasts. While there is no research examining whether IPO firms use the account for these purposes, there are investigations into the actions of more established firms.

⁶ The authors classify loss firms that do not report a deferred tax benefit as having recorded a valuation allowance.

Hanlon & Heitzman (2010) offer an overview of the existing research and document the inconclusive nature of the evidence regarding this possibility. For example, Miller & Skinner (1998) find no evidence for earnings management, whereas Frank & Rego (2006) find that managers use the account to manage earnings in an effort to meet analysts' forecasts. Christensen et al. (2008) find no evidence that firms use the valuation allowance to create a reserve to manage earnings in a subsequent period. Yet they do find some evidence that firms use it to meet or beat the mean analyst forecast. More generally, with deferred tax expense, there is some evidence that firms use the account to avoid a loss (ie. Phillips et al. (2003)). However, these papers focus on firms that move from small loss to small profit (a la Burghstahler and Dichev (1997)) and are less relevant to the firms in my sample. The main point to take away from this research is, as Hanlon & Heitzman point out, managers may implement some earnings management activities when using the valuation allowance, but the extent and frequency of occurrence remains an open question.

Given that the firms in my sample exhibit substantial losses smoothing is not a relevant explanation for their allowances. A more likely possibility is that the firms may use reversals of the allowance to increase earnings in future years. Given the magnitude of the losses generated by the IPO firms, the reversals would have to be substantial in order to have a noticeable effect on firm income. Therefore, if the firms were using the allowance for this purpose, it would bias against my predicted results. The reversals would significantly dilute the predicted negative relationship between the allowance and future income.

Chapter 3

Testing

3.1 Accrual prediction testing

To test hypothesis 1A, I use the following model:

$$Magallowdta_t = \alpha_0 + \beta_1 DTL_t + \beta_2 NOLDTA_t + \beta_3 FUTINC + \beta_k INDUST + \beta_j YEAR + \varepsilon_t \quad (1)$$

Where:

$Magallowdta_t$ = [Magnitude of the deferred tax valuation allowance at time t]/[DTA_t-DTL_t] if the allowance is applied against the net deferred tax asset. Otherwise, equal to [Magnitude of the deferred tax valuation allowance at time t]/DTA_t if the allowance is applied directly against the gross deferred tax asset.⁷

DTL_t = The firm's deferred tax liability scaled by gross deferred tax assets at time t

$NOLDTA_t$ = The portion of the deferred tax asset associated with the NOL scaled by the gross deferred tax asset at time t

$FUTINC = \sum_{k=1}^3 INC_{t+k}$, where INC_{t+k} = Net Income at time t+k (COMPUSTAT item NI)/Assets in t+k (item AT)⁸

$INDUST$ = industry dummies by 1-digit SIC code

$YEAR$ = year controls for the evaluation year – the last audited fiscal year prior to IPO

Following prior research, I include DTL_t as proxy for management's expectation of future taxable income. If a firm has temporary differences that result in financial statement income being higher than taxable income for a given period, they must record a deferred tax liability (DTL) that reflects the estimated future taxes due. As noted by Behn et al. (1998), since the DTA represents future tax deductions, and the DTL represents future taxable income, the larger the DTL in relation to the DTA, the greater the likelihood that the firm should be able to generate sufficient taxable income to utilize the DTAs. Therefore I expect that as DTL_t increases, the magnitude of a firm's valuation allowance decreases.

My second proxy for management's expectations of future taxable income is the sum of the actual realized income for the next three years – $FUTINC$. Since this is book income, it is an admittedly noisy proxy of future taxable income. But as Miller & Skinner (1998) show, it is a

⁷ The vast majority of the sample applied the allowance against the net DTA. I noted 10 firms that applied it against the gross DTA. In order to be consistent with their accounting I adjust my measure accordingly.

⁸ As in previous research I find that the distribution of my scaled variables is characterized by a small number of extreme observations. As a result I winsorize all financial variables at 1% and 99% level. My results are robust to non-winsorization.

predictor of whether or not a firm records a valuation allowance. As with DTL_t , I expect that the larger realized future income, the less likely it will record a full allowance.

The final predictive variable I include from prior literature is $NOLDTA_t$. This is the portion of the deferred tax asset generated by the NOL carry-forward, scaled by the total DTA. As shown in prior research (i.e. Miller and Skinner (1998)) the size of the NOL is a prime determinant for whether or not a firm records a valuation allowance. The greater the NOL the higher uncertainty over the firm's ability to utilize the deduction. Therefore, I predict the larger $NOLDTA_t$ the more likely a firm will be to record a valuation allowance.

The one common predictor from prior literature that I do not include in this model is recent past earnings. Since my evaluation period is the last audited fiscal year prior to IPO, COMPUSTAT does not consistently provide income information for previous years. As a result, inclusion of that variable would significantly limit the size of the sample available for testing. However, the other variables should reasonably proxy for this information. $NOLDTA_t$ in particular, should be highly correlated, as it proxies for the magnitude of accumulated past tax losses.

To test hypothesis 1B I use the following model:

$$Magallowdta_t = \alpha_0 + \beta_1 DTL_t + \beta_2 NOLDTA_t + \beta_3 FUTINC + \beta_4 Ownlimit_t + \beta_k INDUST + \beta_j YEAR + \varepsilon_t \quad (2)$$

Where:

Ownlimit = indicator variable equal to 1 if the firm is predicted to be subject to an ownership change limitation, and zero otherwise

Other variables defined as above

I include an indicator variable (*Ownlimit*) equal to 1, if a firm's ownership structure predicts that it will undergo a qualifying ownership change. For purposes of section 382, I consider the IPO as the beginning of the three-year testing period. Over the next three years, if there is a qualifying ownership change the firms will be subject to the limitation on the NOLs accumulated to that point. I make this distinction based on information about the firms' ownership structures disclosed in their financial disclosures made immediately prior to the public offering (discussed later in further detail). If my hypothesis is correct, and firms are considering the limitation when recording the allowance, then I would expect the indicator variable to be positively related to the magnitude of the valuation allowance.

3.2 Income signal testing

To test hypothesis 2A, I examine the relationship between the magnitude of the valuation allowance and future earnings. Since the net operating loss can be utilized over many subsequent years, the signal conveyed by the valuation allowance should extend over multiple periods. Jung and Pulliam (2006) find that the increase in the valuation allowance has a negative relation with income for up to two years. Dhaliwal et al. (2010) find that their proxy of a loss-firms' non-increase of an allowance, after the incurrence of an NOL, has a positive relation with income for up to five years in the future. As such, I examine the relation between the magnitude

of the valuation allowance at the year prior to issuance and income for the subsequent three years.⁹

The test is performed using the following model:

$$FUTINC = \alpha + \beta_1 INC_t + \beta_2 Magallowdta_t + \beta_k INDUST + \beta_j YEAR + \varepsilon_t \quad (3)$$

Variables defined as above

I use *FUTINC* as the dependent variable since the accumulation of future earnings should provide a clearer picture of the overall long-term effect than is available through annual regressions. This approach is similar to Hayn (1995), where the use of aggregate earnings reduces some of the noise inherent in year-by-year regressions.¹⁰

I scale by total end-of-the-year, rather than average or beginning-of-the-year assets since, as mentioned earlier, for the majority of my sample, COMPUSTAT does not consistently provide data for year t-1 (the fiscal year prior to the fiscal year prior to IPO). This limited availability of data is also the reason I include only two variables in the model. The more economical my model, the greater the number of observations retained. Hypothesis 2A predicts that the coefficient on *Magallowdta_t* is negative and significant.

To test hypothesis 2B, I run the following regression – which adds the interaction term for the ownership change group:

$$FUTINC = \alpha + \beta_1 INC_t + \beta_2 Magallowdta_t + \beta_3 Ownlimit * Magallowdta_t + \beta_k INDUST + \beta_j YEAR + \varepsilon_t \quad (4)$$

Variables defined as above

If hypothesis 2B is correct, and managers anticipate the qualifying ownership change and record a valuation allowance even when anticipating higher future income (or lower loss persistence) then I would expect β_3 to be positive and significant.

⁹ I focus on three years rather than five because the sample size drops significantly during years four and five due to a substantial number of firms delisting.

¹⁰ My results are robust to the alternative use of year by year regressions.

Chapter 4

Data and sample selection

I collect a listing of all Initial Public Offerings in the United States from the Thomson Financial Services Database (aka Securities Data Company, or SDC), between 1996 and 2008. I begin the sample period in 1996 due to the limited availability of electronically filed S-1's on the EDGAR database prior to that year. This results in the identification of 5,515 firms. I then eliminate all firms that are not identified as having received venture financing. This leaves 1,420 firms for evaluation. I focus on venture backed IPOs because the presence of venture capital investors is a key component of my testing for the ownership change limitation (discussed in further detail later). If I find no evidence of these firms taking the limitation into account, then I feel comfortable assuming it is unlikely that other firms do as well.

From the SDC database, I obtain each firm's name, CUSIP, and stock issue date. I use the CUSIP to match firms with their financial records in the 2010 version of the COMPUSTAT fundamental annuals database. This leaves 1357 firms that could be identified in COMPUSTAT. I then use COMPUSTAT to obtain a firm's book income (item NI) and total assets (item AT). Given the issues with COMPUSTAT-reported NOLs (documented by Mills et al (2003)), as well as the lack of disclosure of the valuation allowance by COMPUSTAT, I hand collect this information from the individual firm S-1's contained on the SEC's EDGAR database. The S-1 form is the filing that companies must submit to register their securities with the SEC, prior to a stock issuance. It contains the firm's audited financial information, generally for the two years prior to the securities issuance. If a firm was a small business, I obtain the information from their SB-2 filing.

From the firms' deferred tax footnote, I obtain the deferred tax asset, deferred tax liability, amount of the deferred tax asset associated with the NOL, magnitude of the valuation allowance, and the net deferred tax asset/(liability) position. I eliminate foreign issuers (firms that file an F-1 instead of an S-1), firms missing the required filings on EDGAR, and firms with insufficient deferred tax disclosures. This leaves 1,111 available for evaluation, of which I retain the 907 who report an accumulated NOL in the last audited fiscal year prior to IPO. For inclusion in the sample, I also require that a firm have items NI and AT for years t and $t+1$ identified in COMPUSTAT, as well as sufficient information in the S-1 to calculate my proxy for the ownership change limitation. This leaves 794 observations with sufficient data available for testing. See figure 3 for an example of the deferred tax footnote.

To determine whether managers are establishing a valuation allowance in anticipation of the ownership change limitation, I establish an ex-ante measure of a qualifying ownership change. Since, by design, all of the firms in my sample receive venture capital financing, I have an obvious starting point. Venture capital investors are subject to lockup provisions that typically last 180 days. These prohibit them from selling shares prior to the agreement's expiration. Prior research, including Field & Hanka (2001) and Bradley et al. (2001), has shown that venture-backed IPO firms exhibit negative abnormal returns at the expiration of the lockup provisions. This is consistent with venture capital shareholders selling a significant amount of their holdings at that time. When these findings are combined with the fact that VC investors will not typically realize income until they liquidate their holdings, it is reasonable to assume that

the sample firms' VC shareholders will generally sell their holdings within three years of the IPO date. Additionally, if the venture capital shareholders bought into the firm less than three years prior to the IPO, then the IPO itself could trigger the limitation through a qualifying ownership change in the three-year period leading up to issuance.

During my data collection, I noted that many of the firms also had other institutional owners who controlled more than 5% of the shares after completion of the public offering. This group was predominantly composed of public equity firms, other publicly traded companies, governmental entities, or trusts. Depending on whether or not these shareholders also liquidate their holdings soon after IPO, their presence could increase the likelihood of a firm being subject to the ownership change limitation. To obtain an idea of the liquidation behavior of the other institutional shareholders, and to confirm my conjecture that venture capital shareholders quickly dispose of their holdings, I examine the behavior of all 5% shareholders for 40 randomly selected sample firms. Of these firms, 39 have at least one VC 5% owner, and 13 have at least one 5% "other-institutional" owner. This is a proportion consistent with the sample as a whole, where 793 firms have at least one 5% VC owner and 332 have at least one other-institutional owner. For these firms, I review the statement of beneficial ownership from their proxy statements for the next three years to determine the change in ownership.¹¹

From this analysis I observe that, consistent with prior theory, the median (mean) VC firm liquidated 100% (73%) of their holdings in the three-year period after IPO. Additionally, the median (mean) other-institutional owner sold 100% (91%) of their holdings in that period. This indicates that these other-institutional owners should also be assumed to liquidate the majority of their holdings in the testing period.

The final confirmation I require before construction of my measure is some evidence that the IPO firms are aware of the possibility of a qualifying change in ownership. A review of the tax disclosures indicates this is the case. 630 firms expressly include verbiage in the deferred tax note to the effect of: *"The Company's ability to utilize the net operating loss and tax credit carryforwards in the future may be subject to substantial restriction in the event of past or future ownership changes as defined in Section 382 of the Internal Revenue Code."*

To identify firms that would potentially be subject to the limitation, I obtain the following information from the firms' prospectus:

- i) The percentage of shares to be sold at IPO
- ii) The percentage of the firm's shares to be owned by venture capitalists, and other-institutional owners that own more than 5% of the firm's shares after the conclusion of the public offering. This information is reported in the statement of 'Principal Stockholders.'¹²

If the sum of the two amounts is over the threshold amount, I classify the firm as anticipating a Section 382 ownership change. I use three different thresholds to test the hypothesis: 50%, 60%, and 70%. The more concentrated a firm's ownership structure, the higher the likelihood it should be subject to a qualifying ownership change (as the liquidation of a single shareholder

¹¹ I focus on the 5% shareholders as the ownership limitation is specifically triggered by the change in ownership of 5% shareholders in the testing period.

¹² I note this statement can have a variety of different names including (but not limited to): 'Statement of Beneficial Ownership,' and 'Statement of Principal and Selling Shareholders.'

would increase the chance of being subject to the limitation). As a result, I would expect the strength of the relationship between the variable and establishment of the full allowance to increase as the threshold increases.

It is important to note that this is a noisy measure of a firm's expectation of a qualifying ownership change and, as such, will bias me against finding any results in my testing. Assuming that firms are actually considering this limitation when recording the allowance, there is still variation in the liquidations of the various 5% shareholders. The firms are likely to have better information about the possible actions of specific shareholders, including whether they are subject to lock-up provisions that extend beyond three years. Since I am unable to take this information into account, it is possible I am not accurately capturing firm expectation of subjectivity to the limitation in my measure. However, given the previously documented behavior of VC investors, and the observed behavior of the other 5% investors in my random draw, I believe that, on average, this measure captures the likelihood of a firm being subject to the limitation.

Chapter 5

Results of empirical tests

5.1 Descriptive statistics and correlations

Table 1 presents descriptive statistics for the entire sample. Panel A reflects the industry breakdown by two-digit SIC code. The majority (56%) of the sample is clustered in two industries – Business Services/Software and Chemical & Allied Products. These are technologically intensive industries that often require significant upfront expenditures of R&D. This is confirmed in Panel B, where 81% of the sample (*RDPres*) report R&D expenditures greater than zero in the evaluation year. These expenditures are also material – on average 33% of total assets (*RDItent_i*). The significant R&D expenditures contribute to the prevalence of current, (*INC_i* of (0.50)), and future, (*FUTINC* of (0.96)) losses in the sample.

Panel C presents the deferred tax information for the sample firms. These firms generate significant deferred tax assets (on average 63% of total assets (*DTA_i*)), that are predominantly composed of the deferred benefit from the accumulated NOL (73% of gross DTA (*NOLDTA_i*)). This ratio is important because it illustrates that if firms are properly recording the allowance, they are doing so primarily in anticipation of a lack of deductibility of the NOL, and not for other temporary differences. In addition, the lower the proportion of the NOL to the total asset, the less likely the allowance is attributable to concerns about the ownership change limitation.

82% of the sample record a valuation allowance fully valuing out the deferred tax asset (*Fullallow_i*), which is reflected in the mean net deferred tax asset of 0.01 (*Net DTA(DTL)_i*). The magnitude of the allowance is significant (on average 61% of total firm assets (*Magallowassets_i*)), and illustrates the strong effect its establishment has on a firm's reported income. It is also worth noting that the magnitudes of these deferred tax items are substantially higher than has been found in prior literature. For example in Miller & Skinner (1998) the DTA is on average 10% of total assets, and the NOL is 14% of the gross DTA. This demonstrates that IPO firms, on average, generate significantly larger NOLs than more mature firms, and reinforces how examining these firms should provide new information for research into determinants of the valuation allowance.

Panel D shows the relevant ownership information. Depending on the threshold, the number of firms with ownership structures that predict they will be subject to the ownership change limitation ranges from 73% (*Ownlimit50*) to 37% (*Ownlimit70*). Even with the most restrictive threshold (*Ownlimit70*), the number of firms predicted to be subject to the limitation is substantial – reflecting the fact that the majority of the sample firms have concentrated ownership structures. VC owners (*FiveperVC*) own 31% of the mean firm, and their liquidation behavior after IPO drives the likelihood of the ownership change. The other-institutional owners (*FiveperOther*) are not as prevalent, owning on average 7% of the sample firms.

Panel E documents the survival outcomes for the sample firms based on the CRSP delisting codes as of 12/31/2010. Only 34% of the sample is still active at that date, with the largest number of firms having been subject to a merger (43%). This is not surprising, given the strong level of current and future losses exhibited by the sample firms. Undergoing a merger may be the only way they can maintain operations. In addition, only 21% of the sample delist for performance related reasons, including bankruptcy. When compared to the percentage of the

sample that records a full allowance (83%), the ex-post conservative nature of this accrual is reinforced.

Table 2 partitions the sample based on whether or not a firm records a full valuation allowance.¹³ It reports the mean values for each of the relevant variables. Panel A documents that firms recording a full allowance are significantly more likely to operate in the Business Service/Software and Chemicals & Allied Products industries. As previously mentioned, these industries are characterized by the need for substantial investments in R&D. This is confirmed in Panel B. The firms that record a full allowance are both more likely to report R&D expense (*RDPres* of 87% versus 53%) and to spend at a higher intensity (*RDInten_t* of 38% of total assets versus 11%). The full allowance firms are also smaller (*Assets_t* of \$33.13 million vs. \$214.30), and report poorer performance in both current (*INC_t* of (0.60) vs. (0.05)) and future periods (*FUTINC* of (1.14) vs. (0.11)). There is no significant difference between the groups in the use of a big five auditor (*Big5*), reflecting the uniformity of this treatment across audit firms.

Panel C reports the mean values of the deferred tax variables for the two groups. Predictably, the full allowance firms have significantly larger DTA's, and NOL's, both as a percentage of total assets (*NOLAssets_t*) and gross DTA (*NOLDTA_t*). Conversely, they also have significantly smaller deferred tax liabilities (*DTL_t*). This information is consistent with hypothesis 1A, which predicts that the larger a firm's NOL and the smaller its expectations of future taxable income, the larger the magnitude of its valuation allowance.

Panel D presents the ownership variables. There is no significant difference between the two groups in the number of firms predicted to be subject to the ownership change limitation, regardless of threshold. There is also no significant difference in the ownership percentage of venture capital and other institutional shareholders (though there is a slight difference in the amount sold at IPO).

Finally, Panel E documents the difference in survival outcomes between the two groups. Consistent with their superior reported performance, firms that do not record a full allowance are significantly more likely to remain active at the evaluation date (45% vs. 31%). Conversely, the full allowance firms are more likely to delist for reasons of performance (23% vs. 14%). Even though the full allowance firms are more likely to fail, the percentage that cease operation is still substantially less than is implied by the number that record a full allowance.

In untabulated results, I also compare the mean values of the variables for the sample partitioned based on whether a firm is predicted to be subject to an ownership change. Regardless of the threshold used, the differences in size and current period income are not significant for the two groups. The rate they record a full allowance (as well as the size of the allowance) also differs only marginally. In addition, differences in size of the gross deferred tax asset, its components, and the allowance itself, are minor. This indicates that, after the partition, the firms all start at a similar point at time *t*. However, the group categorized as recording an allowance due to anticipation of the ownership change limitation exhibits higher future income. This difference is significant, and provides some preliminary support to the idea that some of these firms may be recording an allowance even though they anticipate a rise in future earnings.

Table 3 presents the correlation matrix for the variables under analysis. In the interest of parsimony, I only report correlations for total assets and the variables used in the regression analysis. I also only report the correlations with one of the ownership change variables – *Ownlimit50*. The correlations with the other ownership change thresholds are substantially the

¹³ I partition the sample based on the presence of the full allowance as opposed to some other sub-division, as the distribution of the sample is essentially binary – only 17% of the firms do not record a full allowance.

same. Current period income (INC_t) is positively related to future income ($FUTINC$) and, consistent with expectations, the valuation allowance ($Magallowdta_t$) is negatively related to income in all periods. The magnitude of the valuation allowance is positively related to the size of the NOL ($NOLDTA_t$), and negatively related to the relative size of the deferred tax liability (DTL_t) and future income ($FUTINC$). The allowance does not have a significant univariate correlation with whether a firm is predicted to be subject to a qualifying ownership change ($Ownlimit50$).

5.2 Prediction of the magnitude of the valuation allowance

Table 4 presents the results of the accrual prediction testing. The standard errors are reported in parentheses below the coefficient estimates. Columns 1-3 show the results of the testing of hypothesis 1A. The magnitude of the valuation allowance is strongly negatively related to the size of the deferred tax liability, and realized future income, and positively related to the size of the NOL. The results are economically and statistically significant, and confirm the idea that even though it is conservative, this accrual is substantially driven by concerns over firm ability to generate sufficient taxable income to utilize the deferred tax assets – specifically the NOL carry-forward.

The relatively low economic significance of $FUTINC$ (-0.03) in predicting the allowance is interesting. The greater predictive strength of DTL_t (-0.32) and $NOLDTA_t$ (0.31) supports the idea that, when making the determination to record an allowance, auditors are conservatively putting more reliance on currently available evidence (in particular a recent history of losses) as opposed to any expectations of future taxable income.

Columns 4-6 present the results of the tests of hypothesis 1B. The coefficients on $Ownlimit$ are all as predicted, and the significance increases as the cutoff threshold increases (p-value of 20% for the 50% threshold vs. less than 5% for the 60% & 70% thresholds).¹⁴ It is important to note that the ownership change limitation is the least economically significant of the variables when it comes to predicting the magnitude of the allowance (coefficient of 0.04 for the 60% & 70% thresholds). This is unsurprising given the prevalence of the full allowance in the sample. As mentioned earlier, if a firm is subject to an ownership change, it will only limit the amount of the deduction, not eliminate it. Therefore, if a firm anticipates it will be subject to limitation, but will generate future taxable income, it should only record, at most, a partial allowance.

Taking this prevalence of the full allowance into account, I conduct the analysis using a logit regression – with the dependent variable ($FULLALLOW$) equal to 1 if the firm records a valuation allowance fully valuing out the deferred tax benefit from the NOL and zero otherwise. Table 5 presents the results. The results are consistent with the continuous analysis. Establishment of a full valuation is strongly negatively related to the size of the deferred tax liability and future income, and positively related to the size of the NOL. The statistical power on the ownership change variable is significantly reduced, though this is not surprising given the fact that the dependent variable is now binary. Still, the fact that it is achieving any statistical significance provides further indication that the firms are taking this limitation into consideration when making the determination to record a valuation allowance. In effect, the anticipation of a qualifying ownership change is one more piece of negative evidence that is being taken into

¹⁴ The insignificance of the knife-edge specification, the 50% threshold, is not unexpected given the aforementioned noise surrounding my measure.

account by these firms, incremental to the other explanations. They are not choosing to record a full allowance or none at all, but are rather already considering recording a substantial allowance, and the ownership change pushes them into recording a full one.

5.3 Income signal tests

Table 6 presents the test results of the relation between the magnitude of the valuation allowance and future income. Regression 1 shows the full sample results. As predicted by hypothesis 2A, the magnitude of the valuation allowance is significantly negatively related to accumulated future income over the next three years. The coefficient on $Magallowdta_t$ is -0.75 which provides strong support for the idea that valuation allowance sends a strong negative signal for future income. As previously noted, this is consistent with the belief that managers are recording the allowance, at least partially, for reasons related to the future deductibility of the NOL (as required by ASC 740). If the conservative nature of this accrual was completely unrelated to the firms' actual economic fundamentals, such a strong result would be unlikely.

Regressions 2-4 show the results after controlling for the allowance's signal after partitioning on whether the firm will be subject to the ownership-change limitation. As predicted, the coefficient on the interaction term is economically and statistically significant. It indicates that firms that record a valuation allowance, while also anticipating a qualified ownership change, will have higher future income (by a factor of 0.24 for the 70% threshold) than those that do not anticipate a change. In addition, the coefficient on $Magallowdta_t$ becomes significantly more negative (-0.75 to -0.95 for the 60% threshold) after controlling for this affect. Taken together, it does appear that some firms are recording a valuation allowance in anticipation of the qualified ownership change, even as they anticipate the generation of higher future income. After accounting for these firms, the negative relation between the valuation allowance and future earnings is enhanced.

5.4 Allowance reversals

As mentioned in section 2.3, prior research has focused on the idea that firms can use the valuation allowance as a reserve to increase future earnings. This would be manifested in reversals of the allowance in future periods. Given the magnitude of the losses generated by the IPO firms, the reversals would have to be substantial in order to have a noticeable effect on firm income. My prior finding that the magnitude of the valuation allowance sends a strong negative signal for future income provides indirect evidence that the account is not being used in this manner.

In order to provide more direct evidence of the lack of reversals, I examine the subsequent deferred tax positions of the 655 firms who record a full valuation allowance. I determine if any of the firms report a non-zero net deferred tax asset or liability (COMPUSTAT item TXNDB) in any of the subsequent three years after the IPO. I find that only 87 firms, or 13.2% of the sample, do so. The fact that such a small percentage exhibit any evidence of a reversal indicates that for this sample of VC backed IPO firms, the valuation allowance is not being used to manage future earnings.

5.5 Robustness checks

In order to determine the strength of my findings I perform a series of robustness checks. First, I examine how the results change after inclusion of several additional explanatory variables. Second, I determine whether they are effected by alternate specifications. Finally, I provide preliminary evidence about their generalizeability by extending my tests to two other groups of NOL firms: non-VC backed IPO firms, and non-IPO firms.

5.5.1 Additional explanatory variables

5.5.1.1 R&D Expense

First, I examine the effect that controlling for R&D expense has on my results. As shown in table 2 panel A, this expense is significantly higher for firms that record a full allowance. This could be driving my results in two ways. First, if firms believe the market will evaluate them on other variables besides bottom line net income (in particular the intangible assets generated by research and development), then it may be that they will be more likely to record a valuation allowance as they will not be as concerned with the signal sent by lower net income. Alternatively, the NOLs for the full allowance firms may act as a proxy for the firms' accumulated R&D expenditures. I would then expect that the greater the R&D expense, the greater the NOL and therefore the higher the likelihood the firm records a valuation allowance. I rerun the accrual prediction regressions including: 1) a dummy for if a firm reported R&D expense in the evaluation year ($RDPres$) and 2) the magnitude of that expenditure ($RDinten_t$).

Table 7 documents the results for the dummy variable. As expected the presence of R&D expenses are positively related to the magnitude of the valuation allowance, all other results are unchanged. Table 8 presents the results from including the magnitude of the R&D expense in the accrual prediction regression. As with $RDPres$ the magnitude of the expenditure is positively related to the size of the allowance, and the results for all other variables do not change. This is not unexpected as the prevalence of R&D expense is contributing to the persistent losses in the sample. In addition, I re-run the income prediction regressions while controlling for $RDinten_t$. Table 9 reports the results. $RDinten_t$ does not have a statistically significant relationship with future income, and all other results are unchanged.

5.5.1.2 Use of a Big 5 auditor

I next test to see if the firm auditor has any relationship with the magnitude of the valuation allowance. I include an indicator variable equal to 1 if the firm is audited by a Big 5 auditor ($Big5$).¹⁵ Table 10 reports the results. The use of a Big 5 auditor has no relation with the magnitude of the allowance, this indicates that use of a large audit firm does not make a firm any more or less likely to increase the magnitude of the allowance. In untabulated results I also re-run the full allowance prediction model while controlling for $Big5$, as well as individual audit firms. Again it has no statistically significant relationship with the establishment of the full allowance. This shows the uniformity of the treatment across firms.

¹⁵ I use a big 5 specification as opposed to a big 4 due to the fact that Arthur Anderson was in existence for a substantial portion of my sample period.

5.5.1.3 Size

Next, I consider if including size affects my results. Table 2 panel B indicates that firms that do not record a full allowance are significantly larger than firms that do. Therefore my results, particularly regarding the allowance's income signal, may simply be reflecting the superior performance of larger firms. I proxy for firm size by using the log of the ending total assets for the evaluation year (*Size*). Table 11 presents the accrual prediction results. I find that while *Size* is negatively related to the magnitude of the valuation allowance, the other results are unchanged. Table 12 shows the income prediction results with the inclusion of *Size*. Again the prior results are unchanged, while the size of the firm is positively related to future income. In particular I want to emphasize that the inclusion of *Size*, as well as the other new explanatory variables, does not affect the economic and statistical significance of the ownership change variables in either test. This reinforces the previous contention that my proxy for expectation of the ownership change is not correlated with some underlying aspect of the firms' financial process.

5.5.2 Additional specifications

5.5.2.1 Ex-ante prediction

I evaluate how my accrual prediction results hold if I use only ex-ante predictors of the magnitude. Specifically, I re-run my accrual prediction tests eliminating *FUTINC* from the independent variables. Table 13 documents the results. As is expected, given the aforementioned low explanatory power of *FUTINC* in my main tests, the significance of the other variables is unchanged. This again supports the idea that auditors are putting less weight on expectations of future income when recording the valuation allowance. Alternatively, this may simply indicate that the high correlation of realized future income with the other variables means that it does not provide substantial additional information about these firms' future income expectations.

5.5.2.2 Remove firms that 'fail.'

The sample is composed of a large number of firm that 'fail.' The presence of these firms could be affecting my results in two ways. First, they may be muting the significance of the ownership change variables. If a firm's managers anticipate the likelihood that it will fail, then they should give no consideration to the ownership change limitation (the NOL will be lost regardless of whether there is a change). Including these firms in the sample would then reduce the predictive power of the ownership change variable. Second, the income signal results may be driven by these abnormally poor performers as they amplify the observed negative relationship between the valuation allowance and realized future income.

I re-run all tests after removing firms that are classified as having delisted for performance reasons (survival outcome coded as *Performance*). Table 14 presents the results for the accrual prediction regression. The results are consistent with the prior tests, and more interestingly the economic (increase of 0.04 to 0.06 at the 70% level) and statistical significance (50% cutoff goes from insignificance to statistically significant at the 10% level) on *Ownlimit*

increases across all specifications – though it is still a marginal predictor. The increase in significance on *Ownlimit* in this specification indicates that it may be the case that some managers are entering the market with the expectation that there is a greater than 50% chance their firm will ‘fail’ and record the allowance without consideration of the ownership change limitation. Table 15 presents the income signal regressions for this sample. The results are unaffected by the removal of these firms. As a result I feel comfortable claiming that these excessively poor performing firms are not driving the relationship between the magnitude of the valuation allowance and future income.

5.5.2.3 Ex-post measure of the ownership change

I also re-run the tests using an ex-post measure of the ownership change limitation – whether a firm is subject to a merger (*Merge*). Given that the overwhelming majority of firms at the IPO stage of development are generating significant losses, it is possible they anticipate being acquired in order to maintain their future operations. If so, they should record an allowance anticipating the future ownership change limitation.

Table 16 presents the results of accrual prediction regression. The results for the main predictive variables are unchanged, and *Merge* (coefficient of 0.03) is positively related to whether they record a valuation allowance. Table 17 presents the results of the income signal testing using the new measure, and as before firms that are subject to the ownership change, and increase their valuation allowance, have higher future income than the corresponding firms that are not subject to a change (0.63). Both of these results seem to indicate that some firms are recording the allowance, at least partially, in anticipation of a merger. When this is combined with the earlier results for the removal of the ‘failure’ firms, it indicates that how a firm records a valuation allowance might be useful in predicting IPO firm survival outcomes. Future research should focus on obtaining a clearer picture of this relationship.

5.5.2.4 Using quintiles to correct for skewness

A review of my descriptive statistics indicates that even after winsorization, the variables in my sample are highly skewed. To ensure that this skewness is not driving my results I re-run all my tests converting all continuous variables into quintile ranks. Table 18 presents the accrual prediction, and table 19 the income signal results. I find that the power on the main predictive variables is unchanged, though the power on the ownership change variables is reduced. This is not unexpected given that the dependent variable is now in quintile ranks, but it does seem to indicate that the ownership change result is somewhat sensitive to the use of continuous variables. That said, the results are generally consistent with my main results.

5.5.2.5 Tobit specification

Finally, at least one paper, Behn et. al. (1998), has proposed that a tobit specification is a more appropriate approach when estimating the magnitude of the valuation allowance since its value is bounded on the bottom by zero and on the top by one. I question whether use of the tobit is actually correct. The tobit regression is used when the dependent variable is censored. A censored variable is one where the variable is constrained in some way that does not allow the observation of variables outside of a certain bound. That is not the case for the valuation

allowance. Even though it has a maximum and minimum value, they are true bounds. It cannot possibly take an unobserved value outside zero or one. Therefore it does not appear appropriate to use the tobit for this dependent variable. That said, in the interest of robustness I re-run my accrual prediction test using this specification. The results stay substantially the same.

5.5.3 Out of sample tests

To test the generalizeability of my results I examine the deferred tax valuation allowance for two other sets of NOL firms: IPO firms that did not receive VC funding, and non-IPO firms.

5.5.3.1 Non-VC backed IPO firms

Morsfield & Tan (2006) document that IPO firms which receive VC funding exhibit lower abnormal accruals than firms that are not VC backed. Therefore it may be the case that the recording of a substantial valuation allowance is not as prevalent in a sample of non-VC backed IPOs. To see if this is the case I randomly select a sample of 256 non-VC backed IPOs from the sample period. There are some marked differences between VC and non-VC backed firms. First, 44 of the non-VC backed firms were organized as pass-through entities immediately prior to issuance which would preclude the existence of NOL and its associated deferred tax asset. The prevalence of the pass-through form in the non-VC backed sample is consistent with the VC bias against investing in firms organized as pass-throughs documented by, among others, Allen & Raghavan (2012).

The generation of an NOL is not as prevalent in the non-VC backed sample. Of the remaining 212 non-pass-through firms only 118 report a deferred tax asset attributable to a NOL. To be consistent with the rest of the paper these firms will be the focus of my analysis. Table 20 presents the descriptive statistics for the sample. Panel A gives the industry breakdown. Given the more limited sample size I report the breakdown using 1 digit SIC codes as opposed to 2 digit. There is more variation in the industries for the non-VC backed sample, as 73% of the sample is spread out across four different industry classifications. There is also less concentration in the technical industries (39% in codes 7 and 2 as opposed to 56% for the VC backed firms), which is reflected in panel B where only 52% of the sample firms report the incurrence of R&D expense ($RDPres_t$).

Panel B also documents that the non-VC firms are significantly larger than the VC backed firms (average assets of \$673 versus \$65 million), but on average exhibit similar levels of current (INC_t of -0.62 versus -0.50) and future ($FUTINC_t$ -0.84 versus -0.96). The deferred tax benefit from the NOL ($NOLAssets_t$) is of a similar proportion of total assets for the two groups ($NOLAssets_t$ of 0.48 versus 0.50), though it composes a substantially lower portion of the gross deferred tax asset for the non-VC backed firms ($NOLDTA_t$ of 0.59 versus 0.73).

When it comes to magnitude of the valuation allowance there is substantially more variation in the non-VC sample. As panel C shows, fewer firms record a full valuation allowance ($FULLALLOW_t$ of 0.47 versus 0.82) and the average magnitude is a substantially lower proportion of the net DTA ($Magallowdta_t$ 0.57 versus 0.89). This decrease in the rate of the full allowance, as well as the lower magnitude, is most likely attributable to the smaller NOL (as a proportion of net DTA) in the non-VC sample, but may also provide some support for the idea that the VC firms are more conservative in their treatment of this accrual.

Panel D shows the survival outcomes for the non-VC backed firms. Approximately the same amount are active at the end of the sample period (34%) as the VC sample but there are fewer mergers (32% vs. 43%) and more delistings for performance reasons (32% vs. 21%). This seems to indicate that the exit strategy for VC backed IPO firms who are performing poorly is more likely to be a merger as opposed to outright failure. This may be attributable to the greater presence of R&D expenditure, which yields more intangible assets that might make a firm attractive for acquisition even though it is performing badly in other respects.

Table 21 partitions the sample based on whether they record a full allowance. As with the VC sample the full allowance firms are more concentrated in R&D intensive industries (40% vs. 19% in industry code 7), and as a result are more likely to incur R&D expense ($RDPres$ of 0.60 vs. 0.44) and at a greater magnitude ($RDinten_t$ of 0.50 vs. 0.03). This increase in R&D expenditure is reflected in the lower current (INC_t of -1.35 vs. 0.02) and future ($FUTINC$ of -1.85 vs. 0.02) for the full allowance firms.

The full allowance firms also report substantially higher NOLs both as a percentage of assets ($NOLAssets_t$ of 0.96 vs. 0.07) and the gross DTA ($NOLDTA_t$ of 0.78 vs. 0.43). These significant losses are reflected in the differential survival outcomes where 49% of the full allowance firms delist for performance reasons, versus 16% of the firms that do not record a full allowance.

Table 22 presents the results of the accrual prediction tests, and consistent with the VC backed sample, the magnitude of the valuation allowance is significantly negatively related to the size of the DTL and realized future income, and positively related to the size of the NOL. However the statistical power of realized future income is marginal, and the economic significance of the DTL is less than for the VC sample.

Table 23 presents the results of the income signal testing. The magnitude of the valuation allowance is significantly negatively related to realized future income, and the economic significance of the result is larger than for the VC sample. This could indicate that the VC firms increased conservatism mutes the signal sent by the allowance, but without more extensive testing taking into account the inherent differences between the two groups it is difficult to draw that specific conclusion.

Though this testing only represents a preliminary, descriptive, step it does appear that, consistent with the main results of the paper, non-VC backed IPO firms who incur a NOL generally record the allowance due to their concerns about utilizing the NOL carry-forward. There is more variation in the magnitude of the allowance, which may support the prior finding that VC backed firms are more conservative in their accounting, but in general the information content of the allowance for these firms is similar to the VC backed sample.

5.5.3.2 Non-IPO firms

Finally I perform a brief examination of a sample of non-IPO firms. I randomly select the year 2003 and identify all firms in COMPUSTAT with a December fiscal year-end - 7,793 firms. I then identify the 2,327 firms (29.8% of the total) that are shown to have an accumulated net operating loss (item $TLCF > 0$). Given the aforementioned problems with COMPUSTAT reported NOLs it is likely that this number understates the true proportion of NOLs in the sample, but for descriptive purposes I believe it is a reasonable approximation. I next use the NOL firms' CIK number to identify their 10-K filings using the DIRECTEDGAR search software. I then use the DIRECTEDGAR table extraction tool to pull the firms' deferred tax footnote for evaluation. For the first 347 firms with the extracted note, I hand-collect their gross deferred tax asset, gross deferred tax

liability, valuation allowance, and the portion of the deferred tax asset attributable to the net operating loss.

In order to test the effect of the ownership change limitations, I collect the percentage owned by shareholders who hold 5% or more of the firms' stock. I obtain this information from the table of beneficial ownership in the firms' 2003 proxy statement. If the firm does not disclose the information in the proxy, I collect it from the 2003 10-K. I eliminate firms with multiple classes of voting stock that do not provide sufficient information to convert the different classes into one comprehensive voting percentage. Since the proxy statement is generally filed at least six months prior to fiscal year end, there is a chance the owners at the time the firm recorded the accrual would be different than at the time of the proxy. In addition, unlike the IPO sample, I do not attempt to segregate the 5% owners into different groups. I simply accumulate all of their holdings into one class. It is very possible that there will be differences in how shareholders liquidate their holdings. However, since this analysis is intended to be descriptive, I believe the ownership structure at the proxy date gives a reasonable ex-ante picture of the firms' potential to be subject to the ownership change limitations.

For final inclusion in the sample, I require that all firms have non-missing current period, next period, and prior period income (COMPUSTAT item NI) and ending assets (item AT). In addition, I eliminate all firms that did not have sufficient disclosures to hand-collect the required deferred tax variables, or the 5% beneficial ownership information. This leaves 300 firms with sufficient information for testing.

Table 24 presents the descriptive statistics for the entire sample. Panel A presents the industry breakdown. As with the non-VC backed IPO sample I present the breakdown based on 1 digit SIC code given the more limited sample size. The majority (0.63) of the sample is clustered in the two manufacturing industries (SIC codes 2 & 3). Panel B shows that most firms report the expenditure of R&D ($RDPres$ of 0.67) but the average magnitude is not substantial ($RDInten_t$ of 0.09). The firms also report average losses in the past ($PASTINC$ of -0.45) current (INC_t of -0.15) and future periods ($FUTINC$ of -0.38) though the magnitudes are lower than for the IPO firms.

Panel C reports the deferred tax information. I find that 34% of these firms record a full allowance ($FULLALLOW$). This indicates that its occurrence is not unique to IPO firms. However there is more variation in the allowance as the mean is only 57% of the net DTA ($Magallowdta_t$). The NOL's are substantial, both as a portion of assets ($NOLAssets_t$ of 0.57) and as a percentage of DTA ($NOLDTA_t$ of 0.51).

Panel D shows the ownership information. 5% owners own 33% of the mean firm ($Fiveperown$) and between 15% ($Ownlimit60$) and 23% ($Ownlimit50$) of the firms have ownership structures that might make them likely to be subject to the limitation depending on the threshold used.

Panel E shows the survival outcomes for the sample. Unsurprisingly, as these are more mature firms, there is a higher rate of active firms (0.46) than for the IPO sample. However, given that this is a sample of predominantly loss firms, a substantial portion still delist for performance reasons (0.27).

Table 25 presents the descriptive statistics for the sample partitioned on whether they record a full allowance. The full allowance firms are more like to expend R&D ($RDPres$ of 0.83 vs. 0.59) and in larger amounts ($RDInten_t$ of 0.19 vs. 0.03). They are also smaller ($Assets_t$ of 169.56 vs. 5,175.75) and have lower income in the past ($PASTINC$ of -1.32 vs. -0.01), current (INC_t of -0.50 vs. 0.04) and future periods ($FUTINC$ of -1.22 vs. 0.05). The full allowance firms also unsurprisingly have larger average NOLs ($NOLDTA_t$ of 0.74 vs. 0.39) and smaller DTL's (DTL_t of 0.06 vs. 1.13). Unlike the IPO firms, firms that have a full allowance are significantly

more likely to have a concentrated ownership structure (*Ownlimit50* of 0.33 vs. 0.18). Like the IPO sample firms that record a full allowance are significantly more likely to delist for performance reasons than those that do not (*Performance* of 0.53 vs. 0.14).

Table 26 presents the accrual prediction results. As these are not IPO firms I am able to include accumulated income from the prior two years (*PASTINC*) in the regression. As with prior research I expect that the higher income is in these periods, the lower the magnitude of the valuation allowance. Columns 1-4 show the results without the ownership change variable. They are broadly consistent with the IPO samples. The magnitude of the NOL is the most economically significant predictor of the allowance's magnitude, and income in the past and future periods is negatively related to the magnitude. The only significant difference from the VC backed IPO sample is the marginal economic and statistical significance of the DTL. But in general the magnitude of the NOL does appear to be driven by firms concerns over the ability to utilize the NOL carry-forward.

Columns 5-7 add the ownership change variables, and there is preliminary evidence that these firms are taking the ownership change into account when recording the allowance. The variable is statistically significant across all specifications, and is the second most economically significant of the predictive variables.

Table 27 presents the income signal results. As with the IPO samples the valuation allowance sends a strong negative signal about future income. The interaction terms does not reach statistical significance in any threshold, but its inclusion does increase the negative signal sent by the valuation allowances' magnitude (coefficient on *Magallow_t* decreases from -0.39 to -0.52 for the 50% threshold). This again provides some weak support that firms may be taking this limitation into account when recording the valuation allowance.

As a final test I re-run the regressions in table's 26 & 27 including *Size* as a control. Given that, unlike the IPO firms, this sample shows a significance difference between the full and no full allowance groups in the percentage of firms with an ownership structure that makes them likely to be subject to a qualifying change, the concentrated ownership may just be a reflection of the relatively small size of the firms. Therefore the ownership change results may just be reflecting this inherent size difference.

I first find that for the accrual prediction tests the economic and statistical significance of the ownership change variable is reduced across all specifications but the general results still appear to hold. However, the income signal testing yields some surprising results. The most surprising being that the statistical significance on the magnitude of the valuation allowance is significantly reduced with the inclusion of *Size*. The significance improves after including the ownership change interaction, but it still does not exceed 15% significance in any specification. However, this result appears sensitive to the measure of size used. If I alternatively use the log of ending market value; ending total assets; or the interaction of *Size* and *Magallowdta_t*, the significance on the magnitude of the allowance is restored (albeit at a lower significance level than the original tests). The sensitivity of the income signal to the measure of size used in this sample of non-IPO firms points out the importance of taking into consideration differences between firms in different stages of development when conducting large sample tests of the valuation allowance's information content.

Though there is still work to be done when evaluating the information content of the valuation allowance in a more general sample, the results are generally consistent with those from my IPO samples. In particular there is some evidence that the firms take the ownership change limitation into account when recording the valuation allowance. Future research should

attempt to determine a better measure of the ownership change for mature firms in order to more effectively evaluate their anticipation of the limitation.

Chapter 6

Concluding remarks and directions for future research

This paper examines the information contained in the deferred tax valuation allowance for venture backed IPO firms. These firms overwhelmingly record a valuation allowance fully valuing out the deferred tax benefit generated by the accumulated NOL. The prevalence of the full allowance calls into question prior literature (Teoh et al. (1998a & b)) that contends that IPO firm managers upwardly manage their earnings to inflate their firms' stock price. The fact that these firms are also recording a full allowance (instead of a partial one) also supports the contention in prior literature (i.e. Ball & Shivakumar (2008)) that IPO firms are conservative in their accounting.

Prior literature claims that this conservative accounting improves the quality of IPO firms' earnings. I examine this directly by determining if the conservative accrual reflects firms' economic fundamentals. I test to what extent the firms are recording the allowance in accord with the requirements of ASC 740. The results indicate that the magnitude of the allowance is significantly driven by firm concerns over both the generation of sufficient taxable income to utilize the NOL carry-forward and anticipation of the qualifying ownership change limitation.

I next examine the relation between the valuation allowance and future income. Consistent with prior theory, I find that the magnitude of the allowance is negatively related to future earnings. I also show that this negative relationship is muted by firms that properly record a full allowance in anticipation of a qualifying ownership change (while anticipating higher future income). Once this expectation is controlled for the negative relationship between the allowance and future income is more pronounced. Both of these results provide evidence that these firms are not using the allowance to increase earnings in future periods.

This paper makes several contributions to the existing literature. It is one of the first to specifically consider the accounting disclosures of IPO firms. These firms are characterized by an information set more limited than that of established firms – a condition that introduces greater uncertainty to users of their financial statements. As the deferred tax valuation allowance is often one of the more material accruals on an IPO firm's balance sheet, the results should help users of the IPO financial statements better interpret the information conveyed.

This is also the first paper to consider the Section 382 ownership change limitation as an explanation for the valuation allowance. My results support both the idea that venture-backed IPO firms consider the limitation when recording the accrual, and the importance of weighing statutory explanations unrelated to earnings when evaluating a firm's tax disclosures. Future research should focus on other potential tax laws that could affect financial reporting in a similar manner. This could help investors disentangle the information conveyed in the tax accounts, and potentially enhance the results from prior research.

References

- Allen, E.J. and Raghavan, S. (2012). Are Venture Capital Investments Inefficiently Organized? Quantifying the foregone tax losses generated by startup firms organized as C corporations, *Working Paper*.
- Accounting Standards Codification 740: Tax Provisions (formerly FAS 109).
- Ball, R., & Shivakumar, L. (2008). Earnings Quality at Initial Public Offerings. *Journal of Accounting and Economics*, 324-349.
- Bauman, M., & Das, S. (2004). Stock Market Valuation of Deferred Tax Assets: Evidence from Internet Firms. *Journal of Business Finance & Accounting*, 1223-1260.
- Behn, B., Eaton, T., & Williams J. (1998). The Determinants of the Deferred Tax Allowance under SFAS No. 109. *Accounting Horizons*, 63-78.
- Bradley, D., Bradford, J., Roten, I., & Yi, H. (2001). Venture Capital and IPO Lockup Expiration: An Empirical Analysis. *Journal of Financial Research*, 465-93.
- Brau, J. & Fawcett, S. (2006). Initial Public Offerings: An Analysis of Theory and Practice. *The Journal of Finance*, 399-436
- Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, 99-126.
- Christensen, T., Paik, G., & Stice, E. (2008). Creating a Bigger Bath Using the Deferred Tax Valuation Allowance. *Journal of Business Finance and Accounting*.
- Dhaliwal, D., Kaplan, S., & Weisbrod, E. (2010). The Information Content of Tax Expense for Firms Reporting Losses. *Working Paper*.
- Field, L. C., & Hanka, G. (2001). The Expiration of IPO Share Lockups. *The Journal of Finance*, 471-500.
- Frank, M. M. & Rego, S. O. (2006). Do Managers Use the Valuation Allowance Account to Manage Earnings Around Certain Earnings Targets? *Journal of the American Taxation Association*, 43-65.
- Hanlon, M. & Heitzman, S. (2010). A Review of Tax Research. *Journal of Accounting and Economics*, 127-178.
- Hayn, C. (1995). The Information Content of Losses. *Journal of Accounting and Economics*, 125-153.

IRS Notice 2010-50, Measuring owner shifts for organizations with more than 1 class of stock, IRB 2010-27. (n.d.).

Jung, D.J. & Pulliam, D. (2006). Predictive Ability of the Valuation Allowance for Deferred Tax Assets. *Academy of Accounting and Financial Studies Journal*, 49-70.

Miller, G. S. & Skinner, D. J. (1998). Determinants of the Valuation Allowance for Deferred Tax Assets under SFAS No. 109. *The Accounting Review*, Vol 73, no. 2, 213-233.

Mills, L. F., Newberry, K. J. & Novack, G. F. (2003). How Well do Compustat NOLs identify firms with US Tax Return Loss Carryovers? *Journal of the American Taxation Association* Vol. 25, No 2, 1-17.

Morsfield, S., Tan C. (2006). Do Venture Capitalists Influence the Decision to Manage Earnings in Initial Public Offerings? *The Accounting Review* Vol. 81, No. 5, 1119-1150.

Phillips, J., Pincus, M. & Rego, S. O. (2003). Earnings Management: New Evidence Based on Deferred Tax Expense. *The Accounting Review*, 491-521.

PricewaterhouseCoopers (2009). Guide to Accounting for Income Taxes, National Professional Services Group.

Teoh, S., Wong, T. & Rao, G. (1998a). Are Accruals during Initial Public Offerings Opportunistic?. *Review of Accounting Studies*, 175-208.

Teoh, S., Welch, I. & Wong, T. (1998b). Earnings Management and the Long-Run Market Performance of Initial Public Offerings. *The Journal of Finance*, 1935-1974.

Venkataraman, R., Weber, J. & Willenborg, M. (2008). Litigation Risk, Audit Quality, and Audit Fees: Evidence from Initial Public Offerings. *The Accounting Review*, 1315-1345.

Panel A: Incur NOL in year 1, generate future taxable income, no valuation allowance	Panel B: Return to profitability, initially record allowance, reverse in the future
--	---

35

Figure 1: Effect of an NOL on Book and Tax Income for a Hypothetical Firm (cont.)

<i>Panel C : Losses Continue, no valuation allowance</i>				<i>Panel D : Losses Continue, record valuation allowance</i>			
<i>Income Statement</i>				<i>Per Books</i>			
				Year			
	1	2	3	1	2	3	
<i>Per Books</i>				100	100	100	
Income	100	100	100	(200)	(110)	(110)	
Expense	(200)	(110)	(110)	(100)	(10)	(10)	
Income Before Tax	(100)	(10)	(10)	30	3	3	
Income Tax Benefit/(Expense)	30	3	3	(30)	(3)	(3)	
Net Income	(70)	(7)	(7)	(100)	(10)	(10)	
				Year			
	1	2	3	1	2	3	
<i>Per Tax Return</i>				100	100	100	
Income	100	100	100	(200)	(110)	(110)	
Expense	(200)	(110)	(110)	100	10	10	
NOL Disallowed/(Applied)	100	10	10	-	-	-	
Taxable Income	-	-	-				
NOL Balance	(100)	(110)	(120)	(100)	(110)	(120)	

Figure 1: Effect of an NOL on Book and Tax Income for a Hypothetical Firm (cont.)

<i>Panel E: Return to profitability, but section 382 Limitations apply, record valuation allowance</i>			
	Year		
	1	2	3
<i>Per Books</i>			
Income	100	100	100
Expense	(200)	(50)	(50)
Income Before Tax	(100)	50	50
Income Tax Benefit/(Expense)	30	(15)	(15)
Valuation Allowance	(18)	-	-
Net Income	(88)	35	35
	Year		
	1	2	3
<i>Per Tax Return</i>			
Income	100	100	100
Expense	(200)	(50)	(50)
NOL Disallowed/(Applied)	100	(2)	(2)
Taxable Income	-	48	48
NOL Balance	(100)	(98)	(96)

Note: The above assumes that all expenses are deductible for book and tax purposes and that any losses are financed by additional capital contributions.

Figure 2: Hypothetical timeline of a qualifying ownership change

Timeline of Events

Event #	Date	Equity Event	Type of Equity	# of shares
1	1/1/2003	Initial Capitalization	Common	1,000
2	3/1/2003	Venture Capital Investor	Preferred	650
3	2/1/2007	Public Offering	Common	400
4	8/31/2007	Sale By Venture Capitalists	Common	650

Event 1 - Initial Capitalization

5% S/Hs	# of shares	Testing Date %	Testing Period Low %	Shift in Owner %
Founder	1000	100%	100%	0%
Total	1000	100%	100%	0%

Event 2-Venture Capital Investor

5% S/Hs	# of shares	Testing Date %	Testing Period Low %	Shift in Owner %
Founder	1000	60.6%	60.6%	0.0%
Venture Capitalist	650	39.4%	0.0%	39.4%
Total	1650	100.0%	60.6%	39.4%

Event 3 -Public Offering and Preferred Conversion

5% S/Hs	# of shares	Testing Date %	Testing Period Low %	Shift in Owner %
Founder	1000	48.8%	48.8%	0.0%
Venture Capitalist	650	31.7%	31.7%	0.0%
Public Group 1	400	19.5%	0.0%	19.5%
Total	2050	100.0%	80.5%	19.5%

Event 4 -Sale By Venture Capitalists

5% S/Hs	# of shares	Testing Date %	Testing Period Low %	Shift in Owner %
Founder	1000	48.8%	48.8%	0%
Venture Capitalist	0	0.0%	0.0%	0%
Public Group 1	400	19.5%	0.0%	19.5%
Public Group 2	650	31.7%	0.0%	31.7%
Total	2050	100.0%	48.8%	51.2%

Ownership change of over 50% in a 3 year period, section 382 limitation is now in effect.

Figure 2: Hypothetical timeline of a qualifying ownership change (Continued)

Column headings are defined as follows:

Title	Description
<i>5% S/Hs</i>	Ownership group
<i># of shares</i>	Shares held at the testing date
<i>Testing Date %</i>	Percentage of ownership at the testing date
<i>Testing Period Low %</i>	The lowest percentage owned by the ownership group in the previous three years
<i>Shift in Owner %</i>	Change in ownership interest over the three year testing window. Equal to the difference between the testing date ownership percentage and lowest percentage owned in the three year testing window.

Notes:

- i) The testing period begins on the day the NOL is initially incurred, and then rolls forward until a qualifying change occurs.
- ii) The shift in ownership percentage is based on the difference between the ownership percentage at the testing date, and the lowest ownership percentage at any point in the three year testing window.
- iii) The value of each share is assumed to be equal

Figure 3: Sample income tax footnote

Netsuite, Inc.

	<u>December 31,</u> <u>2005</u>	<u>2006</u>
Deferred tax assets:		
Property and equipment	\$ 268	\$ 192
Deferred revenue	7,126	8,917
Other reserves and accruals	2,229	2,296
Stock options	8,977	14,898
Federal operating loss carryforwards	47,321	52,196
State and foreign net operating loss carryforwards	5,640	6,686
Research and development credits	4,131	5,324
Deferred tax assets	<u>75,692</u>	<u>90,509</u>
Valuation allowance	<u>(75,692)</u>	<u>(90,509)</u>
Net deferred tax assets	<u>\$ —</u>	<u>\$ —</u>

As of December 31, 2006, the Company had approximately \$149.1 million of federal and \$109.1 million of state net operating loss carryforwards available to offset future taxable income, respectively. The federal net operating loss carryforwards expire in varying amounts between 2018 and 2026. The California net operating loss carryforwards expire in varying amounts between 2008 and 2016. The net operating losses include \$1.6 million relating to the tax benefit of stock option exercises which when realized will be recorded as a credit to additional paid-in capital.

The Company also had approximately \$3.6 million of federal and \$2.6 million of state research and development tax credit carryforwards for 2006, and \$58,000 of Manufacturer Investment Credit carryforwards. The federal credits expire in varying amounts between 2019 and 2026. The California research credits do not expire and the Manufacturer Investment Credits for California expire in varying amounts between 2009 and 2013.

The Company's ability to utilize the net operating loss and tax credit carryforwards in the future may be subject to substantial restriction in the event of past or future ownership changes as defined in Section 382 of the Internal Revenue code and similar state tax law.

As a result of continuing losses, management has determined that it is more likely than not that the Company will not realize the benefits of the deferred tax assets and therefore has recorded a valuation allowance to reduce the carrying value of the deferred tax assets to zero.

The Company considers all undistributed earnings of its foreign subsidiaries to be permanently invested in foreign operations. Accordingly, no deferred tax liabilities have been recorded in this regard.

Table 1: Descriptive statistics – full Sample
(Dollar amounts in Millions)

Panel A: Industry Breakdown

2 digit SIC code & description	Percentage of Sample
<i>73- Business Services/Software</i>	0.38
<i>28 - Chemicals & Allied Products</i>	0.18
<i>38 - Analytical Control Instruments</i>	0.12
<i>36 - Electronic Equipment</i>	0.07
<i>48 - Communications</i>	0.05
<i>35 - Industrial & Commercial Machinery</i>	0.05
<i>59 - Miscellaneous Retail</i>	0.03
<i>87 - Engineering, Accounting, Research & Related Services</i>	0.03
<i>80 - Health Services</i>	0.02
<i>Other</i>	0.08

Variable	Mean	Std Dev	Min	Max
Panel B - Financial Characteristics				
<i>Assets_t</i>	64.85	241.01	0.28	4,153.12
<i>INC_t</i>	(0.50)	0.69	(7.54)	0.39
<i>FUTINC</i>	(0.96)	1.24	(6.29)	0.47
<i>Opercf_t</i>	(0.41)	0.59	(3.37)	0.43
<i>RDPres</i>	0.81	0.39	0.00	1.00
<i>RDIntent</i>	0.33	0.38	0.00	2.10
<i>Big5</i>	0.92	0.27	0.00	1.00

Panel C - Deferred Tax Variables

<i>Fullallow_t</i>	0.82	0.38	0.00	1.00
<i>Magallowdta_t</i>	0.89	0.29	0.00	1.00
<i>Magallowassets_t</i>	0.61	0.74	0.00	4.16
<i>NetDTA(DTL)_t</i>	0.01	0.04	(0.09)	0.25
<i>DTA_t</i>	0.63	0.73	0.01	4.16
<i>DTL_t</i>	0.11	0.39	0.00	2.69
<i>NOLAssets_t</i>	0.50	0.64	0.00	3.86
<i>NOLDTA_t</i>	0.73	0.23	0.04	1.00

**Table 1: Descriptive statistics – full sample
(Dollar amounts in Millions)
(Continued)**

Variable	Mean	Std Dev	Min	Max
Panel D - Ownership Variables				
<i>Ownlimit50</i>	0.73	0.44	0.00	1.00
<i>Ownlimit60</i>	0.58	0.49	0.00	1.00
<i>Ownlimit70</i>	0.37	0.48	0.00	1.00
<i>FiveperVC</i>	0.31	0.18	0.00	0.95
<i>FiveperOther</i>	0.07	0.13	0.00	0.98
<i>Soldatipo</i>	0.24	0.10	0.00	0.85

Panel E - Survival Outcomes

Category	Percentage of Sample
<i>Active</i>	0.34
<i>Merged</i>	0.43
<i>Performance</i>	0.21
<i>Violation</i>	0.01

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the appendix.

Table 2
Mean values for the sample partitioned by the recording of a full valuation allowance
(Dollar amounts in millions)

Panel A: Industry Breakdown

<i>2 digit SIC code & description</i>	Percentage of Sample		Diff	P-Value
	No Full Allowance	Full Allowance		
73- Business Services/Software	0.32	0.39	0.08	0.09
28 - Chemicals & Allied Products	0.05	0.21	0.16	0.00
38 - Analytical Control Instruments	0.11	0.12	0.02	0.61
36 - Electronic Equipment	0.05	0.07	0.02	0.36
48 - Communications	0.11	0.04	(0.07)	0.00
35 - Industrial & Commercial Machinery	0.01	0.05	0.04	0.05
59 - Miscellaneous Retail	0.06	0.03	(0.03)	0.09
87 - Engineering, Accounting, Research & Related Services	0.01	0.03	0.01	0.37
80 - Health Services	0.05	0.01	(0.04)	0.00
Other	0.23	0.05	(0.18)	0.00

Variable	Mean Value		Diff	P-Value
	No Full allowance	Full Allowance		
Panel B - Financial Characteristics				
<i>Assets_t</i>	214.30	33.13	(181.17)	0.00
<i>INC_t</i>	(0.05)	(0.60)	(0.55)	0.00
<i>FUTINC</i>	(0.11)	(1.14)	(1.02)	0.00
<i>Opercf_t</i>	(0.01)	(0.50)	(0.49)	0.00
<i>RDPres</i>	0.53	0.87	0.35	0.00
<i>RDIntent</i>	0.11	0.38	0.27	0.00
<i>Big5</i>	0.89	0.93	0.04	0.15
Panel C - Deferred Tax Variables				
<i>Magallowdta_t</i>	0.38	1.00	0.62	0.00
<i>Magallowassets_t</i>	0.11	0.72	0.61	0.00
<i>NetDTA(DTL)_t</i>	0.04	0.00	(0.04)	0.00
<i>DTA_t</i>	0.20	0.72	0.52	0.00
<i>DTL_t</i>	0.50	0.03	(0.47)	0.00
<i>NOLAssets_t</i>	0.14	0.58	0.44	0.00
<i>NOLDTA_t</i>	0.57	0.77	0.20	0.00

Table 2
Mean values for the sample partitioned by the recording of a full valuation allowance
(Dollar amounts in millions)
(Continued)

Variable	Mean Value		Diff	P-Value
	No Full allowance	Full Allowance		
Panel D - Ownership Variables				
Ownlimit50	0.72	0.73	0.01	0.75
Ownlimit60	0.60	0.57	(0.02)	0.59
Ownlimit70	0.37	0.37	(0.00)	0.92
FiveperVC	0.30	0.31	0.01	0.67
FiveperOther	0.07	0.07	0.01	0.42
Soldatipo	0.27	0.24	(0.03)	0.00

Panel E - Survival Outcomes

Category	Percentage of Sample		Diff	P-Value
	No Full allowance	Full Allowance		
<i>Active</i>	0.45	0.31	(0.13)	0.00
<i>Merged</i>	0.41	0.44	0.03	0.52
<i>Performance</i>	0.14	0.23	0.09	0.02
<i>Violation</i>	0.01	0.01	0.01	0.53

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the appendix.

Table 3
Pair-wise correlations
Pearson above the diagonal, Spearman Below

	$Assets_t$	INC_t	$FUTINC$	$Magallowdta_t$	DTL_t	$NOLDTA_t$	$Ownlimit50$
$Assets_t$	1	0.54***	0.34***	-0.31***	0.30***	-0.20***	0.04
INC_t	0.15***	1	0.58***	-0.43***	0.33***	-0.27***	0.04
$FUTINC$	0.13***	0.30***	1	-0.36***	0.25***	-0.24***	0.07*
$Magallowdta_t$	-0.25***	-0.31***	-0.28***	1	-0.67***	0.24***	0.02
DTL_t	0.32***	0.19***	0.18***	-0.51***	1	-0.11***	-0.02
$NOLDTA_t$	-0.12***	-0.21***	-0.20***	0.36***	-0.17***	1	-0.01
$Ownlimit50$	0.00	0.03	0.07**	0.01	0.01	0.00	1

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

Table 4
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance
(Standard errors reported in parentheses)

		Dependent Variable: <i>Magallowdta_t</i>					
		Ownership Threshold					
		50%	60%	70%			
	Predicted Sign	1	2	3	4	5	6
<i>Intercept</i>		0.73*** (0.124)	0.54*** (0.117)	0.56*** (0.114)	0.54*** (0.116)	0.53*** (0.116)	0.55*** (0.115)
<i>DTL_t</i>	-	-0.37*** (0.025)	-0.33*** (0.025)	-0.32*** (0.025)	-0.32*** (0.025)	-0.32*** (0.025)	-0.32*** (0.025)
<i>NOLDTA_t</i>	+		0.33*** (0.047)	0.31*** (0.047)	0.31*** (0.047)	0.31*** (0.047)	0.31*** (0.047)
<i>FUTINC</i>	-			-0.03*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)
<i>Ownlimit</i>	+				0.02 (0.018)	0.04** (0.016)	0.04** (0.016)
N		794	794	794	794	794	794
Adjusted R squared		0.326	0.393	0.404	0.404	0.408	0.407
Industry Controls		yes	yes	yes	yes	yes	yes
Year Controls		yes	yes	yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years *t* & *t*+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 5
Logistic regression results of the determinants of a full valuation allowance
(Standard errors reported in parentheses)

		Dependent Variable: $Fullallow_t$					
		Ownership Threshold					
		50%	60%	70%			
	Predicted Sign	1	2	3	4	5	6
<i>Intercept</i>		-0.29 (0.816)	-2.19*** (0.833)	-1.69* (0.873)	-2.19*** (0.901)	-2.07*** (0.883)	-1.87** (0.908)
<i>DTL_t</i>	-	-4.76*** (0.682)	-4.19*** (0.642)	-3.75*** (0.613)	-3.77*** (0.605)	-3.85*** (0.615)	-3.91*** (0.634)
<i>NOLDTA_t</i>	+		2.88*** (0.482)	2.38*** (0.527)	2.36*** (0.521)	2.33*** (0.526)	2.37*** (0.531)
<i>FUTINC</i>	-			-1.17*** (0.301)	-1.19*** (0.302)	-1.19*** (0.306)	-1.18*** (0.302)
<i>Ownlimit</i>	+				0.46* (0.274)	0.43* (0.262)	0.48*** (0.273)
N		794	794	794	794	794	794
Pseudo R squared		0.301	0.352	0.403	0.406	0.407	0.407
Industry Controls		yes	yes	yes	yes	yes	yes
Year Controls		yes	yes	yes	yes	yes	yes

The above coefficients are from logit regressions. The standard errors (reported in parentheses) are robust.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 6
OLS regression results of the signal strength of the magnitude of the
valuation allowance for accumulated future income
(Standard errors reported in parentheses)

		Dependent Variable: <i>FUTINC</i>			
		Ownership Threshold			
		50%	60%	70%	
Independent Variables	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.90*** (0.155)	0.51*** (0.141)	0.51*** (0.141)	0.52*** (0.141)
<i>INC_t</i>	+	0.32*** (0.079)	0.33*** (0.077)	0.33*** (0.076)	0.33*** (0.077)
<i>Magallowdta_t</i>	-	-0.75*** (0.090)	-0.90*** (0.121)	-0.95*** (0.112)	-0.85*** (0.101)
<i>OWNLIMIT * Magallowdta_t</i>	+		0.18* (0.107)	0.30*** (0.095)	0.24*** (0.090)
N		794	794	794	794
Adj R squared		0.174	0.176	0.185	0.180
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 7
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance - controlling for the presence of R&D expense
(Standard errors reported in parentheses)

		Dependent Variable: <i>Magallowdta_t</i>			
		Ownership Threshold			
		50%	60%	70%	
	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.54*** (0.111)	0.51*** (0.112)	0.49*** '(0.112)	0.52*** (0.110)
<i>DTL_t</i>	-	-0.31*** (0.026)	-0.31*** (0.026)	-0.31*** (0.026)	-0.31*** (0.026)
<i>NOLDTA_t</i>	+	0.31*** (0.047)	0.31*** (0.046)	0.30*** (0.046)	0.31*** (0.046)
<i>FUTINC</i>	-	-0.03*** (0.005)	-0.03*** (0.005)	-0.03*** '(0.005)	-0.03*** (0.005)
<i>Ownlimit</i>	+		0.03 (0.017)	0.04*** (0.016)	0.04*** (0.016)
<i>RDPres</i>	+	0.06** (0.028)	0.06** (0.028)	0.06** (0.028)	0.07** (0.028)
N		794	794	794	794
Adjusted R squared		0.407	0.408	0.412	0.411
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 8
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance - controlling for the magnitude of R&D expense
(Standard errors reported in parentheses)

		Dependent Variable: $Magallowdta_t$			
		Ownership Threshold			
		50%	60%	70%	
	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.56*** (0.114)	0.53*** (0.115)	0.52*** (0.115)	0.54*** (0.114)
<i>DTL_t</i>	-	-0.32*** (0.025)	-0.32*** (0.025)	-0.32*** (0.025)	-0.32*** (0.025)
<i>NOLDTA_t</i>	+	0.31*** (0.047)	0.31*** (0.046)	0.31*** (0.046)	0.31*** (0.046)
<i>FUTINC</i>	-	-0.026*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)
<i>Ownlimit</i>	+		0.02 (0.018)	0.04** (0.016)	0.04** (0.016)
<i>RDInten_t</i>	+	0.05*** (0.017)	0.05*** (0.017)	0.05*** (0.017)	0.05*** (0.017)
N		794	794	794	794
Adjusted R squared		0.406	0.407	0.410	0.409
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 9
OLS regression results of the signal strength of the magnitude of the valuation allowance for
accumulated future income – controlling for the magnitude of R&D expense
(Standard errors reported in parentheses)

		Dependent Variable: <i>FUTINC</i>			
		Ownership Threshold			
		50%	60%	70%	
Independent Variables	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.48*** (0.148)	0.46*** (0.149)	0.46*** (0.148)	0.47*** (0.148)
<i>INC_t</i>	+	0.32*** (0.086)	0.31*** (0.085)	0.31*** (0.083)	0.31*** (0.085)
<i>Magallowdta_t</i>	-	-0.75*** (0.090)	-0.89*** (0.12051)	-0.94*** (0.112)	-0.84*** (0.100)
<i>OWNLIMIT * Magallowdta_t</i>	+		0.18* (0.107)	0.30*** (0.095)	0.25*** (0.089)
<i>RDInten_t</i>	-	-0.03 (0.134)	-0.02 (0.133)	-0.04 (0.132)	-0.04 (0.135)
N		794	794	794	794
Adj R squared		0.173	0.175	0.184	0.180
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 10
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance – controlling for use of a Big 5 auditor
(Standard errors reported in parentheses)

		Dependent Variable: <i>Magallowdta_t</i>			
		Ownership Threshold			
		50%	60%	70%	
	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.53*** (0.119)	0.51*** (0.12)	0.50*** (0.120)	0.52*** (0.119)
<i>DTL_t</i>	-	-0.32*** (0.025)	-0.32*** (0.025)	-0.32*** (0.025)	-0.33*** (0.025)
<i>NOLDTA_t</i>	+	0.31*** (0.047)	0.31*** (0.047)	0.31*** (0.047)	0.31*** (0.047)
<i>FUTINC</i>	-	-0.03*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)
<i>Ownlimit</i>	+		0.02 (0.018)	0.04** (0.016)	0.04** (0.016)
<i>Big5</i>		0.03 (0.04)	0.03 (0.036)	0.03 (0.036)	0.03 (0.036)
N		794	794	794	794
Adjusted R squared		0.404	0.404	0.408	0.407
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 11
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance – controlling for size
(Standard errors reported in parentheses)

		Dependent Variable: $Magallowdta_t$			
		Ownership Threshold			
		50%	60%	70%	
	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.66*** (0.117)	0.63*** (0.118)	0.62*** (0.118)	0.64*** (0.118)
<i>DTL_t</i>	-	-0.31*** (0.025)	-0.31*** (0.026)	-0.31*** (0.026)	-0.31*** (0.025)
<i>NOLDTA_t</i>	+	0.29*** (0.047)	0.29*** (0.047)	0.29*** (0.047)	0.30*** (0.047)
<i>FUTINC</i>	-	-0.02*** (0.005)	-0.02*** (0.005)	-0.03*** (0.005)	-0.03*** (0.005)
<i>Ownlimit</i>	+		0.02 (0.018)	0.04** (0.016)	0.04** (0.016)
<i>Size</i>	-	-0.02** (0.007)	-0.02** (0.008)	-0.02** (0.008)	-0.02** (0.008)
N		794	794	794	794
Adjusted R squared		0.407	0.407	0.411	0.411
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 12
OLS regression results of the signal strength of the magnitude of the
valuation allowance for accumulated future income – controlling for size
(Standard errors reported in parentheses)

		Dependent Variable: <i>FUTINC</i>			
		Ownership Threshold			
		50%	60%	70%	
Independent Variables	Predicted Sign	1	2	3	4
<i>Intercept</i>		-0.09 (0.203)	-0.10 (0.203)	-0.10 (0.202)	-0.10 (0.202)
<i>INC_t</i>	+	0.21*** (0.078)	0.20*** (0.077)	0.21*** (0.075)	0.21*** (0.076)
<i>Magallowdta_t</i>	-	-0.64*** (0.088)	-0.78*** (0.117)	-0.83*** (0.109)	-0.73*** (0.098)
<i>OWNLIMIT * Magallowdta_t</i>	+		0.17 (0.106)	0.30*** (0.094)	0.24*** (0.089)
<i>Size</i>	+	0.16*** (0.040)	0.16*** (0.040)	0.16*** (0.040)	0.16*** (0.040)
N		794	794	794	794
Adj R squared		0.187	0.190	0.198	0.194
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 13
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance – using only ex-ante predictors
(Standard errors reported in parentheses)

		Dependent Variable: $Magallowdta_t$			
		Ownership Threshold			
		50%	60%	70%	
	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.54*** (0.114)	0.52*** (0.116)	0.51*** (0.116)	0.53*** (0.115)
<i>DTL_t</i>	-	-0.33*** (0.025)	-0.33*** (0.025)	-0.33*** (0.025)	-0.33*** (0.025)
<i>NOLDTA_t</i>	+	0.33*** (0.047)	0.33*** (0.047)	0.33*** (0.047)	0.33*** (0.047)
<i>Ownlimit</i>	+		0.02 (0.018)	0.03** (0.016)	0.04** (0.016)
N		794	794	794	794
Adjusted R squared		0.393	0.393	0.395	0.395
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 14
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance – eliminating firms that delist for performance reasons
(Standard errors reported in parentheses)

		Dependent Variable: $Magallowdta_t$			
		Ownership Threshold			
		50%	60%	70%	
	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.58*** (0.130)	0.54*** (0.132)	0.54*** (0.131)	0.57*** (0.130)
<i>DTL_t</i>	-	-0.32*** (0.028)	-0.32*** (0.028)	-0.32*** (0.028)	-0.32*** (0.027)
<i>NOLDTA_t</i>	+	0.29*** (0.052)	0.29*** (0.052)	0.29*** (0.052)	0.29*** (0.052)
<i>FUTINC</i>	-	-0.03*** (0.007)	-0.03*** (0.008)	-0.03*** (0.008)	-0.03*** (0.008)
<i>Ownlimit</i>	+		0.04* (0.022)	0.05** (0.020)	0.06*** (0.019)
N		624	624	624	624
Adjusted R squared		0.396	0.399	0.401	0.403
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis. For this test I further eliminate all firms with a survival outcome coded as 'performance'. This leaves 624 firms remaining for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 15
OLS regression results of the signal strength of the magnitude of the
valuation allowance for accumulated future income – eliminating firms that delist for
performance reasons
(Standard errors reported in parentheses)

		Dependent Variable: <i>FUTINC</i>			
		Ownership Threshold			
		50%	60%	70%	
Independent Variables	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.35** (0.151)	0.32** (0.151)	0.33** (0.150)	0.34** (0.151)
<i>INC_t</i>	+	0.32*** (0.083)	0.308*** (0.080)	0.31*** (0.080)	0.32*** (0.080)
<i>Magallowdta_t</i>	-	-0.54*** (0.086)	-0.72*** (0.126)	-0.71*** (0.109)	-0.62*** (0.097)
<i>OWNLIMIT * Magallowdta_t</i>	+		0.22* (0.113)	0.26*** (0.093)	0.19** (0.086)
N		624	624	624	624
Adj R squared		0.206	0.212	0.217	0.211
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis. For this test I further eliminate all firms with a survival outcome coded as 'performance'. This leaves 624 firms remaining for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 16
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance – using whether a company merged as a measure of the
ownership change
(Standard errors reported in parentheses)

Dependent Variable: $Magallowdta_t$			
	Predicted		
	Sign	1	2
<i>Intercept</i>		0.56*** (0.114)	0.55*** (0.112)
<i>DTL_t</i>	-	-0.32*** (0.025)	-0.32*** (0.024)
<i>NOLDTA_t</i>	+	0.31*** (0.047)	0.31*** (0.047)
<i>FUTINC</i>	-	-0.03*** (0.005)	-0.03*** (0.006)
<i>Merge</i>	+		0.03* (0.017)
N		794	794
Adjusted R squared		0.404	0.406
Industry Controls		yes	yes
Year Controls		yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 17
OLS regression results of the signal strength of the magnitude of the
valuation allowance for accumulated future income – using whether a company merged as a
measure of the ownership change
(Standard errors reported in parentheses)

Dependent Variable: <i>FUTINC</i>			
Independent Variables	Predicted		
	Sign	1	2
<i>Intercept</i>		0.90*** (0.155)	0.46*** (0.147)
<i>INC_t</i>	+	0.32*** (0.079)	0.33*** (0.079)
<i>Magallowdta_t</i>	-	-0.75*** (0.090)	-1.00*** (0.102)
<i>Merge * Magallowdta_t</i>	+		0.63*** (0.090)
N		794	794
Adj R squared		0.174	0.225
Industry Controls		yes	yes
Year Controls		yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 18
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance – using quintile ranks
(Standard errors reported in parentheses)

Dependent Variable: $Magallowdta_t$					
		Ownership Threshold			
		50%	60%	70%	
Predicted					
Sign		1	2	3	4
<i>Intercept</i>		0.59*** (0.083)	0.57*** (0.084)	0.57*** (0.084)	0.59*** (0.083)
<i>DTL_t</i>	-	-0.63*** (0.031)	-0.63*** (0.031)	-0.63*** (0.031)	-0.63*** (0.031)
<i>NOLDTA_t</i>	+	0.11*** (0.025)	0.11*** (0.024)	0.11*** (0.024)	0.11*** (0.025)
<i>FUTINC</i>	-	-0.12*** (0.027)	-0.13*** (0.027)	-0.13*** (0.027)	-0.13*** (0.027)
<i>Ownlimit</i>	+		0.02 (0.015)	0.03** (0.013)	0.02 (0.013)
N		794	794	794	794
Adjusted R squared		0.507	0.508	0.510	0.508
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & $t+1$ available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis. The continuous variables are separated into quintile ranks and scaled to fall between zero and one.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 19
OLS regression results of the signal strength of the magnitude of the
valuation allowance for accumulated future income – using quintile ranks
(Standard errors reported in parentheses)

Dependent Variable: <i>FUTINC</i>					
		Ownership Threshold			
		50%	60%	70%	
Independent Variables	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.44*** (0.065)	0.43*** (0.065)	0.44*** (0.064)	0.44*** (0.063)
<i>INC_t</i>	+	0.44*** (0.033)	0.44*** (0.033)	0.44*** (0.033)	0.44*** (0.033)
<i>Magallowdta_t</i>	-	-0.11*** (0.033)	-0.15*** (0.043)	-0.14*** (0.039)	-0.13*** (0.035)
<i>OWNLIMIT * Magallowdta_t</i>	+		0.06 (0.038)	0.06* (0.033)	0.07* (0.034)
N		794	794	794	794
Adj R squared		0.383	0.384	0.385	0.385
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all Initial Public Offerings from 1996-2008 are obtained from the SDC database. All firms that are not identified as being venture backed are then removed leaving 1420 firms for evaluation. I then eliminate firms with exclusively foreign operations; are missing required deferred tax disclosures; or did not have an accumulated NOL in the evaluation year. This leaves 907 firms that reported an accumulated NOL in the last audited fiscal year prior to IPO. I hand collect all information related to the deferred tax and ownership variables from the individual firms' form S-1. For inclusion in the sample I require that the firm have item NI and AT in years t & t+1 available in COMPUSTAT. This leaves 794 observations with sufficient data for analysis. The continuous variables are separated into quintile ranks and scaled to fall between zero and one.

Variables are defined in the Appendix.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 20
Descriptive statistics – non-VC backed IPO sample
(Dollar amounts in millions)

Panel A: Industry Breakdown

1 digit SIC code & description	Percentage of Sample
<i>7 - Services</i>	0.29
<i>3 - Manufacturing - electronics</i>	0.23
<i>4 - Transportation</i>	0.11
<i>2 - Manufacturing - textiles</i>	0.10
<i>5 - Wholesale Trade</i>	0.09
<i>1 - Mining</i>	0.07
<i>6 - Finance, Insurance and Real Estate</i>	0.05
<i>8 - Health Services</i>	0.03

Variable	Mean	Std Dev	Min	Max
Panel B - Financial Characteristics				
<i>Assets_t</i>	672.83	68.33	0.02	13,591.71
<i>INC_t</i>	(0.62)	(0.02)	(23.91)	0.32
<i>FUTINC</i>	(0.84)	(0.12)	(9.11)	0.65
<i>RDPres</i>	0.52	1.00	0.00	1.00
<i>RDIntent</i>	0.25	0.00	0.00	10.46
Panel C - Deferred Tax Variables				
<i>Fullallow_t</i>	0.47	0.00	0.00	1.00
<i>Magallowdta_t</i>	0.57	0.72	0.00	1.00
<i>Magallowassets_t</i>	0.53	0.03	0.00	14.76
<i>NetDTA(DTL)_t</i>	(0.00)	0.00	(0.24)	0.33
<i>DTA_t</i>	0.58	0.10	0.00	14.76
<i>DTL_t</i>	1.14	0.13	0.00	33.80
<i>NOLAssets_t</i>	0.48	0.04	0.00	13.03
<i>NOLDTA_t</i>	0.59	0.67	0.00	1.00

Table 20
Descriptive statistics – non-VC backed IPO sample
(Dollar amounts in millions)
(Continued)

Panel D - Survival Outcomes

Category	Percentage of Sample
<i>Active</i>	0.34
<i>Merged</i>	0.32
<i>Performance</i>	0.32
<i>Violation</i>	0.01

A list of all initial public offerings from 1996-2008 is obtained from SDC, all firms identified as having received venture capital financing are eliminated from the sample. This leaves 3,171 offerings. I eliminate all financial (SIC code between 6000 and 6999) firms. I then use the CUSIP to match the remaining 2,137 firms to COMPUSTAT. 101 firms are unable to be matched, leaving 2,036 firms for evaluation. I randomly select a sample of 256 firms and collect the relevant deferred tax information from the footnote. Of this sample 44 pass-through firms are eliminated, as well as 94 who did not report a NOL in the last audited fiscal year prior to IPO. The final sample is composed of 118 non-VC backed IPO firms who conducted their initial public offering between 1996 and 2008.

Variables are defined in appendix A.

Table 21
Mean values for the non-VC backed IPO sample partitioned by the recording of a full valuation allowance
(Dollar amounts in millions)

Panel A: Industry Breakdown

<i>1 digit SIC code & description</i>	Percentage of Sample		Diff	P-Value
	No Full Allowance	Full Allowance		
7 - Services	0.19	0.40	0.21	0.01
3 - Manufacturing - electronics	0.24	0.22	(0.02)	0.799
4 - Transportation	0.11	0.11	(0.00)	0.97
2 - Manufacturing - textiles	0.08	0.13	0.05	0.39
5 - Wholesale Trade	0.11	0.07	(0.04)	0.48
1 - Mining	0.11	0.02	(0.09)	0.05
6 - Finance, Insurance and Real Estate	0.06	0.04	(0.03)	0.51
8 - Health Services	0.03	0.02	(0.01)	0.64

Variable	Mean Value		Diff	P-Value
	No Full allowance	Full Allowance		
Panel B - Financial Characteristics				
<i>Assets_t</i>	1,188.62	82.01	1,106.61	0.00
<i>INC_t</i>	0.02	(1.35)	1.37	0.00
<i>FUTINC</i>	0.02	(1.84)	1.86	0.00
<i>RDPres</i>	0.44	0.60	(0.16)	0.09
<i>RDIntent</i>	0.03	0.50	(0.47)	0.02
Panel C - Deferred Tax Variables				
<i>Magallowdta_t</i>	0.25	0.94	(0.69)	0.00
<i>Magallowassets_t</i>	0.05	1.09	(1.04)	0.00
<i>NetDTA(DTL)_t</i>	(0.01)	0.00	(0.01)	0.54
<i>DTA_t</i>	0.10	1.14	(1.03)	0.00
<i>DTL_t</i>	2.02	0.10	1.92	0.00
<i>NOLAssets_t</i>	0.07	0.96	(0.89)	0.00
<i>NOLDTA_t</i>	0.43	0.78	(0.35)	0.00

Table 21
Mean values for the non-VC backed IPO sample partitioned by the recording of a full
valuation allowance
(Dollar amounts in millions)
(Continued)

Panel E - Survival Outcomes

Category	Percentage of Sample		Diff	P-Value
	No Full allowance	Full Allowance		
<i>Active</i>	0.49	0.16	0.33	0.00
<i>Merged</i>	0.32	0.33	(0.01)	0.91
<i>Performance</i>	0.17	0.49	(0.32)	0.00
<i>Violation</i>	0.00	0.02	(0.02)	0.29

A list of all initial public offerings from 1996-2008 is obtained from SDC, all firms identified as having received venture capital financing are eliminated from the sample. This leaves 3,171 offerings. I eliminate all financial (SIC code between 6000 and 6999) firms. I then use the CUSIP to match the remaining 2,137 firms to COMPUSTAT. 101 firms are unable to be matched, leaving 2,036 firms for evaluation. I randomly select a sample of 256 firms and collect the relevant deferred tax information from the footnote. Of this sample 44 pass-through firms are eliminated, as well as 94 who did not report a NOL in the last audited fiscal year prior to IPO. The final sample is composed of 118 non-VC backed IPO firms who conducted their initial public offering between 1996 and 2008.

Variables are defined in appendix A.

Table 22
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance – non-VC backed IPO sample
(Standard errors reported in parentheses)

Dependent Variable: $Magallowdta_t$				
	Predicted			
	Sign	1	2	3
<i>Intercept</i>		0.74*** (0.238)	0.51** (0.217)	0.46*** (0.166)
<i>DTL_t</i>	-	-0.04** (0.015)	-0.04*** (0.012)	-0.03*** (0.011)
<i>NOLDTA_t</i>	+		0.66*** (0.095)	0.59*** (0.101)
<i>FUTINC</i>	-			-0.04 (0.026)
N		118	118	118
Adjusted R squared		0.099	0.339	0.358
Industry Controls		yes	yes	yes
Year Controls		yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all initial public offerings from 1996-2008 is obtained from SDC, all firms identified as having received venture capital financing are eliminated from the sample. This leaves 3,171 offerings. I eliminate all financial (SIC code between 6000 and 6999) firms. I then use the CUSIP to match the remaining 2,137 firms to COMPUSTAT. 101 firms are unable to be matched, leaving 2,036 firms for evaluation. I randomly select a sample of 256 firms and collect the relevant deferred tax information from the footnote. Of this sample 44 pass-through firms are eliminated, as well as 94 who did not report a NOL in the last audited fiscal year prior to IPO. The final sample is composed of 118 non-VC backed IPO firms who conducted their initial public offering between 1996 and 2008.

Variables are defined in appendix A.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 23
OLS regression results of the signal strength of the magnitude of the
valuation allowance for accumulated future income – non-VC backed IPO sample
(Standard errors reported in parentheses)

Dependent Variable: <i>FUTINC</i>		
Independent Variables	Predicted Sign	
<i>Intercept</i>		-0.711 (1.175)
<i>INC_t</i>	+	0.27*** (0.071)
<i>Magallowdta_t</i>	-	-1.07*** (0.296)
N		118
Adj R squared		0.226
Industry Controls		yes
Year Controls		yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

A list of all initial public offerings from 1996-2008 is obtained from SDC, all firms identified as having received venture capital financing are eliminated from the sample. This leaves 3,171 offerings. I eliminate all financial (SIC code between 6000 and 6999) firms. I then use the CUSIP to match the remaining 2,137 firms to COMPUSTAT. 101 firms are unable to be matched, leaving 2,036 firms for evaluation. I randomly select a sample of 256 firms and collect the relevant deferred tax information from the footnote. Of this sample 44 pass-through firms are eliminated, as well as 94 who did not report a NOL in the last audited fiscal year prior to IPO. The final sample is composed of 118 non-VC backed IPO firms who conducted their initial public offering between 1996 and 2008.

Variables are defined in appendix A.

I include 1 digit SIC industry controls, and controls for the evaluation year (the last audited fiscal year prior to IPO).

Table 24: Descriptive statistics – non-IPO sample
(Dollar amounts in millions)

Panel A: Industry Breakdown

1 digit SIC code & description	Percentage of Sample
3 - Manufacturing - electronics	0.36
2 - Manufacturing - textiles	0.27
7 - Services	0.12
4 - Transportation	0.06
1 - Mining	0.05
5 - Wholesale Trade	0.05
6 - Finance, Insurance and Real Estate	0.04
8 - Health Services	0.03

Variable	Mean	Std Dev	Min	Max
Panel B - Financial Characteristics				
$Assets_t$	3,473.64	10,136.16	0.51	89,848.50
$PASTINC$	(0.45)	1.64	(11.72)	0.86
INC_t	(0.15)	0.68	(4.51)	1.36
$FUTINC$	(0.38)	1.58	(10.76)	0.82
$RDPres$	0.67	0.47	0.00	1.00
$RDIntent$	0.09	0.16	0.00	0.91
Panel C - Deferred Tax Variables				
$Fullallow_t$	0.34	0.47	0.00	1.00
$Magallowdta_t$	0.57	0.40	0.00	1.05
$Magallowassets_t$	0.68	1.95	0.00	17.60
$NetDTA(DTL)_t$	0.01	0.06	(0.21)	0.36
DTA_t	0.74	2.05	0.00	21.13
DTL_t	0.76	2.77	0.00	44.15
$NOLAssets_t$	0.57	1.79	0.00	20.41
$NOLDTA_t$	0.51	0.30	0.00	1.00

Table 24: Descriptive statistics – non-IPO sample
(Dollar amounts in millions)
(continued)

Variable	Mean	Std Dev	Min	Max
<i>Panel D - Ownership Variables</i>				
<i>Ownlimit50</i>	0.23	0.42	0.00	1.00
<i>Ownlimit60</i>	0.15	0.35	0.00	1.00
<i>Ownlimit70</i>	0.15	0.35	0.00	1.00
<i>Fiveperown</i>	0.33	0.24	0.00	1.00

Panel E - Survival Outcomes

Category	Percentage
<i>Active</i>	0.46
<i>Merged</i>	0.25
<i>Exchanged</i>	0.03
<i>Performance</i>	0.27

I identify all firms in COMPUSTAT with a December 2003 fiscal year-end - 7,793 firms. I then identify the 2,327 firms (29.8% of the total) that are shown to have an accumulated net operating loss (item TLCF>0). I next use the NOL firms' CIK number to identify their 10-K filings using the DIRECTEDGAR search software. I then use the DIRECTEDGAR table extraction tool to pull the firms' deferred tax footnote for evaluation. For the first 347 firms with the extracted note, I hand-collect their gross deferred tax asset, gross deferred tax liability, valuation allowance, and the portion of the deferred tax asset attributable to the net operating loss. For final inclusion in the sample, I require that all firms have non-missing current period, next period, and prior period income (COMPUSTAT item NI) and ending assets (item AT). In addition, I eliminate all firms that did not have sufficient disclosures to hand-collect the required deferred tax variables, or the 5% beneficial ownership information. This leaves 300 firms with sufficient information for testing. The ownership information is collected from the 2003 proxy statement.

Variables are defined in appendix A.

Table 25
Mean values for the non-IPO sample partitioned by the recording of a full valuation allowance
(Dollar amounts in millions)

Panel A: Industry Breakdown

<i>1 digit SIC code & description</i>	Percentage of Sample		Diff	P-Value
	No Full Allowance	Full Allowance		
3 - Manufacturing - electronics	0.37	0.33	0.04	0.55
2 - Manufacturing - textiles	0.23	0.34	(0.12)	0.0316
7 - Services	0.11	0.15	(0.04)	0.37
4 - Transportation	0.08	0.02	0.06	0.05
1 - Mining	0.06	0.04	0.02	0.44
5 - Wholesale Trade	0.05	0.06	(0.01)	0.76
6 - Finance, Insurance and Real Estate	0.06	0.00	0.06	0.01
8 - Health Services	0.02	0.05	(0.03)	0.17

Variable	Mean Value			P-Value
	No Full allowance	Full Allowance	Diff	
Panel B - Financial Characteristics				
$Assets_t$	5,175.75	169.56	5,006.19	0.00
$PASTINC$	(0.01)	(1.32)	1.32	0.00
INC_t	0.04	(0.50)	0.54	0.00
$FUTINC$	0.05	(1.22)	1.26	0.00
$RDPres$	0.59	0.83	(0.24)	0.00
$RDIntent$	0.03	0.19	(0.15)	0.00
Panel C - Deferred Tax Variables				
$Magallowdta_t$	0.36	1.00	(0.64)	0.00
$Magallowassets_t$	0.07	1.85	(1.78)	0.00
$NetDTA(DTL)_t$	0.01	0.00	0.01	0.17
DTA_t	0.13	1.91	(1.77)	0.00
DTL_t	1.13	0.06	1.07	0.00
$NOLAssets_t$	0.07	1.55	(1.48)	0.00
$NOLDTA_t$	0.39	0.74	(0.35)	0.00

Table 25
Mean values for the non-IPO sample partitioned by the recording of a full valuation allowance
(Dollar amounts in millions)
(Continued)

	Mean Value			
Variable	No Full allowance	Full Allowance	Diff	P-Value
Panel D - Ownership Variables				
<i>Ownlimit50</i>	0.18	0.33	(0.16)	0.00
<i>Ownlimit60</i>	0.13	0.19	(0.06)	0.17
<i>Ownlimit70</i>	0.13	0.19	(0.06)	0.17
<i>Fiveperowner</i>	0.31	0.37	(0.06)	0.03
Panel E - Survival Outcomes				
	Percentage of Sample			
Category	No Full allowance	Full Allowance	Diff	P-Value
<i>Active</i>	0.55	0.27	0.28	0.00
<i>Merged</i>	0.28	0.19	0.09	0.08
<i>Exchanged</i>	0.04	0.01	0.03	0.19
<i>Performance</i>	0.14	0.53	(0.39)	0.00

I identify all firms in COMPUSTAT with a December 2003 fiscal year-end - 7,793 firms. I then identify the 2,327 firms (29.8% of the total) that are shown to have an accumulated net operating loss (item TLCF>0). I next use the NOL firms' CIK number to identify their 10-K filings using the DIRECTEDGAR search software. I then use the DIRECTEDGAR table extraction tool to pull the firms' deferred tax footnote for evaluation. For the first 347 firms with the extracted note, I hand-collect their gross deferred tax asset, gross deferred tax liability, valuation allowance, and the portion of the deferred tax asset attributable to the net operating loss. For final inclusion in the sample, I require that all firms have non-missing current period, next period, and prior period income (COMPUSTAT item NI) and ending assets (item AT). In addition, I eliminate all firms that did not have sufficient disclosures to hand-collect the required deferred tax variables, or the 5% beneficial ownership information. This leaves 300 firms with sufficient information for testing. The ownership information is collected from the 2003 proxy statement.

Variables are defined in appendix A.

Table 26
OLS regression results of the determinants of the magnitude of the
deferred tax valuation allowance – non-IPO sample
(Standard errors reported in parentheses)

		Dependent Variable: <i>Magallowdta_t</i>						
		Ownership Threshold						
		50%	60%	70%				
	Predicted Sign	1	2	3	4	5	6	7
<i>Intercept</i>		0.38*** (0.062)	0.41*** (0.062)	0.10*** (0.059)	0.11*** (0.058)	0.09*** (0.059)	0.10*** (0.059)	0.09* (0.0587)
<i>PASTINC</i>	-	-0.08*** (0.014)	-0.07*** (0.013)	-0.036*** (0.009)	-0.02** (0.008)	-0.02* (0.008)	-0.02** (0.008)	-0.02** (0.008)
<i>DTL_t</i>	-		-0.03* (0.017)	-0.02 (0.013)	-0.02 (0.012)	-0.02 (0.012)	-0.02 (0.012)	-0.02 (0.012)
<i>NOLDTA_t</i>	+			0.71*** (0.063)	0.69*** (0.064)	0.67*** (0.064)	0.69*** (0.064)	0.69*** (0.064)
<i>FUTINC</i>	-				-0.04*** (0.010)	-0.04*** (0.010)	-0.04*** (0.010)	-0.04*** (0.010)
<i>Ownlimit</i>	+					0.13*** (0.040)	0.11** (0.047)	0.11** (0.047)
N		300	300	300	300	300	300	300
Adjusted R squared		0.104	0.136	0.384	0.397	0.412	0.405	0.405
Industry Controls		yes	yes	yes	yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

I identify all firms in COMPUSTAT with a December 2003 fiscal year-end - 7,793 firms. I then identify the 2,327 firms (29.8% of the total) that are shown to have an accumulated net operating loss (item TLCF>0). I next use the NOL firms' CIK number to identify their 10-K filings using the

DIRECTEDGAR search software. I then use the DIRECTEDGAR table extraction tool to pull the firms' deferred tax footnote for evaluation. For the first 347 firms with the extracted note, I hand-collect their gross deferred tax asset, gross deferred tax liability, valuation allowance, and the portion of the deferred tax asset attributable to the net operating loss. For final inclusion in the sample, I require that all firms have non-missing current period, next period, and prior period income (COMPUSTAT item NI) and ending assets (item AT). In addition, I eliminate all firms that did not have sufficient disclosures to hand-collect the required deferred tax variables, or the 5% beneficial ownership information. This leaves 300 firms with sufficient information for testing. The ownership information is collected from the 2003 proxy statement.

Variables are defined in appendix A.

I include 1 digit SIC industry controls.

Table 27
OLS regression results of the signal strength of the magnitude of the
valuation allowance for accumulated future income – non- IPO sample
(Standard errors reported in parentheses)

		Dependent Variable: <i>FUTINC</i>			
		Ownership Threshold			
		50%	60%	70%	
Independent Variables	Predicted Sign	1	2	3	4
<i>Intercept</i>		0.20** (0.102)	0.25*** (0.115)	0.23** (0.112)	0.23** (0.112)
<i>INC_t</i>	+	1.71*** (0.234)	1.71*** (0.234)	1.71*** (0.237)	1.71*** (0.237)
<i>Magallowdta_t</i>	-	-0.39*** (0.134)	-0.52*** (0.174)	-0.44*** (0.158)	-0.44*** (0.158)
<i>OWNLIMIT * Magallowdta_t</i>	+		0.37 (0.236)	0.25 (0.189)	0.25 (0.188)
N		300	300	300	300
Adj R squared		0.619	0.623	0.619	0.619
Industry Controls		yes	yes	yes	yes
Year Controls		yes	yes	yes	yes

The above coefficients are from pooled OLS regressions. The standard errors (reported in parentheses) are white robust standard errors.

***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

I identify all firms in COMPUSTAT with a December 2003 fiscal year-end - 7,793 firms. I then identify the 2,327 firms (29.8% of the total) that are shown to have an accumulated net operating loss (item TLCF>0). I next use the NOL firms' CIK number to identify their 10-K filings using the DIRECTEDGAR search software. I then use the DIRECTEDGAR table extraction tool to pull the firms' deferred tax footnote for evaluation. For the first 347 firms with the extracted note, I hand-collect their gross deferred tax asset, gross deferred tax liability, valuation allowance, and the portion of the deferred tax asset attributable to the net operating loss. For final inclusion in the sample, I require that all firms have non-missing current period, next period, and prior period income (COMPUSTAT item NI) and ending assets (item AT). In addition, I eliminate all firms that did not have sufficient disclosures to hand-collect the required deferred tax variables, or the 5% beneficial ownership information. This leaves 300 firms with sufficient information for testing. The ownership information is collected from the 2003 proxy statement.

Variables are defined in appendix A.

I include 1 digit SIC industry controls.

APPENDIX A

Variable Definitions

Variable	Definition
<i>Active</i>	= Delisting code (DLSTCD) from the CRSP delisting database as of 12/31/2010 falls in the range of 100-199
<i>Assets_t</i>	= Total Assets at the end of the year (COMPUSTAT item AT)
<i>Big5</i>	= Indicator variable equal to 1 if the audit is conducted by a Big 5 auditor (AUI = 1,4,5,6 or 7) and zero otherwise
<i>DTA_t</i>	= Gross Deferred tax Asset/ <i>Assets_t</i>
<i>DTL_t</i>	= Gross Deferred tax Liability/ <i>Assets_t</i>
<i>Exchanged</i>	= Delisting code (DLSTCD) from the CRSP delisting database as of 12/31/2010 falls in the range of 300-399
<i>FiveperOther</i>	= The percentage of the firm owned by non-venture capital, institutional owners with a greater than 5% interest after the conclusion of the IPO
<i>Fiveperowner</i>	= The percentage of the firm owned by all 5% owners from the 2003 proxy statement.
<i>FiveperVC</i>	= The percentage of the firm owned by venture capital shareholders with a greater than 5% interest after the conclusion of the IPO
<i>Fullallow_t</i>	= Indicator variable equal to 1 if the firm records a valuation allowance fully valuing out the deferred tax asset and zero otherwise
<i>FUTINC</i>	= the sum of <i>INC_{t+k}</i> from k=1 to 3
<i>INC_t</i>	= Net Income (NI) in year t/ <i>Assets_t</i>
<i>Magallowassets_t</i>	= Magnitude of the deferred tax valuation allowance at time t/ <i>Assets_t</i>
<i>Magallowdta_t</i>	= Magnitude of the deferred tax valuation allowance at time t/(<i>DTA_t</i> - <i>DTL_t</i>) if the allowance is applied against the net deferred tax asset. Otherwise, equal to the Magnitude of the deferred tax valuation allowance at time t/ <i>DTA_t</i> if the allowance is applied directly against the gross deferred tax asset
<i>Merged</i>	= Delisting code (DLSTCD) from the CRSP delisting database as of 12/31/2010 falls in the range of 200-299
<i>NetDTA(DTL)_t</i>	= (<i>DTA_t</i> - <i>DTL_t</i> - Valuation Allowance)/ <i>Assets_t</i>
<i>NOLAssets_t</i>	= Deferred tax benefit from NOL carry-forward/ <i>Assets_t</i>
<i>NOLDTA_t</i>	= Deferred tax benefit from NOL carry-forward/ <i>DTA_t</i>
<i>Opercf_t</i>	= Operating cash flow (OANCF)/ <i>Assets_t</i>
<i>OwnlimitXX</i>	= Indicator variable equal to 1 if the firm is predicted to undergo a qualifying ownership change as defined in IRC section 382 and zero otherwise. As firm is defined as undergoing a qualifying change if <i>FiveperVC</i> + <i>FiveperOther</i> + <i>Soldatipo</i> is greater than the threshold amount XX (50%, 60%, 705)
<i>PASTINC</i>	= the sum of <i>INC_{t-k}</i> from k = 1 to 2
<i>Performance</i>	= Delisting code (DLSTCD) from the CRSP delisting database as of 12/31/2010 falls in the range of 520-585
<i>Size</i>	= Log of ending total assets (AT)
<i>Violation</i>	= Delisting code (DLSTCD) from the CRSP delisting database as of 12/31/2010 falls in the range of 585-599
<i>RDInten_t</i>	= R&D Expense (XRD)/ <i>Assets_t</i>
<i>RDPres</i>	= Indicator variable equal to 1 if a firm has R&D expense (XRD) > zero and 0 otherwise. R&D expense is set to zero for firms with XRD = 'missing'
<i>Soldatipo</i>	= The percentage of outstanding common stock sold through the initial public offering

To mitigate the effect of outliers *Assets_t*, *DTA_t*, *DTL_t*, *FUTINC*, *INC_t*, *Magallowassets_t*, *Magallowdta_t*, *Net(DTA(DTL))_t*, *NOLAssets_t*, *NOLDTA_t*, *Opercf_t*, *PASTINC*, and *RDInten_t* are all winsorized at the 1% and 99% levels.