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Why do Venture Capital Funds Burn Research and Development Deductions?”

Calvin H. Johnson, University of Texas at Austin

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February 24, 2009

Dear Articles Editors:

I submit my manuscript, “Why do Venture Capital Funds Burn Research and Development Deductions?” for the consideration of the new board for publication.

Venture capital funds form a separate corporation for each venture they support. The separate incorporation destroys much of the value that the funds could achieve from deducting research and development costs incurred by the ventures. The resulting taxes are draconian, sometimes confiscatory. The article looks carefully at the justifications offered for chosen structures in the literature and by interviews of experts in the field, and concludes that none of the justifications work. The willingness of sophisticated funds to burn their R&D deductions is a serious anomaly. The continuing puzzle as to why the deduction-destroying structure is used makes it plausible that the fittest structures do not always inevitably survive.

My cv. updated frequently can be found at http://www.utexas.edu/law/faculty/cvs/chj7107_cv.pdf
I write frequently on current tax issues.

I am at your service when I can help.

Sincerely yours,

Calvin H. Johnson
Andrews & Kurth Centennial Professor of Law
Why do Venture Capital Funds Burn Research and Development Deductions?

Calvin H. Johnson*

Abstract

Venture capital funds form a separate corporation for each venture that they support, within their portfolio of diverse ventures. The separate incorporation reduces the tax value that could be achieved from deducting research and development costs. The resulting taxes are draconian, sometimes confiscatory. If R&D deductions were used optimally, taxable investors could achieve a tax regime that does not reduce their pretax return, and taxable investors would drive tax-exempt investors out of the funds. If capital must come from tax-exempt investors, the funds should still be trying to use the R&D deductions against taxable income of the successful ventures. Tax exempt investors, in event, do not justify the draconian taxes, the VC funds bring upon themselves by their structure.

The justifications offered for separate incorporation do not survive scrutiny. It is not necessary to incorporate before an initial public offering or before the fund’s full R&D deductions have been used. Inertia and the EBIDTA measurement of success are not plausible explanations given the size of the tax values that are lost. Tax planning to achieve employee capital gain increases total tax paid to the government, once the venture level effects are considered. Stock options are inefficient means of compensation

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* Professor of Law University of Texas. I thank the participants at workshops at Northwestern Law School, Michigan Law School and University of Texas Law School for wonderfully stimulating comments and conversations in reaction to prior drafts. I want to thank Joseph Bartlett, Stanley Blend, D. Forrest Brumbaugh, Mike Cook, Dennis Drapkin, Tom Evans, Brian Fenske, Martin Ginsburg, Tom Klein, Matthew Lyons, Bill Morrow, Ed Rogers, and Bill Volk for answering questions, and providing an education in venture capital funds. None of the attitudes, views or errors of this paper can be fairly attributed to any one who provided help.
because the time-value-of-money cost to the employer is so high and because options induce managers to impose too much risk on the venture. Partnership options in an unincorporated entity, moreover, could imitate stock if that were an advantage.

A possible explanation is that VC funds are attempting to manage earnings statements issued to the stock markets. R&D deductions would be accounting losses. R&D expenses, however, do not seem to suppress stock prices significantly and may in fact lead to overvaluation by the markets. If the funds are giving up valuable deductions to manipulate stock prices, they are probably not succeeding in the manipulation. Even the best of the surviving explanations, accordingly, leaves the question as to why the VC funds incorporate each venture separately as an anomaly.

The willingness of sophisticated funds to burn their R&D deductions undercuts the arguments that R&D needs subsidy, better than ordinary income tax. The continuing puzzle as to why the deduction-destroying structure is used makes it plausible that the fittest structure does not always inevitably survive.

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Summary
Why do Venture Capital Funds Burn Research and Development Deductions?

Venture capital ("VC") funds have developed a structure that destroys much of the accessible value of deducting research and development ("R&D") expenditures. The ability to "expense" R&D investments, that is, to deduct them immediately, is a substantial advantage to taxpaying investors. The deduction is worth $35 per hundred dollars invested and if the R&D investment is wise within an ordinary range, then the $35 is available without losing the $100. Indeed the ability to deduct an investment immediately is a privilege ordinary as valuable as not paying any tax on the profit from the investment.

VC funds waste the R&D deductions, however, by incorporating each of the ventures in their portfolio into a separate corporation. Separate incorporation traps the R&D deductions for each venture inside a corporation just starting up that does not have any income against which to use its R&D deductions. The R&D deductions are at least delayed until the venture has some revenue. When ownership of a venture changes, the deductions are reduced in value, sometimes drastically. When a risky venture fails, the R&D deductions disappear with it. The delay and frequent loss of the R&D deductions turns what optimally would be an exemption-equivalent privilege into draconian taxes. Under some circumstances, the taxes exceed the profit for the fund as a whole.

The various explanations offered for the burning of the R&D deductions are not very plausible once they are examined with care. A successful venture does not need to be a corporation until it is ready to go public. The wasted benefits are too large to be explained by inertia, by standardization of the forms or by the EBIDTA measure of
success. The funds are large, so the stakes are large and the transactions would support technical care. Tax planning to achieve employee capital gain of stock increases total tax paid to the government, once the venture level effects are considered. Stock options are an inefficient means of compensation because the time-value-of-money cost to the employer is so high and because options induce managers to impose too much risk on the venture, but if options were an advantage, partnership-equity options in an unincorporated entity could imitate stock options.

A possible explanation is that VC funds are attempting to manage earnings statements issued to the stock markets. R&D deductions are accounting losses. It is not plausible, however, that the market imposes any substantial penalty on expensing of R&D investments or requires firms to avoid the expensing, since many successful ventures including, for example, Amazon, e-Bay, Microsoft, Nike, Coca Cola and the pharmaceutical industry live off investments that are expensed. Government regulation plays no significant role. Once the usual list of suspects is discounted, with careful seriousness, there is little left with any promise of giving a satisfactory explanation of the anomaly.

Fifteen years ago, Professor Joseph Bankman described the separate incorporation of Silicon Valley fund ventures as a suboptimal structure that posed a challenge to those who study tax law.\footnote{Joseph Bankman, \textit{Structure of Silicon Valley Start-Ups}, 41 UCLA L. REV. 1737, 1738, 1768 (1994).} This article bravely takes up the challenge, examines all the arguments offered to justify the structure and fails to find any merit in the offered justifications. The justifications observers give vary a great deal. Different observers cite different factors and wildly different weights to factors when do cite the same factors. Some reasons seem better than others. Still the venture capital funds have
evolved a structure that destroys available value, for expressed reasons that do not seem plausible to me, either alone or in combination. The gate keepers—managers of the largest corporations and institutional investors, the VC fund managers, and the investment bankers who help bring the stock to market—are hard driving, experienced, well-informed and smart. The chosen structures are not ephemeral; they have remained in place for years. Yet in the end the smartest people on earth have evolved and retained a structure with massive amounts of unnecessary waste. I have tried hard to figure why, and failed. None of the arguments offered by the observers or in articles published since the Bankman article stand up. This article is my report of my best, but failed effort to understand why VC funds put each of their ventures into a separate corporation.

When I had completed a draft of this article, I undertook a pilot survey conducting interviews with five very experienced lawyers from prestigious firms who identified themselves as doing primarily venture capital work. Each of the five was an expert who gave me over an hour of his time in conversation structured by the framework of a pilot questionnaire. While the aim of the pilot survey was to prepare the way for larger more formal survey, the pilot convinced me, first, that finding numbers from the conversations would require many arbitrary decisions and, secondly, that I would not be able to compute the amount of tax lost or the reasons for the burning of R&D deductions with a

2 The five lawyers volunteered in response to a form email solicitation I sent to 30 lawyers who were partners in major law firms whose listing in Martindale-Hubbell legal directory indicated they worked primarily with venture capital investments. I am extraordinarily appreciative of their time. They were all charming. I could not have afforded their billing rate for the time they gave graciously. When I asked for them to talk to me, I was sure I could solve this puzzle. The conditions of the interview was that I would cite them by name where I thought they should be given public credit for a lovely perception and given them confidentiality where they might be embarrassed. I err on the side of confidentiality, but sometimes from participants in the pilot experts survey.
larger survey of the same kind.\textsuperscript{3} There was within the five experts a very wide variation in explanations given for the choice of separate incorporation and none of the offered explanations convinced me that the separate incorporation was justified on the merits, for reason set out in this paper. Also my colleague, Kate Litvak, selected ventures from high quality funds for the period before 1997, the period from 1997-2001 and the period after 2001 to then present 2007. The results of the sample are included in an appendix to this article.\textsuperscript{4} As with the pilot survey, the Litvak sample convinced me that I would not be able to measure the value of tax lost in a venture capital funds nor find an explanation of why it is done with a larger sample of the same type,.. I quote experts form the “pilot expert survey” and give the results of the Litvak sample, but without any confidence that the results are robust or statistically significant.

I. Choosing Draconian Tax over Generous Subsidy

A. Draconian tax.

1. Model A: Sink-or-swim ventures.

The standard form for a VC fund, rarely breached, is that each venture within a greater overall fund is incorporated as a separate regular or C corporation. A venture capital fund is an investment pool that supports the research and development expenditures of a large number of high-risk, but high-potential, start-up “portfolio” ventures. A single fund might invest in ventures in biomedicine, telecommunications, computer software and new “killer aps” for the internet.

\textsuperscript{3} While I had a questionnaire the participants saw in advance, I invited participants to treat it as a guide to a conversation and they did. Participants often restated what they thought was important in ways that did not fit the questionnaire tabulations. The reasons they gave why each venture incorporated separately are very different from participant to participant, but participants often re-explained the factor given to make it more plausible as to why it was important. Participants were asked to rank order factors and give a percentage weight, and their answers on the rank ordering were commonly not consistent with the percentage weighting. The percentages usually did not total 100%.

\textsuperscript{4} The results of the Litvak sample are included in an Appendix to this article.
A venture capital fund can add considerable value to a promising core technological idea. VC fund managers identify projects that have a potential of making extraordinary returns and filter out unpromising projects. They give business and financial advice to the technological founders of the venture. They push the technology toward commercially viable goals. Before the venture goes public, they can and usually do replace the founding engineers with executives who move institutions. Importantly, the VC funds also put a project into a diversified pool. Pushing high technology ventures through to commercial success is high risk, even with expert help, and most fail. Venture capital investments, accordingly, tend to be made through funds that collect 80-100 different portfolio ventures into a single pool or fund, which modulates the risk. Any single venture within the fund might be like throwing dice to make an eleven, but if when 100 dice are thrown, the outcome is less volatile. The VC managers’ filtering, nurturing and diversification means that outside investors, including large institutions with no special expertise in the underlying engineering merits of the ventures, are willing to place very significant amounts of money into the ventures early in their development.

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6 Thomas Hellman and Manju Purin, Venture Capital and Professionalism of Start-up Firms, 57 J. of Finance 169 (2002) (finding that VC managers help on business plan development, networking for finance, customers and human resources, and are twice as likely as non-VC funds to fire the founder); Xuan Tian, supra note 2 (finding that VC funds give ventures greater access to both stock market and product markets).
Tax law allows R&D expenditures to be treated not as investments but as lost or worthless costs as soon as they are made. The tax treatment is a subsidy, giving corporate investors the potential to recover 35% of their investment immediately by reduction of tax. For deductions to have any value, however, they must be mated with taxable income. Optimally, each venture and the fund as a whole should be organized as “pass-through entities” qualifying to be taxed like partnerships to pass out the R&D deductions to investors who can use the deductions. A tax partnership or pass-through entity calculates income or losses on the venture or entity level, but then gives allocates out the total to the various owners. Under what are called the check-the-box regulations, limited liability companies can qualify as partnerships or pass through entities for tax purposes, so that there is now no need to give up limited liability in order to qualify as a tax partnership.\(^7\)

Separate incorporation of each venture traps the R&D deductions within a start up corporation that will not have any income for a while.\(^8\) The separate incorporation commonly means that a significant fraction of the deductions are lost permanently. The structure can turn what would be reasonable profits before tax into money-losing funds after tax. The VC funds may add value to separate ventures in other ways, but by insisting on separate corporations for each venture, the VC funds destroy available tax value.


\(^8\) Deductions of a subsidiary corporation can be used by other corporations within an affiliated group (IRC §1501 (allowing consolidated returns)), but the parent corporation or other corporate members of the group must own both 80% of the voting stock of the subsidiary and 80% of the stock by value. Corporate investors in a VC fund never own that much of any one portfolio company because VC funds have more than one investor contributing to the pool and because founders and new key employees have stock worth more than 20% of the venture.
With separate incorporation of each venture, tax can turn quite acceptable returns into post-tax losses. Assume, for instance, a simple model in which a slice of a VC fund costing $100 million consists of a pool of ten diverse high-risk, high-tech investments, each absorbing $10 million for its R&D. Assume the $10 million per venture is spent immediately for a combination of ordinary business expenses and research and development expenses that qualify for immediate deduction under section 174 of the Internal Revenue Code. Since the tax treatment of business expenses and R&D expenses is the same, the $10 million covering both, will be consistently described as simply “R&D deductions.” Funding the $100 million slice of the R&D comes from one outside institution.

Assume that the fund invests $100 million overall and gets $140 million back pretax, assumed here to be sufficient for the time of investment and overall risks, and that all of the return comes from one venture. VC-backed ventures are high risk operations even with the backing of a fund. The pilot expert survey estimated a mean that only 7% of ventures made it to a clear profit, that is, an offering of the stock to the public, and Litvak sample found that less than 1% of ventures made it to IPO. Assume in this model that nine of the ten portfolio ventures in fact fail, and that the entire $140 million revenue of the fund comes from the one venture that succeeds. Pretax, in the model,

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9 In the pilot expert survey, the mean estimate of ventures that made to IPO was 7.2% with a standard deviation of 4.4%. The Litvak sample found 0.46% of ventures in her overall sample made it to IPO, with the more mature sample, pre-1997 showing 0.71% of the ventures went to IPO. The older slice of the sample had more time to make it to IPO and also might have operated in a period in which VC funds had less competition.

10 The assumption that the pool returns all of its $140 million at once at a terminal point is a simplifying assumption. Returns of the successful venture will in fact stretch into the future. But if the $140 million represents the net present value of the pretax returns after that point, then the one time payment and a terminal measurement at that point can be viewed as a fair proxy within the model for the whole history of the venture, and it is surely much simpler.
the pool invests $100 million and gets back $140 million for a 40% profit at the terminal point for measurement.

Under the assumptions of the model, tax paid by the successful venture will exceed the profit from the whole fund. The fund will lose money after tax. To have any use, deduction must be mated against taxable income and the ventures do not have any immediate income. Each $10 million of deductible R&D and business expenses is trapped within a separate corporation. Expenses in excess of revenue for a year create net operating losses, which may be carried forward for the next 20 years. The nine ventures in the model that fail, however, never have any revenue use the deductions against.

Since 1986 reform legislation, enacting what is now section 382 of the Code, net operating losses or corporations have been hard to transfer to other owners. If an enterprise changes hands – defined as 50% turnover of ownership within two years – R&D deductions carried over from earlier years are allowed only within a limitation equal to the long-term tax exempt rate (4.5% per year for August 2007) times the price for the venture when it changes hands. Under the section 382 limitations, the tax deductions for past R&D can have a worth not more than about 20% of the value of the purchase price when the venture changes hands. For the ventures that are worthless, the limitations reduce net operating losses to 20% of worthlessness. In sum, when the

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Also note that income is ordinarily measured as interest-like annual percentages, and tax is best measured by how much it reduces the annual interest-like return. The measurement used here is far simpler, just comparing the result at the terminal measurement point to the amount invested. Neither rates of return nor tax rates are annualized in this model.

11 IRC §172
12 IRC §382(g).
14 The limitation on net operating carry forwards under section 382 allows at most an annuity of 35% of 4.5% of the price at which it changes hands, over the 20 year carryforward period allowed by section 172. A 20 year annuity of 4.5%*35% discounted at 4.5% is worth 20.46% of the price paid.
failing ventures disappear, they take their net operating losses with them. Had the ventures been organized as tax partnerships, the losses would have passed through to the VC fund as a whole, and the failure of any one of the ventures would have had any impact on the use of the NOLs arising from that venture’s R&D deductions.

Because of the decision to incorporate each venture separately, moreover, the one successful venture within the pool will be subject to corporate tax, under Code, section 11 on its reported income. The successful venture will be able to use its own R&D deductions but not the R&D of the other failure ventures within the fund. The one successful corporation would report income of $140 million less its own separate $10 million R&D cost carried forward to the years of success. Taxable income would be $140 - $10 million for a total of $130 million. Tax at the section 11 tax rate of 35% on $130 million is $45.5 million. The tax leaves $140 million less $45.5 million tax for an after tax result of $94.5 million. The fund as a whole would have $100 million invested and $94.5 returned after tax. The tax at $45.5 million exceed the profit of $40 million. The chosen structure turned an acceptable 40% pretax return into a situation in which tax exceeded profit.

If we assume higher pretax profits or less risky individual ventures, the tax will not exceed profit, but it will still be high. The $45.5 million tax on $40 million profit was a 114% tax when success was only one in 10 ventures, a 10% success rate. Table 1, following, shows a range of tax rates, all high, with different assumption about profit and success rates. The underlying logic for taxation for all cases is the 35% corporate tax
imposed on the one successful venture, which however can use only its own R&D
deductions.\textsuperscript{15}

<table>
<thead>
<tr>
<th>success rate</th>
<th>profit 40%</th>
<th>profit 60%</th>
<th>profit 100%</th>
<th>profit 200%</th>
</tr>
</thead>
<tbody>
<tr>
<td>45%</td>
<td>83.1%</td>
<td>67.1%</td>
<td>54.3%</td>
<td>44.6%</td>
</tr>
<tr>
<td>35%</td>
<td>91.9%</td>
<td>72.9%</td>
<td>57.8%</td>
<td>46.4%</td>
</tr>
<tr>
<td>25%</td>
<td>100.6%</td>
<td>78.8%</td>
<td>61.3%</td>
<td>48.1%</td>
</tr>
<tr>
<td>15%</td>
<td>109.4%</td>
<td>84.6%</td>
<td>64.8%</td>
<td>49.9%</td>
</tr>
<tr>
<td>5%</td>
<td>118.1%</td>
<td>90.4%</td>
<td>68.3%</td>
<td>51.6%</td>
</tr>
<tr>
<td>1%</td>
<td>121.6%</td>
<td>92.8%</td>
<td>69.7%</td>
<td>52.3%</td>
</tr>
</tbody>
</table>

For higher profits from the overall fund and higher success rates, the tax does not exceed
the profit, but it is still much higher than 35\% tax rate nominally imposed by the Code,
and higher than the zero effective tax rate that expensing ordinarily accomplishes.

If the investors in the VC fund are taxable, moreover, there is also a second level
shareholder tax imposed when the shares of the successful venture is sold. The
shareholder tax is in addition to the venture or corporate level tax underlying Table 1.
VC funds are organized as partnerships so that stock of the successful venture may be
distributed to investors without tax.\textsuperscript{16} Taxable investors, however, will have to pay tax
on the capital gain on the stock of the successful venture when they sell their shares,
typically sometime after an initial public offering (“IPO”) of the successful venture.

Corporate investors, for example, must pay an added 35\% tax on their capital gain from

\textsuperscript{15} The formula underlying Table 1 is
\[35\% \times \frac{1}{1+P-s}/P,\]
where \(P\) is rate of profit, and \(s\) is the rate of successful ventures. The logic of the formula is that taxes are
ordinarily imposed only on gross profit of \(1+P\) less expenses of 1, where 1 is the unit expenses. But in the
VC fund with separate incorporation only the costs of the successful venture is deducted from the gross
profit of \(1+P\), for a taxed amount of \(1+P - s\).

\textsuperscript{16} Had the VC venture been organized as a regular or C corporation, the fund would have recognized gain
on the excess of the value of the successful venture over the $10 million cost of that venture. IRC
§§311(b), 336. IRC §731 has no parallel recognition when the fund is organized as a partnership and it
distributes stock of the successful venture.
sale of the shares of the successful venture. Corporate investors do pay lower rates on dividends, but the successful venture will usually accumulate earnings when the corporate investors would like to see their return. Corporate investors can avoid the second level tax on subsidiaries in which they own more than 80% of the stock, but in VC funds, no one investor institution owns such a large percent of any venture. In computing the shareholder level tax, it is reasonable to create a model of a corporate investor that can use the full $100 million basis to compute capital gain or loss. Basis in stock of failed ventures does not disappear, even though the section 382 limitations make the corporate level net operating losses disappear when the venture fails. The premise behind Table 2 is that corporate investors will be able to use their full $100 million basis, by investing in something that generates $100 million of capital gain. The corporate or venture level tax reduces the shareholder capital gain. If the venture level tax exceeded profit, then the shareholder level tax would ameliorate the loss, because there would be a tax-valuable capital loss on the shareholder level. The shareholder tax, however, makes matters worse if the corporate level tax did not take all the profit. Table 2 takes the tax from Table 1 and adds a 35% shareholder level on shareholder capital gain from sale of the ventures.

<table>
<thead>
<tr>
<th>profit</th>
<th>40%</th>
<th>60%</th>
<th>100%</th>
<th>200%</th>
</tr>
</thead>
<tbody>
<tr>
<td>success rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45%</td>
<td>89.0%</td>
<td>78.6%</td>
<td>70.3%</td>
<td>64.0%</td>
</tr>
<tr>
<td>35%</td>
<td>94.7%</td>
<td>82.4%</td>
<td>72.5%</td>
<td>65.1%</td>
</tr>
</tbody>
</table>

17 IRC §§243(b) 332, 337 allowing distributions from or liquidation of an 80% owned subsidiary without tax.

18 The formula for Table 2 is \[ vt*p + 35% (p-vt*p)/p \] where \( p \) is the profit from the entire venture, and \( vt \) is the venture level tax rate computed in Table 1. Success or failure has no impact on the shareholder level tax because of the assumption that the investor’s full $100 million basis invested in the stock reduces the shareholder-level gain.
<table>
<thead>
<tr>
<th></th>
<th>25%</th>
<th>100.4%</th>
<th>86.2%</th>
<th>74.8%</th>
<th>66.3%</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>106.1%</td>
<td>90.0%</td>
<td>77.1%</td>
<td>67.4%</td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>111.8%</td>
<td>93.8%</td>
<td>79.4%</td>
<td>68.6%</td>
<td></td>
</tr>
<tr>
<td>1%</td>
<td>114.1%</td>
<td>95.3%</td>
<td>80.3%</td>
<td>69.0%</td>
<td></td>
</tr>
</tbody>
</table>

Even when the taxes do not exceed profit, the taxes shown in Table 1 and Table 2 are very high. Tax exempt institutional investors, however, do not face the extra taxes in Table 2, and Table 1, which is bad enough, describes their full terminal value tax.

2. Model B: Zombies.

The model just described overstates the loss of R&D deductions in assuming that nine out of ten ventures fail. While full success, an IPO, is rare, indeed rarer than the 10% chance used in the simple model A, a VC fund will typically have a large portion of its ventures which neither fail in full nor succeed to the point of an IPO or as was hoped. These semi-successful ventures are sometimes called “zombies” or “the living dead.” A zombie gives back just its invested capital (or almost returns its capital), or gives back invested capital plus a return below what is needed to attract capital in a competitive market. The zombie venture would attract no new capital and it would not grow. They are commonly not liquid investments so they continue to be owned by the original funders and founders. Still, the zombie venture would have just enough revenue to use (or almost use) its own R&D expenses and the expenses would not be burned or lost in computing tax. Just getting the money invested back is not what the investors had in mind when they invested in the zombie, but it is better than losing everything.

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The estimates of how large a fraction of a VC fund is represented by zombies are very far apart. Published estimates put zombies at 20%.\textsuperscript{20} The 5-lawyer pilot survey estimated a range from 33\% to 65\%, with an average of 46\%.\textsuperscript{21} The Litvak pilot sample found 10\% of ventures were bankrupt or defunct, only half of percent were clearly successful IPOs and that 89.5\% of her sample were merged, acquired or still privately held. The very large 89.5\% category would include some salvage operations, in which the VC fund is getting almost nothing at disposition, some good results (but probably not home runs), but it would include many zombies as well. The edges of how to define zombies are not sharp and the definition what it means for a venture to be worth about what was invested in them varies with variations in the assumed discount rate.

Adding to the complexity is that the proportion of success, failure and zombie-like in-between ventures varies by stage of funding. There may be five separate funding decisions between start up and successful IPO. The later fundings go to companies that are already showing their success and, which therefore, are less likely to be failures or zombies. For earliest stages, success is rare, and failures and zombie-state ventures dominate.

Adding to the complexity is that net operating losses are reduced, under section 382 of the Code, not just by the failure of a venture, which would terminate the net operating losses in full, but also by a turnover of 50\% of ownership of stock within a three year period. VC investors almost uniformly get preferred stock that is convertible

\textsuperscript{20} Id.
\textsuperscript{21} The standard deviation was 10.7\%, but the sample was only five lawyers. Their answers were commonly ranges and I had to “reinterpret” the ranges they gave me so that their totals would reach 100\%. These estimates were also intended as back of the envelope estimates and the result of actual counts.
into common stock in return for their cash invested.\textsuperscript{22} VC funds pay for ventures in stages and in each stage the investors get in return more of the preferred stock. A single stage of funding might well constitute a change over of ownership triggering the reduction, and the three year test period might pull in more than one stage of funding. As noted, if a turnover is triggered, section 382 limits R&D deductions carried over from earlier years to an amount equal to the long-term tax exempt rate times the value of the venture at which it changes hands, and the limitation reduces the value of the net operating losses to about 20\% of the value of the venture when the change is triggered.\textsuperscript{23} The limitation is not serious for ventures that have grown by 175\%, but the zombies are not worth that much. The 50\% change in ownership thus drops the deductions from worth of 35\% of investment to 20\% of value of the zombies at the time they change hands. Had the ventures been organized as tax partnerships, by contrast, the venture’s losses would pass through to the VC fund, and a refinancing that constituted a change in ownership of the venture that did not chance ownership of the fund as a whole would not have had any impact on the use of the NOLs. Even if the zombies eventually use most of the R&D deductions, the tax rates that result from lost R&D deductions are still draconian. The pilot expert’s survey and the pilot sample indicate that the information necessary to calculate the impact of zombies on the terminal value taxes is hard to get, given the complexities of many stage investments and section 382 limitations. Assume, somewhat arbitrarily, a model in which 50\% of

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{22} D. J. Denis, \textit{supra} note 5, at 311 (96\% of financings in Sillicon Valley ventures gave preferred stock to the investors).
\item \textsuperscript{23} See, \textit{supra}, note @ @ and accompanying text. Models A and B and Tables (1)-(4) are based upon terminal tax as a percentage of terminal value, which precludes taking into account the reduction in \textit{present value} of net operating deductions when ownership changes hands. The simplicity of terminal tax as a percentage of terminal value make it worth using the models while for narrative purposes even though they do not capture impact of timing on tax value.
\end{itemize}
\end{footnotesize}
ventures will eventually use their R&D internally. Table 3, follows Table 1, in showing terminal tax as a percentage of terminal value for different profits and risks of value. Table 3 differs from Table 1, in allowing a deduction for zombies of 50% of the $100 million overall cost in addition to the deductions of the one successful venture. The overall profit, however, comes from the successful venture alone:

Table 3. Tax as percentage of terminal income with nominal rate of 35%

<table>
<thead>
<tr>
<th>Half Zombie (just returning capital)</th>
<th>40%</th>
<th>60%</th>
<th>100%</th>
<th>200%</th>
</tr>
</thead>
<tbody>
<tr>
<td>overall profit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>overall success rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45%</td>
<td>39.4%</td>
<td>37.9%</td>
<td>36.8%</td>
<td>35.9%</td>
</tr>
<tr>
<td>35%</td>
<td>48.1%</td>
<td>43.8%</td>
<td>40.3%</td>
<td>37.6%</td>
</tr>
<tr>
<td>25%</td>
<td>56.9%</td>
<td>49.6%</td>
<td>43.8%</td>
<td>39.4%</td>
</tr>
<tr>
<td>15%</td>
<td>65.6%</td>
<td>55.4%</td>
<td>47.3%</td>
<td>41.1%</td>
</tr>
<tr>
<td>5%</td>
<td>74.4%</td>
<td>61.3%</td>
<td>50.8%</td>
<td>42.9%</td>
</tr>
<tr>
<td>1%</td>
<td>77.9%</td>
<td>63.6%</td>
<td>52.2%</td>
<td>43.6%</td>
</tr>
</tbody>
</table>

When success rate is high, at the top of table 3, the VC fund is deducting almost all its R&D expenses. When success rate is low at the bottom of table 3, the VC fund is still using the R&D from the zombies, but the loss of the R&D drives the tax on terminal investment into ranges over twice as high as the 35% statutory tax rate might indicate.

For corporate investors, there is an added 35% tax on shareholder gain. Table 4 has the same assumptions as Table 2, but with the venture level tax computed in Table 3.

Table 4. Tax as percentage of terminal income with 35% tax on venture and 35% tax on shareholder.

<table>
<thead>
<tr>
<th>Half Zombie (just returning capital)</th>
<th>40%</th>
<th>60%</th>
<th>100%</th>
<th>200%</th>
</tr>
</thead>
</table>

24 The formula for Table 3 is \( t^* \left(1 + P - \frac{1}{2} - s\right)/P \). The formula differs from the formula for Table 1 only in allowing the deduction of one half the costs for the zombies that take up 50% of the cases.

25 The formula for Table 4 is \( \lfloor vt + t^* (P-vt)/P \rfloor \), just as for Table 2, but \( vt \) or venture tax here is the tax computed in Table 3 (rather than Table 2). As for Table 2, the model assumes that all of the investor’s $100 million basis invested in the stock will reduce the shareholder-level gain.
The terminal taxes computed for Tables 3 and 4 (half of ventures just return their investment) are not as draconian as those under Tables 1 and 2. They never exceed the profit of the VC fund as a whole. Still, the terminal taxes in Table 3 and 4 are still quite high. The loss of the value of the research and development costs for the failed companies drives real tax well above the nominal 35% statutory maximum, and require tens of millions of dollars of unnecessary tax. The extraordinary tax rates stand in contrast to the optimal use of the R&D deductions which, as explained next, yield an effective tax rate on the profits of zero. Even the second best tax regime – using the tax deductions entirely within the VC fund with pass-through entities for each venture would yield real tax rates noticeably below the nominal 35% tax rate.

B. Optimal use of R&D deductions gives yield exemption.

The best use of the $100 million deductions would be to get the deductions out to taxable investors who can use the deductions immediately. To get the best use, however, the separate ventures, as well as the VC fund itself, would have to be organized as pass-through entities for tax. With the best use of the deductions, the highest bracket taxpayers would bid up the price and drive out tax-exempt institutions and lower tax rate investors. With immediate deduction, the R&D expenses give investors a result under which tax does not reduce the pretax profit.
Ordinarily, under an income tax an investor can not deduct the cost of an investment while the investment holds its value. The investor has not lost anything because the cash invested is replaced with a valuable investment. The investor gets basis for investment, useful later, but not an immediate deduction. However, for technological development --R&D--, we ignore the investment value and allow the costs to be deducted immediately or expensed. Research and development expenditures are treated for tax law as if they were lost costs as soon as they are paid. Truly speculative investments might in fact have a chance of succeeding that is so low that common sense might well presume for both accounting and tax that the investment is lost when made. When R&D is incurred within a large and diversified fund, however, the law of averages for large numbers applies. Investments in a fund paying R&D for 100 diverse ventures are not especially risky, and are certainly less dangerous than many hard asset investments for which basis, not expensing, is the settled result.

Expensing an investment that has not been lost is an extraordinary advantage. If the deductions are used to shelter otherwise taxed income, the deduction saves tax and that is like the government’s reimbursing the taxpayer and reducing its cost for the investment. The reimbursement allows the taxpayer to increase or “gross up” its investment counting on the tax savings. Assume that a venture within a VC fund is worth $10 million in absence tax. The $10 million reflects the considerable enhancement added by VC fund managers and diversification. Assume that unlike the typical fund structure, this fund organizes each of its portfolio ventures as a LLC or partnership that passes through its tax losses to the owners. The funds themselves are already organized as

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26 IRC §174. Section 174 allows immediate deduction for investments in “research and experimentations” but it is generally assumed that the expensing covers not just experimentation but development and the language describes the expenditures as “research and development” or R&D.
partnerships and losses passed through to the fund will in turn be allocated out to the various investing partners. Assume that the investing partner who owns a part of the VC fund is a taxable corporation that can use R&D deductions immediately against outside taxable income.

A corporation that can use R&D deductions can increase or “gross up” the amount paid for the project to reflect the value of the deduction. If a tax exempt investor can pay $10 million for the project, after enhancement by VC fund managers, it follows that a corporation that deducts the project’s cost as R&D against 35%-rate taxed income should be able to bid as much as $15.4 million for the same project. Deduction of $15.4 million will save the taxable corporation tax of 35% of $15.4 million or $5.4 million, which would otherwise be due. After the tax savings, the cost of the deductible $15.4 million is $10 million. In general a taxpayer can gross up a tax deductible investment by reason of the tax savings to a pretax investment of $10m/(1-t), where t is the tax rate.\(^{27}\)

The gross-up available to a taxable corporation that can get a 35% reimbursement for its R&D investments should mean that taxable corporations monopolize the ownership of VC funds driving out all competing investors. The gross up for the 35% bracket taxpayer means the strike price of that taxpayer is 154% of what an investor who can not use the deductions can pay. This is not a matter of fine tuning. A strike price of 154% of the competitor’s bid should win the competition. Indeed, venture funds owned by tax exempt investors should be easy pickings for a taxable investor. The taxable corporation needs only to bid only a bit more than the $10 million that tax exempt

---

\(^{27}\) The gross up formula for a tax deductible investment is:

\[
(1) \quad \text{Post-tax investment}/(1-t) = \text{Pretax investment}.
\]

If some amount of Pretax investment (“X”) can be deducted, saving tax at t, then the after tax cost of the investment will be \(X - t \times X = \text{post-tax investment}\). From this it follows that \(X \times (1-t) = \text{post tax investment}\) and that Post-tax investment = pretax investment, which is equation (1).
investors can pay to win the competition. The winning bid of just in excess of $10 million still leaves the taxable investors with a large cushion below their maximum price. When the taxable corporation has a strike price of 154% of the tax-exempt institution’s best bid, should it not be inevitable that the taxable corporation would own these R&D ventures?

The expensing privilege given to R&D is ordinarily as valuable to someone who can use the deductions as not paying any tax on the profits from the investment. The equivalence between yield exemption and expensing of the investment, under the assumption of constant rates, is sometimes known as the Cary Brown thesis, after its finder, and it one of the bed rock tools of tax economics. In the model, in absence of tax the overall investment would involve $100 million input and $140 million return for a pretax profit of 40%. With grossing up, the 35% tax bracket investor could invest $154 million from an investment of $100 million, in absence of tax, make 140% of the bigger slice of the fund, or $216 million, pay tax at 35% to return to $140 million. With

29 Assume to prove the Cary Brown thesis that taxpayer Y makes $100x, and must pay tax at rate t. In an income tax, a taxpayer can ordinary only invest after tax money or take home pay. Taxpayer Y must pay tax of t*$100x and will have only $100x –t*$100x or $100x *(1-t) left to invest after tax. Assume Y invests the $100* (1-t) in some investment growing to a multiple (1+R) after some period. Now assume there is no tax on the profit from the investment. Investor Y will have an after tax position, with the exemption on the yield of

\[(1) \; 100x \ast (1-t) \ast (1+R) \ast (1-0)\]

The last of equation (1) has a tax of zero and the multiplier (1-0) just reminds us that there would ordinarily be tax of some kind of the gain from 1+R, but not in this case.

Now assume, that Taxpayer Z makes $100x, but can deduct it, e.g., as research and development costs, and thus has no tax on the gross pay or pretax tax income. Taxpayer Z can thus invest $100x * (1-0) in the investment. At assumed return multiple (1+R) over the same period that Y invested, taxpayer Z reaches $100x * (1-0) * (1+R). Taxpayer Z has no basis in the investment, given the deduction of the entire investment at the start, and must pay tax on the full yield from the investment leaving

\[(2) \; 100x \ast (1-0) \ast (1+R) \ast (1-t)\]

Equation (1) describing the terminal position of Taxpayer Y and equation (2) describing the terminal position of Taxpayer Z are the same. As long tax rate t and return R are the same, then a taxpayer is indifferent between getting the zero tax at the end (as in equation (1)) or at the beginning of the investment as in equation (2).
gross up and ordinary income tax at the end, there is within the investment in the presence of tax, the same $100 million to make $140 million that was present in absence of tax. The equivalence of expensing to no reduction of the rate of profit is true for any rate of profit if tax rates do not go up, provided only that the amount invested is sensitive to tax.\(^\text{30}\)

Tax favors, including expensed investments, create what Myron Scholes and Mark Wolfson have called a clientele effect.\(^\text{31}\) In the bidding competition, taxpayers facing high tax rates pay more for tax-favored properties than do tax exempt or near exempt institutions. The higher price for any given investment means that there is a lower return rate. The drop in pretax return rate that arises by reason of bidding up of purchase price in reaction to tax favors for the investment is sometimes called an “implicit tax.” The implicit tax should drive out tax exempt and lower tax owners because they can avoid only real taxes, not the “implicit tax.” Tax exempt and low tax owners thus move to disfavorably taxed investments where the pretax return is high. High tax rate investors move to tax favored investments such as R&D. The phenomenon is much like a charity buying tax exempt municipal bonds. The bonds pay a discounted

\(^{30}\) Algebraically \(\frac{100}{1-t} \times (1+r)^n \times (1-t) = 100 \times (1+r)^n\), no matter what the return rate \(r\), period of growth \(n\), or the tax rate \(t\). The $100 is just a unit of available investment in absence of tax and \((1+r)^n\) is the formula for compound growth.

It is also possible to avoid the gross up, and prove the equivalence to zero tax on profit, so long as amount invested is sensitive to tax. Assume taxpayer has $1 unit income, subject to income tax. An income tax reduces the amount investable to \(1 \times (1-t)\) and with growth of \((1+r)^n\) the terminal value before tax is

\[
(1) \quad 1 \times (1-t) \times (1+r)^n.
\]

If the return is tax exempt, equation (1) also reflects the post-tax return. With expensing, there is no reduction of the $1 income for tax because the deduction avoids the upfront tax. The full $1 grows to \(1 \times (1+r)^n\). Because expensing consumes basis, all of the terminal value is subject to tax and the after tax position is

\[
(2) \quad 1 \times (1+r)^n \times (1-t).
\]

Equation (1) and (2) are equal to each other if the \(r\) and \(t\) used in the comparison are the same. Hence expensing, equation (2) equals yield exemption, equation (1). The equivalence depends upon the amount invested in (1) being reduced by upfront tax, avoided in equation (2).

interest rate because holders pay for their tax exemption on interest, and the lower interest makes it irrational for charities to buy the bonds.

Individual investors are also subject to tax rates as high as 35%, but individuals can get access to the R&D deductions only as subject to the barriers of the anti-shelter “passive activity loss limitations.” Under the passive activity loss limitations of section 469, individuals may take deductions from “passive activities” only against income or gains from this or other passive activities, up until the time that they exit from the investment. Section 469 embodies a skepticism that ordinary tax accounting prevents artificial tax losses and concedes that the loss is real only when the cash in and out is totaled up at the end of the venture. A portfolio venture’s R&D costs are passive activity losses subject to section 469 if the individual spends less than 500 hours a year on the venture, that is, better than a quarter of the time of a basic 40-hour-a-week work schedule. For high-income remote investors, the quarter-time hurdle is prohibitive, far higher than the time that well-to-do investors are willing to or able to contribute to the venture. Some wealthy individuals have passive activity income from other investments, however, and for them the R&D deductions can be used immediately and give the immediate 35% tax savings.

Even if the passive activity limitations apply, an individual investor should be able to bid more than a tax exempt investor for a pool of portfolio ventures. Deductions are usable under the passive activity limitations when the first income from the investment is realized. Deductions can still make all interim cash flow tax exempt,

32 IRC §1.
33 IRC §469.
35 If a worker works for 40 hours a week for 50 weeks, taking 2 weeks vacation, she will work 2000 hours a year.
within the limitations. A system of taking losses against the first income is relatively advantageous – not as good as expensing, but better than mandated 35% statutory tax rate. Under one set of typical facts, expensing of R&D combined with the section 469 passive activity loss limitations means that tax reduces pretax return by an effective rate of 11%. If the individual faces a higher than 11% tax rate elsewhere, the taxpayer will bid up the pool of R&D investments to get access to its relatively attractive 11% effective tax rate and help drive out tax exempt investors even with the section 469 limitations. Of course, taxable corporations and individuals with outside passive activity losses to shelter get zero effective tax rates from the pool, not 11%, and they should in turn drive out the individual investors who get 11%-taxed returns.

2. What actually happens.

Notwithstanding that taxable corporations should dominate the source of funds for venture capital, in fact, they do not:

<table>
<thead>
<tr>
<th>Table 5: Source of VC Funds</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10</td>
<td>0</td>
<td>0</td>
<td>$2.17</td>
<td>$2.17</td>
<td>$2.17</td>
<td>$2.17</td>
<td>$1.88</td>
<td>1.41</td>
<td>1.41</td>
<td>1.41</td>
<td>1.41</td>
<td>1.41</td>
<td></td>
</tr>
</tbody>
</table>

These cash flows have an internal rate of return of 8.9%, which represents a drop in internal rate of return caused by the tax from 10% to 8.9% or effective tax rate of 11%.

Individuals investors are also disfavored by the separate decision in the typical VC structures to incorporate each portfolio venture. Because of the incorporations, the managers’ costs paid by the individual are treated as investment costs, rather than as business expenses. Investment costs are itemized deductions, allowed only once they exceed a threshold of 2% of adjusted gross income (IRC §67) and then phased out for taxpayers with more $150,000 of taxable income. IRC §68, with current phase out start adjusted by inflation to $150,500. Rev. Proc. 2005-70, 2005 C. B. @@ §3.11. The biggest expense, however, is managers fee and that fee is taken out as an allocation of partnership income rather than as an expense.

36 Assume, for example, a venture in which $10x is invested immediately, that there is then two years of no revenue, and then 10 years of revenue sufficient to give a 10% pretax rate of return. Under the assumptions, the returns will be $2.17x per year from years 3 through 12. If because of the section 469 limitations the R&D deductions can only be used against the first cash from the investment, the after tax returns from the investment drop by 11.3% of the pretax 10% return. If the $10x is used against the first revenues of 2.17x per year, the cash flows after a 35% tax would be as follows:

<table>
<thead>
<tr>
<th>year:</th>
<th>1994</th>
<th>1997</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate</td>
<td>9%</td>
<td>40%</td>
<td>16%</td>
</tr>
<tr>
<td>Individuals</td>
<td>12%</td>
<td>30%</td>
<td>19%</td>
</tr>
<tr>
<td>Pension funds</td>
<td>47%</td>
<td>13%</td>
<td>18%</td>
</tr>
<tr>
<td>Charitable endowments</td>
<td>21%</td>
<td>9%</td>
<td>15%</td>
</tr>
<tr>
<td>Foreign</td>
<td>2%</td>
<td>7%</td>
<td>22%</td>
</tr>
<tr>
<td>Insurance Co. &amp; other</td>
<td>9%</td>
<td>1%</td>
<td>11%</td>
</tr>
</tbody>
</table>

In 1994, only 9% of the investors were corporations, so that, at most, 9% of the investors would have been able to use the R&D expenses against taxable income. The individual investors 12% in 1994 might have had passive activity income to shelter. All the other investors, constituting 79% of the capital invested, probably could not use the R&D deduction. By 1997, corporations had grown to 40% of the investors and individuals constituted 30% of investors. Some of the individuals making up 30% of the investors might well have been able to use the R&D deductions against outside passive activity income. But by 1997, corporations had shrunk to 16% and individuals to 19%. The gross-up theory offered here says that pension funds, charitable endowments and foreign investors should have been outbid and excluded entirely because they could not use the R&D deductions. Taxable corporations and individuals with outside passive activity income should own all R&D firms and be the only investors in a venture capital fund. In fact the U.S. tax-exempt investors (charities, pension funds and foreigners), who should not have participated at all, contributed 70% of the VC funds in 1995 and 55% in 1999. The fact that there exists an investor who can not use the R&D deductions immediately is a puzzle.

The venture capitalists in sum seem to have accomplished a feat of reverse alchemy, turning gold into lead. The expensing of R&D investments best used is
equivalent to a tax exemption for the yield from the investments. Yet the structure of Silicon Valley, incorporating each portfolio venture separately turns potential exemption-equivalency into draconian and confiscatory taxes. The taxes can easily exceed all the pretax profits from the fund.

II. Why Do They Do It?.

The structure of VC funds, incorporating each portfolio venture separately, turns an opportunity for zero-tax equivalence for the venture into draconian tax. Why do the funds adopt such a structure and tolerate such a result? Section A concludes that seven theories sometimes offered as best explanations by the literature or experts in the field are unhelpful to explain the wasting of R&D:

(1) Tax exempt investors need protection from Unrelated Business Income Tax (“UBIT”)

(2) Corporate investors are not interested in investing in VC funds

(3) Ventures need to be incorporated in preparation for the IPO

(4) Rule 144 sale restrictions

(5) Inertia

(6) Use of the Earnings Before Interest Depreciation, Tax and Amortization (“EBIDTA”) measure.

(7) Employee Capital gain.

Sections B and C looks at better theories that can not be so quickly rejected, related to stock options and management of earnings, but the sections conclude, weighing everything, that the explanations are not sufficient to justify the separate incorporation.
A. Rejected theories

1. Tax exempt investors need protection from Unrelated Business Income Tax (“UBIT”)

Attorneys who represent VC funds often say that primary reason why each venture has a separate C corporation is to prevent tax exempt institutions from having to pay or face “unrelated business income tax” or “UBIT.” One participant in the pilot experts survey said that avoiding UBIT was 90% of the explanation for why each venture was incorporated separately. Avoiding UBIT is often offered in conversation as the single reason for separate incorporation of each venture.\(^{39}\)

Section 511 of the Code imposes the UBIT tax, computed at normal corporate tax rates, on the business income received by a charitable organization or pension fund that is otherwise exempt from income tax. A start up venture does not ordinarily have any income, after its R&D and ordinary business expenses, but when it finally makes a profit that the income will be subject to UBIT. The tax exempt institutions usually insist that a VC fund must warrant that that fund will never give income to them that would be subject to UBIT before they will invest in the fund. Venture income received directly would be UBIT, but shareholder income, i.e., dividends, redemption proceeds and gains from sale of the stock, are exempted from unrelated trade or business tax.\(^{40}\) Thus if each portfolio venture is organized as a separate C corporation, the pension fund or charity

\(^{39}\) Consistently in the published sources, see., e.g., Andrew Needham & Anita Beth Adams, PRIVATE EQUITY AT A-34 - A-39 (BNA Portfolio No. 735 2005) (citing UBIT as a reason for “blocker” corporations); J ACK L EVIN, STRUCTURING VENTURE CAPITAL, PRIVATE EQUITY, AND ENTREPRENEURIAL TRANSACTIONS 10-6 through 10-8 (2006) (blocker corporation as one of the remedies for UBIT).

\(^{40}\) IRC §512(b)(1) (dividends), (b)(5) (gains from sale of stock).
avoids the unrelated trade or business tax, and, on its own level, maintains its normal tax exemption.

There is an analogous issue for foreign investors. Foreign investors must pay tax on income that is effectively connected with a U.S. business, but they avoid tax on capital gain on sale of a stock of a corporation. Both foreign and U.S. tax-exempt institutions demand covenants that they were have no taxable business income and they ask for blocker corporations between the business and the investor to prevent their seeing any taxable income. Pension funds, charities and foreign investors are said not just to avoid tax on business ventures organized as passthroughs, but also the rigmarole of tax returns.

Incorporating each venture separately to avoid the unrelated trade business tax of section 511 is, however, a bit like jumping into the fire to avoid the heat of a warm day. The separate incorporation does indeed avoid the direct UBIT tax for the investor-shareholders, but then it creates a section 11 tax on the venture level. A portfolio venture is subject to the section 11 corporate tax even though the venture is ultimately owned by tax exempt entities. Tables 1 and 3 displayed that, under some assumptions, the tax at the venture level will exceed the profit from whole venture. Even when the tax is not greater than profit, it is a very high, above 70% tax. The tax exempt investor can avoid the shareholder level tax on sale of successful ventures, but by then the damage from the draconian rates has already been done.

41 IRC §§872(a)(2).
42 See, e.g., Chang Hsiao Liang v. Commissioner, 23 TC 1040 (1955) (foreign investor exempt from U.S. tax on gain).
The first question as to UBIT is why the tax exempt investors are even allowed by the bidding to get into VC funds. Taxable corporations with taxable income to shelter should be bidding up the price to drive tax-exempt institutions out, and the corporations have taxable income enough to want to shelter it. Assume for argument’s sake, however, that the tax exempt institutions have available capital and that taxable corporations do not, or that, at least, the capital of tax exempt institutions needs to be tapped for a VC fund to be successful. Still, tax exempt institutions, if they must participate, have a better alternative to separate incorporation, which is to organize each venture as a pass-through entity.

If each venture within a VC fund is organized as a pass-through entity, that is, an entity taxed as a partnership, then the R&D deductions of the failed ventures would pass out of the venture and could be used to shelter the first revenues of the fund’s successful or zombie ventures. The deductions would be deferred in use but they would not be burned in full. Deferred use of the R&D deductions would not be tantamount to tax exemptions of the yield, but it does lead to effective tax rates less than the statutory 35% tax rate, and certainly less than the extraordinary taxes caused by burning R&D deductions.

Look again, for example, at the model of a $100 million VC fund slice of 10 different ventures which returns $140 million pretax. If only one of the ventures succeeds and the rest fail, the successful venture will incur $45.5 million tax, for a terminal tax that is 114% of the profit. If five zombies use an added $50 million, the fund will burn $40 million costs, use $60 million of its R&D deductions and incur $28 million tax which is a terminal point tax of 70% of terminal profit. Had the ventures been
organized as pass-through entities, the fund would have used all its R&D deductions, and
the tax on the $40 profit would equal $14 or a 35% terminal tax rate. The usual measure
of the impact of tax on investments, moreover, is the effective tax rate, which measures
the drop in “internal rate of return” from the investment. Use of pass through entities
drops the effective tax rate on the investment to below the statutory tax rate. The tax
exempt institutions are absorbing terminal tax rates of 70% or 114% in order to avoid a
UBIT that a 35% terminal tax on terminal profit, and an effective tax rate of under 35%.
Avoiding UBIT, in sum, does not explain the burning of R&D.

2. Corporate disinterest.

One respondent in the expert survey said that taxable corporations who might
invest in VC funds want instead to invest their available capital within their own business
where they have expertise and a comparative advantage. Taxable corporations do
however have a comparative advantage in R&D-rich ventures because they can get the
35% reimbursement by reduction of tax, and their tax-exempt competitors can not.
Corporations are in general money-making machines willing to invest where there is
profit. The extraordinary strike price 154% above the tax-exempt competitors should
allow them to pick up bargains. Indeed, in a competitive world, the strike price cushion
made possible by the tax reimbursement should be much more important than any
advantage from concentration within a corporation’s core business.

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44 Effective tax rate is a measure of how far tax reduces the internal rate of return (“IRR”) of an
investment. Effective tax rate is \[ \frac{(\text{IRR pretax} - \text{IRR post tax})}{\text{IRR pretax}} \].
45 If assume a 5 year lag between investment and terminal point, the pretax IRR is 6.9% because $100
will grow to $140 in five years at 6.9%: \[ 100 \times (1+6.9\%)^5 = 140 \]. With tax at 35% on $40 or $14, the post
tax return is 126, and the post tax IRR is 4.7%. The effective tax rate is \( \frac{(6.9-4.7)}{6.9} \) or 32%, which is
slightly lower than the 35% statutory tax rate.
One respondent in the expert survey who represented VC funds said that venture capital funds sponsored by a single company have largely been failures and he attributed the failure to the corporate sponsor’s interference in the founders’ decisions. Corporate sponsors tend to steer ventures in the direction that most benefits the sponsor’s pre-existing business, and also steer ventures away from competition. Single company sponsored VC funds have largely been failures. Bell Lab’s Lucent, Xerox’ PARC, and the venture capital funds of Boeing, Dell and AMD\footnote{Henry Chesbrough, “The Governance and Performance of Xerox’s Technology Spin-Off Companies” (March 2002) Available http://papers.ssrn.com/sol3/papers.cfm?abstract_id=304722 (accessed Feb. 12, 2007). For Lucent, see e.g. en.wikipedia.org/wiki/Alcatel-Lucent (accessed Feb. 12, 2007). For Dell, Boeing and ADM, see “Venture Capital, Without the Risk,” National Venture Capital Association, http://www.nvca.org/cvg_tools_RH.html (accessed Feb. 12, 2007).} are all funds that no longer exist because they did not give adequate returns to their sponsor.

There is no good reason, however, why a taxable corporation needs to get involved in management of the VC fund or the individual ventures. The tax exempt institutions that invest in the VC funds rely on the expertise of the VC managers to pick, nurture, and diversify ventures. A well diversified fund with 100 different ventures will have few that compete with the corporate investor. The comparative advantage of the taxable corporation as an investor is not its expertise or tie in to existing business, but the tax reimbursement.

In a related argument, a colleague has argued that corporations do not buy up R&D rich ventures because they have access to investments which bear an effective tax that is considerably less than the 35% statutory corporate rate specified by IRC §11. Indeed, taxable corporation accept lesser returns from tax exempt interest from municipal bonds, but the drop in interest that they accept is under 10% of the interest. The modest
discount on tax exempt bonds is evidence they are paying only modest rates elsewhere.\textsuperscript{47}  
Still, even with opportunities to achieve effective tax on the overall investment at low rates, taxable corporations will have cash flow taxable at the marginal 35% rate that they would rationally shelter. A corporation with R&D, oil drilling or advertising investments, for example, has investment with zero effective tax rate—because expensing investments is ordinarily equivalent to yield exemption --, but it has cash flow from royalties or other income from the research that will be subject to tax in full. As long as there is cash flow bearing tax at 35%, then that cash flow could be mated with R&D deductions to gain 35% reimbursement from the government. There is in fact over $850 billion in the American economy reported in the 35% corporate tax bracket.\textsuperscript{48} Those corporations should be bidding up the price of portfolio ventures to drive out the tax exempt institutions.

3. Incorporation before depletion of the R&D.

Successful ventures are usually sold by selling shares of the successful ventures to the public in an initial public offering (“IPO”). A business can not be taxed as a pass-through entity once it is actively traded on some kind of market. Even an unincorporated partnership for state law is taxed as a C corporation if interests in the partnership are publicly traded if it conducts a business.\textsuperscript{49}

\textsuperscript{47} Calvin H. Johnson, \textit{Thermometer for the Tax System: The Overall Health of the Tax System as Measured by Implicit Tax}, 56 S.M.U. L. REV. 13 (2003) (finding that maximum tax on capital is around 10% as measured by market for municipal bond interest).

\textsuperscript{48} \textsc{internal revenue service, statistics of income: corporate tax returns, 2004} at 3, reports corporate taxable income for 2004 as $857.4 billion, and tax, before credits, of $299.6 billion. At 35% of $857.4 billion, the tax would be $300.1 billion, so the taxable income subject to less than 35% is not material.

\textsuperscript{49} IRC §7704.
It is sometimes said that the venture must incorporate initially since it will have to be a corporation if it turns undertakes an initial public offering of its stock.\textsuperscript{50} Tax-free incorporation is a vital requirement for a successful venture. A successful portfolio company organized first as a partnership would have a great deal of unrealized appreciation built into its partnership interests. The owners’ basis would have been used up by the R&D deductions so that the basis of the venture assets would approach zero. The successful company is considerably worth more than the depleted or zero basis. Incorporation of an entity is tax free under section 351 of the Code, but section 351 is lost and the partners will have to recognize the built-in gain on their partnership interests unless all contributors own 80\% of the stock of the new corporation after the incorporation. The fear expressed is that sales of stock to the public will be part of a step transaction in which the old owners lose their 80\% control. In Revenue Ruling 70-140, business assets were incorporated so that the stock of the new corporation could be acquired in a tax-free reorganization. The IRS considered the incorporation and reorganization to be steps in a single overall plan and collapsed the incorporation and reorganization into a single transaction to sell assets. The IRS then ruled that the tax free incorporation was not available because nonrecognition is not supposed to be available for a direct sale of appreciated business assets and because after the full transaction, the parties contributing the business assets no longer controlled 80\% of the newly formed corporation.\textsuperscript{51}

\textsuperscript{50} Daniel Goldberg, \textit{Choice of Entity for a Venture Capital Start-up: The Myth of Incorporation}, 55 Tax Lawyer 923, 930-943 agrees with this conclusions of this section and discusses alternative forms of exit to a public market.

\textsuperscript{51} In Rev. Rul. 70-140, 1970-1 CB 73, for example, an incorporated entity formed a corporation solely so that an acquiring corporation could pick up the new stock in what was intended to be a tax free acquisition of the stock (a B reorganization). The IRS ruled that the incorporation did not qualify as a tax-free
The fear that an IPO will destroy a tax-free incorporation is, however, wildly overstated. The IRS has been generously allowing the public to be included as a part of an initial tax-free incorporation, even though the sales to the public are make through underwriters and take a little time. Thus the public can easily be made part of the group to which you look in determining whether parties that contribute to the new corporation control 80% of its stock afterwards. Revenue Ruling 70-140, holding that a quick tax free reorganization destroyed the tax-free incorporation, involved an acquiring corporation that made no contribution of assets to the newly formed corporation and which therefore could not have been included in the group that had to control 80% of the corporation. Public shareholders by contrast contribute the proceeds of the their stock purchases to the newly incorporated entity. Given the generous treatment of the public as part of the necessary 80%, in rulings and regulations, however, when the public contributes cash to the corporation in exchange for newly issues stock, there is no reason to think that the IPO is fundamentally inconsistent with the tax free treatment for the partnership interests or assets contributed to a new corporation. A portfolio venture organized as a partnership to pass out the R&D deductions can be incorporated as a part of a public offering.

Moreover, a pass- through entity for portfolio companies gets the R&D deductions out to the investors, and there is ordinarily a natural lag between the use of the

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52 Treas. Reg. 1.351-1(c)(3) (effective after May 1, 1996) (public is treated as part of the transferring group that must own 80% if underwriter is an agent of the issuing corporation or holds the stock only transitorily); Under Rev. Rul. 78-294, 1978-2 C.B. 141, rendered obsolete in 1996 by the just cited regulation, the public was included in the 80% group if the underwriter was working under a best efforts contract, without obligation to buy stock he could not sell. If the underwriter was buying for his own account and trying to resale or retail, the public could not be included, but the underwriter was included so that its purchases of stock were used to meet the 80% test.
big R&D deductions by the investors and the initial public offering. If the incorporation is old and old when the IPO takes place, the initial public offering is not an issue as to nonrecognition for the old owners, even if an IPO were inconsistent with a tax-free incorporation. One of the expert pilot panel members suggested that the IPO was too far away and too remote for very much concern about the IPO when the decision was made to incorporate. In any event, whether the public is part of the incorporation or comes in later, there is no significant risk that an IPO will destroy a tax free incorporation.

4. Rule 144.

The Securities Exchange Act restricts sales by investors holding substantial blocks of unregistered stock, so as to protect the public from sales, indirectly from the issuing corporation, in which the public does not get the information about the issuer that it gets from a prospectus.\textsuperscript{53} Rule 144 under the Securities Exchange Act gives a safe harbor allowing substantial investors to sell stock without the SEC-approved registration and prospectus.\textsuperscript{54} Before amendments to Rule 144, in December 2007, the investor had first hold the stock for at least one year.\textsuperscript{55} Also sales, when made, were subject to a “dribble out” rule under which the shares sold within a three month period can not exceed the higher of 1% of the stock outstanding or the weekly trading volume for the stock.\textsuperscript{56} Rule 144 sales of restricted stock are also allowed only if the issuer provides periodic reports to the SEC which are simpler than a full registration and prospectus, but still give

\textsuperscript{53} Reg. §230.144. Preliminary Note to Rule 144.
\textsuperscript{55} Reg. §230.144(d)(1).
\textsuperscript{56} Reg. §230.144(e)(1). The weekly trading volume is determined by looking to the average over the four weeks prior to the sale.
investors information about the issuer.\textsuperscript{57} In December, 2007, the SEC eased Rule 144, requiring a holding of only six months. Once the six month holding was met, the old dribble out rules were repealed and the holder could make unrestricted sales.\textsuperscript{58}

Two of the experts in the pilot survey said that the most important reason that ventures were incorporated initially is that a later incorporation started the one-year holding period requirement of old Rule 144. The holding period does not start again for stock splits, change in state of incorporation, distributions from a partnership to partners and recapitalizations,\textsuperscript{59} which bear a functional resemblance to the incorporation of pre-exiting business with no change in ownership. There is, however, no source of cold comfort that the prior holding period of a pass-through entity would tack onto the holding of newly issued stock for the same entity. Thus it was assumed that the one-year holding period started over if a venture is incorporated in preparation for an IPO.

Satisfying the one-year holding period of Rule 144 looks like it was a quite modest convenience if any all. First, Rule 144 is not the exclusive means by which a substantial investor can sell its stock.\textsuperscript{60} Thus, under a private placement exemption, an investor could offer unregistered shares to a small group of sophisticated investors including other institution.\textsuperscript{61} Indeed, before the IPO, there are not usually very many holders of a VC venture’s stock and no meaningful market. Thus sale before the IPO usually meant sale to another institution or sophisticated investor, whether or not the one-year holding period is met. Meeting the one year rule did not get you a public market

\textsuperscript{57} Reg. §230.144(c).
\textsuperscript{58} Securities Act Release No. 8869 (Dec, 2007)
\textsuperscript{59} Reg. §230.144(d)(3)(i).
\textsuperscript{60} Reg. §230.144(j).
\textsuperscript{61} 15 USC §77d(2) (Private Offerings); Reg. §230.144A (allowing resales to institutions).
before the IPO. Moreover, holding for just one year did not avoid the Rule 144 dribble out requirements that impose a ceiling on sales as low as 4% of the outstanding stock per year, even had here been a market. Before the IPO, one would not get much advantage or sacrifice much if anything to meet the one year holding period.

The change in Rule 144 in December 2007 shortened the hold period to six months and that period is no longer than what underwriters require after an IPO anyway. In the IPO, the underwriters typically impose a contractual obligation on the original investors to hold the stock for 180 days before selling it.62 Thus, even if the holders met the six month period before the IPO, they would have to wait anyway for six months. Before the 2007 change, the typical underwriters’ lock-up was only half the period of the one year holding period. But both old one year and the 180 days are long enough to prevent sellers from relying on short term factors or using sale for emergency liquidity needs. In a large billion dollar fund, the value of the tax reimbursement from R&D deductions is $540 million. Meeting the holding period is not plausibly worth a substantial amount and certainly nothing to justify giving up the $540 million tax reimbursement.

Even if the holding periods were a substantial virtue, it would also be possible to compromise with use of the R&D deductions by delaying the incorporation for some period of time to allow more of the R&D deductions to be used. If the deductions were passed out to taxable corporations, which would be optimal, use would be immediate and

62 The SEC description of the typical underwriter’s lock up is found at http://www.sec.gov/answers/lockup.htm. The usual explanation for the underwriter’s lockup is to achieve market stabilization, which insider dumping of stock might disrupt, but Mira Ganor, supra note 54, at 33-35, suggests that the lock up may in fact be motivated by desire to let friends of the underwriter to sell their stock first.
incorporation could follow after use so that there would be no significant delay in starting the one year holding period. Even for tax exempt investors, it is possible to keep the ventures as pass through entities until revenue from some allows use of the R&D deductions of all. It is also not that the VC funds have carefully appraised the value of starting the one-year holding period and the use of R&D deduction, and reached the appropriate balance. As one expert put, the VC funds simply never think about tax at all, no matter what the value of the deductions.

5. Inertia.

It is sometimes argued that Silicon Valley’s attachment to separate C corporations for each portfolio venture can be explained by inertia. One attorney representing investors put, “the VC funds come in and say ‘This is our form, and we dont negotiate over our forms.’” Published accounts have said that use of C corporations “might be explained partly by lawyers’ self-interest in guiding clients toward the corporate form in which lawyers can use their existing expertise.” Businessmen re-use the same templates and structures, even the same standardized forms, to save legal fees and to avoid the hard work of working out new business structures, even when the templates do not fit perfectly. As one of the experts in the pilot survey put it, “simple deals get done, and complicated deals do not.”

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63 Larry E. Ribstein, Ethical Rules, Agency Costs, and Law Firm Structure, 84 VA. L. REV. 1707, 1712 (1998); ANTHONY MANCUSO, LLC OR CORPORATION?: HOW TO CHOOSE THE RIGHT FORM FOR YOUR BUSINESS (2005) (“Institutional investors ...venture capitalists generally prefer to fund corporations, because they are accustomed to the way standard corporate paperwork and instruments define and protect their interests).
“[T]he power of standardization should not be overstated,” as Professors Gilson and Schizer have argued, “since parties [can and] will depart from market practice when a departure is profitable enough to overcome the information costs they will incur.”64 For a large, billion dollar R&D funds, the government reimbursement from a grossed up investment will be over half a billion dollars more than the competing bid by tax-exempt institutions. A half billion dollars seems to be a large enough advantage to motivate a departure from the standard structure and to pay for the legal costs of thinking out and perfecting a new form. One would think that the lawyers or anybody looking at the overall fund would see that the taxes on the overall fund are draconian or even absorb all profit, and realize there is enough at stake to do something about it. The stakes involved are large enough to justify redoing the established legal forms to avoid the confiscation.

Inertia, moreover, cannot be used to explain why the structure of using separate corporations developed in the first place.65 If anything, tax rates were once higher, which gave even a greater advantage to the investor who could use the R&D deductions. When the VC funds first arose, before 1986, the tax rates on public corporations were 46% and tax rates for individuals were 50%.66 With tax rates of 50%, the grossed up investment is twice as large a bid as exempt investors can make. A taxable investor making R&D investments could count on the government tax reimbursing almost half of its investment. When this bad structure arose, the economics were even more strongly weighted against it.

65 Id. at 882.
The venture capitalist professionals also sometimes say that they do not think very much about tax. They do worry about relatively petty tax issues like unrelated business income and effectively connected income, so that not all tax is ignored. Even if they did ignore tax, however, considering the size of the stakes and the value added by thinking about tax, ignorance of tax is hardly a justification or an explanation. The stakes are again too large to justify the ignorance.

One apology for the Silicon Valley structures argues that “venture capital professionals who structure the deals do not share personally in the losses, so they have little reason to care about the tax effects of the losses.” That is not a very convincing explanation because the venture capitalists should be selling the product to the highest bidder, and destroying so much of the value of the product does not seem to be a very productive strategy to sell for a high price. Does Wal-Mart destroy inventory because Wal-Mart can not personally use the inventory? Do lawyers purposely write bad wills, because they can not share personally in the client’s estate? Why then do venture capitalists burn the deductions of the overall fund and leave their product sold to the public in IPOs with such a high tax position?

6. EBITDA.

One attorney who represents investors attributes the separate incorporation of ventures to the VC fund’s insistence on using a yardstick for measuring portfolio performance, called EBITDA, which ignores tax to be paid. The acronym EBITDA

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67 See section IIC, infra, on sensitivity of business behavior to tax.
68 See, e.g., Andrew Needham & Anita Beth Adams, Private Equity Funds, BNA TAX PORTFOLIO SERIES No. 735 (2005) at A-13; Robert D. Blashek & Scot A. McLean, INVESTMENTS IN PASS-THROUGH PORTFOLIO COMPANIES BY PRIVATE EQUITY PARTNERSHIPS (PLI/Tax 689 2006) at 732, 770 (arguing that pass-throughs give unrelated business income to tax exempt institutions and effectively connected income to foreign investors, but that blocker corporations for each venture can prevent the impact).
stands for “Earnings Before Interest, Tax, Depreciation, and Amortization.” Under EBITDA, the tax paid, at 35% of gross proceeds, is ignored because the earnings looked at are before tax. Firms apparently sometimes value EBITDA, even more than they value traditional accounting earnings.

EBITDA is ordinarily not a bad yardstick for a short term creditor to measure creditor “coverage,” that is, how much the portfolio venture would have from its operating income to pay interest to the creditor and give the creditor some cushion. Depreciation is ignored as an expense in calculating creditor coverage because the old capital assets were purchased in prior years and they are not now cash outflows that would interfere with repayment of debt. An ongoing firm needs to replace its capital equipment when the old equipment becomes nonfunctional, but the short term creditor expects to get paid before depreciable assets are replaced. Since interest is a deduction, if the EBITDA is paid out as interest, the debtor corporation will pay no tax on the interest payments and tax can be ignored. Interest paid would reduce the shareholder’s share, even after tax, but EBITDA is a creditor measure and shareholders do not matter for creditor coverage.

While EBITD might be a rough but acceptable measure for creditors, EBITD is a disaster as a measure of equity returns. The equity of a healthy C corporation bears tax at

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70 The acronym is sometimes “EBITD,” which drops mention of the A or amortization, since amortization is usually not material.


The cynical translation of EBITDA is “Earnings Before I Tricked the Dumb Accountant,” which announces that the users are displaying distrust of accounting depreciation figures. Depreciation commonly just follows the tax life, and the taxes and interest paid in cash are not open to accounting manipulation, so the cynicism is swamping judgment about real effects.

72 Leslie Robinson, “Pre-tax Versus After Tax Earnings: Do Appearances Matter?,” Tuck School of Business at Dartmouth Working Paper (December 2006) (finding that firms are willing to pay $1 to shift amounts between $17-$23 from post-tax earnings to pre-tax EBITDA).
35% of cash flow. As happens in a VC fund, that tax can easily exceed the profits of the fund as a whole. There is no excuse for ignoring taxes at that level of pain. The investors in shares also cannot ignore interest payments, which might absorb all the EBDTA earnings. Overall, VC management is poking out its eyes with EBITDA, accepting taxes in excess of profits overall, while using a EBITD measure that seems to make it okay to be blind. Some kind of financial rules of thumb might be justified when only small amounts are at issue, but a rule of thumb that captured the tax would do a better job of telling the players about the incredible value of the R&D deduction they are losing.

The EBITD measure might also contribute to use of stock to pay expenses. VC fund ventures use a lot of stock and stock option compensation. Stock does no harm to creditors even if issued as excess even wasted compensation because creditors get paid before shareholders. If a billion dollars of stock were issued to a worthless employee, the creditors could not care. Still more outstanding stock hurts prior shareholders. Shareholder share in the cash flow of the company distributed either as dividends or in redemption of stock, and cash given to new shareholders for wasteful reasons, reduces what is left for the old shareholders. If the EBITDA measure allows the corporation to ignore the cost of wasteful stock, then we need an explanation of why the EBITDA measure is used.

Again the amount of money at stake makes it difficult to use the EBITDA measure as a serious explanation of the wasting of R&D deduction. VC funds use of EBITDA is part of the puzzle itself and not part of explanation.

7. Employee capital gain.
Professor Ron Gilson and Dean David Schizer have argued in the Harvard Law Review that VC ventures suppress the actual value of stock given to the key employees and suppress the claimed value even further, in order to maximize the capital gain that employees report.\footnote{Ronald J. Gilson & David M. Schizer, *Understanding Venture Capital Structure: A Tax Explanation for Convertible Preferred Stock*, 116 HARV. L. REV. 874 (2003).} Capital gain is subject to tax rates of no more than 15% while employees’ compensation would be subject to tax at up to 35%.

The drawback of the employee-capital-gain explanation is that employee capital gain requires the employer corporation to give up deductions for compensation. The compensation deduction is usually more valuable than the difference between employee ordinary income and capital gain. Employee capital gain thus ordinarily makes revenue for the government by wasting employer compensation deductions, which is much like the wasting of R&D deductions. If employee capital gain is the motive for corporate stock, that compounds the mystery, rather than explaining it.

a. The Suppression of Stock Value. The money provided by the outside investors for R&D is ordinarily given in exchange for preferred stock that is convertible into common stock.\footnote{D. J. Denis, *supra* note 5, at 311 (96% of financings in sample were in return for preferred stock).} Typically, if the venture is a success, the preferred stock will be converted into 60% of the common stock of the company, leaving the founders and key employees who provided the ideas and the services with a 40% the share if the venture is a success (the “boom leg.”) If the venture is a zombie worth about what the funders paid in, the investors will not convert and will get the entire net worth of the company by ownership of the preferred stock. If the venture failure, neither founders or funders will have anything.
Professor Gilson and Dean Schizer argue that the investors get convertible preferred stock for their funding in order to suppress the value of the stock when employees receive it. Had the VC investors taken 60% of the common stock for their funding, common stock received by the employees would have the same value per share as the investors stock. The preference to investors suppresses the value of the employee stock. Employees must pay ordinary income tax on the value of compensatory stock that they receive, at rates up to 35%. The subsequent appreciation of the stock, including appreciation that arises just from a successful undervaluation of the stock when received, will be capital gain, which is taxed at only 15%. The suppression of value, Gilson and Schizer argue, is converting 35%-taxed compensation into 15% taxed capital gain.75

Employees also claim a lower value for compensatory stock than the investor’s preference in fact justifies, by relying on the balance sheet value of the stock. The balance sheet net worth of the portfolio venture’s stock is typically strongly negative during the pre-IPO stage of the venture. For accounting purposes the R&D creates expenses and not balance-sheet assets. The preferred stock the investors receive for funding the R&D has a priority ahead of the employee’s common stock. Assume, for example, that funders gave $10 million to pay for the R&D. The venture would start with no assets from the funding, and a prior claim, leaving the common stock with a negative $10 million net worth. Until the venture makes $10 million subsequent operating profit, which may take a while, the balance sheet will show a negative value for the common stock.

The balance sheet value does not represent true value. The outside funders’ willingness to pay the R&D of the venture is arm’s length proof that the employee’s

75 *Id.* at @ @
share has valuable. Continue the assumption that the outside investors pay $10 million and gets preferred stock that will be converted into 60% of the stock if the venture is sold to the public. If the venture is boom or bust, the preferred stock is worthless on the bust leg and becomes worth 60% of the venture on the boom leg. If 60% is worth $10 million, then 100% is worth $10/60% or $16\(^{-2/3}\) million. The employee’s common stock representing 40% of $16\(^{-2/3}\) million is worth $6\(^{-2/3}\) million or two thirds of the funding.

If half of all ventures are zombies, worth roughly $10 million each, then the employee’s 40% share is worth $3\(^{1/3}\) million. The preferred stock will take all of the value of the zombie under its preference. The preferred stock holders can expect to have a 50% chance of making $10m, which has an expected value of $5 million. In the other nonzombie half of the cases, the preferred stock value comes from the boom or bust pattern. If a 60% interest in the boom leg is worth $5 million, then the 100% interest is $8\(^{-1/3}\) million and the key employee’s share of the boom leg is $3\(^{-1/3}\) million or one third of the funding. The employees get no value from the bust or zombie legs of the expected value.

If the employee reports that the stock when received is worth zero or next to nothing, then that he is underreporting his compensation on his tax return. That is dangerous behavior. Tax at 35% on $3\(^{1/3}\)-$6\(^{-2/3}\) million is between $1 million and $2 million. The federal sentencing guidelines require 3\(^{1/2}\) to 5\(^{1/4}\) years of jail time for a first offense with this amount at stake for willful behavior of a taxpayer with no aggravating factors. The employee is not going to get a jury instruction that he has a

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defense because it is part of industry tradition to cheat. The first $3^{1/3} - 6^{2/3} \text{ million}
worth of capital gain the employee eventually reports, moreover, is not real capital gain from appreciation in the value of an investment but merely an artifact of initial undervaluation. As to those first millions, the gain is just an expiration of the possibly felonious undervaluation when the real value is proved up on sale.

b. The automatic zero valuation. The undervaluation of employee stock is illegal, even felonious, only because of the decision to incorporate. If the ventures were organized as pass-through entities, the partnership interest that key employees received early could have a zero value for the interest as a matter of right. The IRS has ruled that if employees receive a partnership interest, the parties may elect to treat the interest as having a value equal to the value that would be distributed if the assets of the venture were sold for fair market value and the venture was liquidated. Proposed regulations would confirm the result. In VC funds, the employee interests have no immediate liquidation or balance sheet value. The funding that bought the R&D created no balance sheet assets and the preference given to the funders would absorb anything that is listed on the balance sheet.

Professor Fleisher has argued that there is no reason for VC funds to go over to pass-through entities for the portfolio ventures, although the zero valuation is available to partners as a matter of right, because the IRS has not challenged the low valuations of the employee stock. The IRS is an overstretched agency that may take a while to get to tax problems, but it does not make the law nor grant indulgences, and if and when it moves

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79 Proposed Treas. Reg. §1.83-3(l), (2005). There are exceptions to the zero value right if the employee’s interest is to get reliably predictable cash (e.g. from high quality debt or net leases), if the interest is sold within two years, or if the venture is publicly traded, then the employee must include the true value of the partnership interest in income. None of the exceptions typically apply to the VC fund venture.
for $3^{-1/3}$ to $6^{-2/3}$ million valuations in our continuing hypothetical, there are no reasonable defenses. Choosing fraudulent undervaluation and incorporation of each venture seems to be a far riskier strategy than just avoiding the separate incorporation of each venture in the first place.

As explained, next, moreover, employee capital gain is a money losing tax strategy. The dangerous-behavior undervaluations are foregoing the employer deduction for compensation and that means that the VC tax plans are making money for the government, again.

c. **Employee capital gain is myopic.** Employee capital gain on venture stock requires the employer venture give up its compensation deduction. The employer compensation deduction is ordinarily more valuable than achieving employee capital gain. Assume that an employee gets $1 million. Reporting the $1 million as capital gain would mean that the employee would pay tax at 15% rather than 35%, thus saving 20% or $200,000 worth of tax. But the employee capital gain means that the employer has to give up the compensation deduction. At an employer tax rate of 35%, the venture-level employer deduction is worth $350,000 which is more than the $200,000 tax saved at the employee level. By reporting the transaction as giving capital gain, the parties have generated $150,000 more revenue for the government than they needed to. Successful ventures could certainly use the employer deduction: the planning has stripped most of the R&D deductions of the pool, and the successful venture is paying tax on almost all its cash flow coming in. An employee who reports capital gain and gives up the corporate deduction makes money for the treasury.
An employee would even come out ahead with ordinary income compensation rather than capital gain if the employer will share the value of the deduction. Assume that the employee gets stock and reports zero compensation and the stock appreciates to $1 million, and the employer redeems it back for its value. If the $1 million is capital gain, the tax is $150,000, leaving the employee with $850,000. By contrast, if the employer could get a deduction, the employer will get a reimbursement at 35% for its cost. The employer could gross up the total deduction to $1.54 million, because 35% tax savings, equaling $540,000, would reduce its after tax cost to $1 million. The employee would have to treat the $1.54 million as ordinary income compensation rather than capital gain, but the 35% employee tax on the ordinary income would reduce the compensation after tax to $1 million. The employee is worse off under capital gain alternative ($850,000 end result) by exactly the amount of the capital gain. Employee capital gain is money-losing strategy for a wide range of assumptions.

Employee capital gain might also make sense for insiders as part of a pattern to fool public owners of stock. Claiming employee capital gain deprives the company of the 35% deductions when the venture is publicly owned, but the public owners of the corporation may not notice the loss or be able to protect themselves. Employee capital gain might both make money for the government in comparison to ordinary income.

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80. If the corporation does not redeem it back then it is no better off because the market’s appraisal of the $100 as fair market value is just an assessment of the future cash that the employer corporation will pay out on the stock, discounted to the then present value at the extraordinary and nondeductible interest rate that the market charges on volatile stock.

81. The specific conclusion that employee is behind by the amount of capital gain if any requires that employee ordinary tax ("Tx") and employer tax ("Tc") are equal, but employee capital gain is bad planning with a wide range, as explained next.

82. Employee terminal value with capital gain tax ("tcg") is $10*(1-tcg) and with employer gross up, employee terminal value is $10 * (1-tx) / (1-tc). If (1-tx)/(1-tc) > (1-tcg) then employee capital gain yields lesser after tax terminal value. With Tx of 35%, and Tc of 15%, employee capital gain will be optimal only if the value of the employer deduction is under 23.5%.
compensation, but also be profitable for insiders because the benefits go to the employees and the harm is borne by public shareholders. There are several strands of argument that VC fund structure is justified by fooling the market and the overall discussion is deferred to the final section of the paper. The section concludes with skepticism about the benefit to be gained by trying to fool the market.

B. Some Explanatory Value: Hiding Compensation with Stock Options.

Optimal tax strategy avoids employee capital gain, but stock options can be used without generating employee capital gain. Nonqualified stock options are options in which the ultimate bargain achieved by exercise of the option. The gain from a late exercise of the nonqualified option is ordinary income to the employee and also a deduction to the employer venture. If the employee exercises the option at the time the employee will sell the stock to get cash from the stock, there will be no employee capital gain and no loss of employer ordinary deduction. Assume, henceforth, the optimal use of stock and stock options, that is, zero employee capital gain.

The VC funds rely heavily on stock options. VC funds will impose stock option compensation on ventures that come to them without a stock option plan. Ventures sponsored by a VC fund are more than twice as likely to have stock option plans than a control group that is not VC fund sponsored.\(^83\) Stock options are said to require incorporation. “Most practitioners,” it is said, “the author included, are of the view that traditional, venture backed companies that intend to incent and retain key employees

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\(^83\) Thomas Hellman and Manju Purin, supra note 3, 57 J. OF FINANCE 169, 180 (2002)
through the use of stock options, with some exceptions, should operate their businesses in
the corporate form."  

1. How big are stock options?

Stock options have been growing in importance over the last 15-20 years. Table 7, below, shows the results of two samples of ventures sponsored by VC Funds, which went through an initial public offering ("IPO"). The first sample, with 15 firms, is from 1992-1999. The second sample, with 16 firms, is VC-backed ventures that had their IPO in the first quarter of 2007. The percentage of stock options is measured by assuming that all stock options outstanding at the time of the IPO are ultimately exercised. Options exercised before the IPO are not revealed by the IPO prospectus, but that is data unavailable without serious damage because deferral of exercise of a stock option is optimal both for tax and nontax planning. For tax, deferred exercise of the option tends to maximize the compensation deduction, which is optimal use of the option. For nontax purposes, deferral delays the cost of financing the exercise price and keeps the insurance value of an option alive as long as possible. The percentages of stock options for each venture are aggregated, weighting each firm by the value of the stock after the IPO.

<table>
<thead>
<tr>
<th>period</th>
<th>sample size</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992-93</td>
<td>8</td>
<td>5.92%</td>
</tr>
<tr>
<td>1994-96</td>
<td>6</td>
<td>8.20%</td>
</tr>
<tr>
<td>1997-99</td>
<td>3</td>
<td>11.84%</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
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<tr>
<td>2001-02</td>
<td></td>
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<tr>
<td>2003-04</td>
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</tbody>
</table>

85 Details on the 31 total firms in the sample, including name, size, stock and stock options for each venture are on file with the author.
Table 7 indicates that stock options have been growing in importance, from 6% of stock in 1992-93 to 14% of stock in 2007.

The stock options, however, do not seem more important than the R&D deductions. A high-tech start up firm is almost entirely R&D and start-up expenses in its early years, and the deductions are optimally worth 35% of the costs. Even if options constitute, e.g., 13.80% of the firm, that does not mean that their value to the venture is that much more valuable than the next best form of compensation. Stock options, in sum, do not seem to a value that is worth anything near the detriment of throwing away the R&D deductions.

Stock options, moreover, have serious drawbacks, as explained next, that makes it unlikely that the stock options are any better than the next form of compensation.

2. The drawbacks of stock option compensation.

Stock options are a dubious way to compensate employees. Stock options, first, entail discount rates that are higher than necessary. Reducing the discount rate would improve the employee’s benefit, reduce the employer’s cost or both.

Stock is a very expensive way to pay future cash. Stock is nothing but a proxy for the present value of the cash flows that the company is expected to make as distribution on or in redemption of the stock. New shareholders have a very effective remedy to enforce the future cash, which is to share in the future cash, as the name “shareholder” implies. Except for the future cash the venture will pay on the share eventually, stock has no value. Stock is such an expensive way to pay future cash because the discount rate used to evaluate future cash on stock is on the merits so adverse to the company. Stock is a volatile investment and as Enron and MCI have shown, it is subject to fraud. The
market reacts to the risk and fraud by acidic skepticism, that is, by setting a value for the future cash on stock that is highly discounted.

To compare stock with debt, for instance, assume a venture with a 30 year life from start to finish that could pay with $1 debt or $1 stock and will pay the only cash on either instrument at the end, 30th year. Assume the historical average discount rates for small corporations apply to the venture. Interest on corporate debt is deductible and the expiration of the discount on stock is not. The market also considers debt to be safer than stock, perhaps questionably. Under the assumptions, it would take ten times more cash to satisfy the unit $1 stock than does to satisfy the unit $1 debt. Yet corporations act as if the shares, which are ten times more expensive than the debt, were free because the accounting treatment allows it, and act as if the debt, which was ten times cheaper than stock, was the prohibitively expensive.

Employees, moreover, are underdiversified: their job, their experience and their nest egg are all invested in the same company. An individual company value goes up and down like a roller coaster, threatening both the employee’s job and nest egg.

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87 Over very long periods, debt becomes riskier than stock. The volatility of a stock portfolio decreases as time goes on, because the fluctuations tend to offset each other. The volatility of debt increases as the term goes on, however, because of fluctuations in general discount rates. With a 20-year horizon, debt has been more volatile than stock. Investors might be especially afraid of catastrophic losses of their investment -- including for instance the great 1929 stock market crash. The truly catastrophic losses, however, have occurred not on stocks, but on bonds: The German hyperinflation of the 1920s wiped out bond holders altogether, as did the Japanese hyperinflation after World War II. Nothing in any stock market has been as bad. Jeremy J. Siegel and Richard H. Thaler, Anomalies: The Equity Premium Puzzle, 11 J. of Econ. Perspectives 191, 194-95 (Winter 1997).

88 For the seventy five years, 1925-2000, small corporate stock had a discount rate of 12.4% per year overall and corporate debt averaged 5.8% interest cost per year. Ibottson Associates, Stocks, Bonds, Bills and Inflation, available at http://www.morganstanleyindividual.com/investmentproducts/equities/why/ibbotson_chart.pdf. Interest on the debt is deductible and expiration of discount on the stock is not although both serve the same rental cost of capital function. The after tax cost of interest at 35% tax rate is 65%*5.8% or 3.8%. For $1 debt the terminal value at which is it redeemed is (1+3.8%)^{30} or $3.35. For $1 stock the terminal value is (1+12.4%)^{30} or $33.34
Underdiversified employees need to discount the value of venture stock even more skeptically than the market as a whole does.\(^8^9\) Employees with an instrument that will pay them cash in 30 years need to discount stock by more than ten times the amount by which they discount the debt.

If the parties could get the discount rate down, with another form of compensation, then employees would get more present value out of the cash the venture ultimately pays, or the venture would ultimately pay less future cash to support the current present value or some combination of both.\(^9^0\)

The high discount rate on stock might be acceptable if stock worked as an accurate incentive that measured employee performance. Stock, however, is not a very good yardstick for the merits of the employee. Substantially all of the volatility of stock is market wide or industry wide and beyond the employee’s control.\(^9^1\) The high discounts rates that arise from volatility and market distrust of management are not a necessary part of a compensation plan. Rationally the extraordinary discounts should be avoided.

Stock options also give an incentive to managers who accept suicidal risk. An option holder can get the gains on the underlying stock but does not share in downside risk on the underlying stock. If the stock loses value, the option holder will just fail to exercise the option and will thereby avoid the loss. Risks that would properly scare the

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\(^9^0\) Accord, Ingolf Ditmann & Ernst Maug, *Lower Salaries and No Options? On the Optimal Structure of Executive Pay*, 62 J. of Finance 303 (2007) (finding that if CEO were paid in cash and stock but no options, the cost of compensation would go down by 20% with no reduction of incentives or value to the CEO).

\(^9^1\) There have been a number of suggestions to filter out market-wide volatility. See, especially, Rick Antle & Abbie Smith, *An Empirical Investigation of the Relative Performance of Corporate Executives*, 24 J. of Accounting Research 1 (1986)(arguing that taking systematic risk out of stock volatility reduces risk to executives without reducing incentives). Filtering out risk would lose the “advantage” of stealth compensation and it would not reduce the disadvantage of risk incentives.
flesh off a shareholder are a matter of indifference to the option holder. A manager with significant options will take bets with a strongly negative expected value for the company as a whole, because the option has an expected positive value.\textsuperscript{92}

If stock options were an advantage to the venture, finally, it would be possible to mimic stock options even if a venture is organized as a partnership or pass-through for tax purposes.\textsuperscript{93} Partnership equity options are treated quite favorably: the partnership can deduct the value of the equity once when the interest is given and again by excluding the cash that gives the option value. Nontax lawyers, however, are intimidated by partnership taxation in general and specifically by the controversies surrounding partnership equity compensation, and they shy away from playing with options on partnership equity. Still, considering again that the tax reimbursement from a billion dollar fund is worth $540 million with the gross up, there is a lot of money at stake, enough one would think to educate people about partnership equity options.

3. The “advantage” of stock options: Understatement of compensation cost.

The major business “advantage” of a stock option is that the accounting standards allow valuable compensatory stock options to be reported as having modest or zero cost. Managers like their own compensation amounts to be reported to shareholders as they were free or trivial in cost because they believe, probably correctly, that they can get

\textsuperscript{92} Assume for example, the company is offered the chance to invest its entire $5 billion net worth in a project that has a 5% chance of making $25 billion and a 95% chance of becoming worthless. The expected value of the project is 5%*$25b less $5b cost which is a negative expected value of $2.5 billion. Assume, however, the officer who makes the decision on the project has an option to purchase 1% of the stock for current value. Should the project succeed, the officer will achieve a $25 million value on his stock for a $5 million option price. If the project fails, the officer will just not exercise the option. For the self-serving officer, the project is worth 5%*$20 million or $1 million expected value through his options, even though the project has a 95% chance of destroying all the net worth of the company.

more compensation that way. The advantage of options depends, however, on the ability to deceive buyers for an extended period and the market is said to be too smart to fool.

Compensatory stock options grew up under a financial standard that allowed the venture to report compensation on its financial accounts to shareholders as if they were free to the employer. Under a financial standard adopted in 1972 and lasting through 2005, the only reported expense in a compensatory option was the initial bargain the option would give to the employee if the option were exercised as soon as it was granted. Options were always granted such that there was no initial bargain and so no associated compensation cost to the employer corporation. The no-initial-value rule was never a good faith estimate of the value of the option privilege. An option gives the holder the chance to bet on the horse race after the race has been run. The option holder thus gets the benefit of the subsequent gain on the stock if it rises in value above the option price and the option holder also avoids any loss on unsuccessful ventures by letting the option lapse. The higher the risk, the closer the option comes in value to the value of the whole underlying stock.

The tax rule, by contrast with the accounting rule, has throughout the period given the employer a deduction measured by the bargain achieved by exercise of the option. Treating options as having no cost in earnings statements and also multi-million deductions on tax returns is an inconsistency that benefited the employer companies on both sides of the inconsistency.

The Financial Accounting Standards Board has adopted a new rule for financial accounting, applicable generally in 2006 and thereafter, under which the firm must report

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94 AICPA, ACCOUNTING PRINCIPLES BD., Opinion No. 25, Accounting for Stock Based Compensation, (1972).
the compensation costs as the value of the option on grant, and not just the initial bargain. The reform was adopted after years of political conflict, but the reform is an elephant that gave birth to a mouse as to VC fund ventures. The new standard, retains the grant of the option as the measurement date for compensation. It uses volatilities in calculating value that are too low for the start up company. It allows much of the option to be written off before the venture reports to the public. With all factors together, the stated compensation cost even under the new standards is a modest fraction of what the real cost will be if the venture is successful.

Assume, for instance, that if the venture is successful, a key employee will be able to exercise an option in 5 years and receive stock worth $100 million. Assume the venture is risky, having only a one-in-ten chance of success. The $100 million is, first, discounted at a high discount rate, assumed here to be 15%, to $50 million at the time of the grant of the option. Since there is only a one-in-ten chance of success, the stock has an expected value of one-tenth of that $50 million or $5 million. The option purchase price is set to be equal to that $5 million value.

The new standard makes some gesture toward including the value of the option privilege, but understates the volatility. The stock of a VC fund venture is not traded on a public market, and historical figures to calculate the expected volatility of the stock of the venture are not available. The new Statement 123(R), therefore, uses the volatility of the industry, using a Dow Jones industry index for the industry sector, rather than the risk

95 FINANCIAL ACCOUNTING STANDARDS BD., Statement No. 123 (revised), Share-Based Payment (2004).

96 Described, for instance, in Calvin Johnson, The Disloyalty of Stock and Stock Option Compensation, 11 CONN. INSUR. L. J. 133, 139-143 (2005).

97 The present value calculation at 15% is $100/(1.15)^5 = $49.6 million.
experience of the VC fund or the specific venture. The Dow Jones index is comprised of mature companies rather than speculative start-ups, and the volatility of the index will be significantly lower than the VC fund venture in fact will experience. Assume, for instance, that using industry average figures, the stock is worth $5 million because it is like stock that has an 80% chance of being worth $6.25 million in present value terms and a 20% chance of being worthless. In 80% of the cases, the option will give a bargain of $6.25m-$5m or $1.25 million, in 20% of the cases, it will not be exercised, so the option has an expected value of $1 million. Had the measurement used the real one-in-ten chance for the venture, the option would have been evaluated as worth $50-$5 or $4.5 million. Thus using the lower volatility suppresses value of the option from $4.5 million to $1 million or to 22% of real value.

The option value found at grant is also written off, under Statement 123(R), over the period of service that is the period between the time the option is granted and the time the employee can exercise the option and walk away with all the resulting stock. For example, if the option valued at grant at $1 million becomes exercisable (“vests”) upon an IPO that is five years after the grant, then $1 million divided by the five years or $200,000 is reported as an expense each year. In connection with an IPO, the successful venture must publish audited financial reports for the five years prior to the IPO. The reported cost of the option is $200,000 per year or 2/10ths of a percent of what the $100 million venture has in fact paid out in the form of stock. More typically, VC fund options

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98 Statement 123 (R) ¶23. Id at ¶A46 n. 45 tells the company to use Dow Jones website for the appropriate industry sector index.
99 The expected value of the stock is 80% * $6.25 million + 20% * 0 or $5 million. If industry wide discount rate is 10% rather than 15%, then the calculated $6.24 assumes the company will be worth $10 million in 5 years: $6.5m * 1.1^5 = $10 m.
have a 10 year term and if there is 10 years between the grant and vesting, the annual compensation cost is $100,000 or only 0.1% of the $100 million stock that is issue. The firm is reporting the compensation of the CEO who strikes it rich at $100 million, as if its cost were that of salary of a modest middle manager.

The amortization of the cost also starts as soon as the option is granted. Financial statements given in an IPO go back no more than five years. If the IPO occurs more than five years after the grant of the option, then some of the costs will be flushed out before the five-year pre-IPO reporting period begins. Assume a 10 year option, for example, or $100,000 per year cost, and that the IPO occurs after 10 years. Only 5 of the $100,000 annual amortization amounts will appear on the five years of income statements required of the IPO, and the other 5 will be gone before the any thing needs to be reported to the public. The public will see only half of a middle manager’s salary for an option that truly cost the venture $100 million.

Self reporting also allows undervaluation of stock. It is, of course, easy in a hypothetic to state a given $100 million value and set one in ten odds of success, but of course in the real world, neither the future results nor the odds are known. In the face of unknowns, the self serving position is to report the value of the stock at grant as speculative, almost worthless. Under that logic, the stock would be appraised for accounting purposes at a token amount. An option to buy near worthless stock for current value might have a value that is a high fraction of the worthlessness, but it is still nearly worthless. Amortizing a worthless cost yields no compensation expense, not even the 0.1-0.2% of the stock ultimately issued. In sum, the new standard, the hard fought
reform of Statement 123 (R), is not a very impressive blow for accuracy in accounting or for loyalty to the investing public.

For tax purposes, the measurement date for the venture’s compensation deduction is the exercise of the option. The option is measured at grant, under tax regulations, only if the option itself is readily traded on an established market or the underlying property has a volatility history that allows the option privilege to be easily valued.\textsuperscript{101} When the options are granted for a VC fund venture, there is no public market for the stock nor public record of price volatility, so that the tax measurement is deferred for all VC ventures. When (and if) the option is exercised, the venture gets a deduction for $95 million, that is, the $100 million cost of issuing the stock, less the $5 million price it gets from the employee for exercise of the option.\textsuperscript{102} On the earnings statements, by contrast, the $95 million cost is a nonevent, already “adequately” reflected by that portion of the $100,000-$200,000 amortized cost of the undervalued option that falls within the prior five years. Management is pleased that their compensation will generate a $95 million deduction for the venture, while being reported to the shareholders who are hurt by compensation cost, that the option cost only $100,000-$200,000 a year.

The tax rule is right, and financial accounting should conform to it. The true cost to a successful venture is the value of the stock when issued. The $100 million represents the present value of the cash that the company will pay out to the employee-shareholder over the life of the stock, as appraised by a skeptical market that discounts the future cash at a discount rate appropriate for strong skeptics. There is no viable distinction between paying out $100 million cash and paying out $100 million stock, except that the $100

\begin{flushleft}
\textsuperscript{101} Treas. Reg. §1.83-7 (2004)
\textsuperscript{102} IRC §83(h) (employer deduction matches employee income as to amount and timing); Treas. Reg. §1.83-6 (2003).
\end{flushleft}
million stock is a more expensive way to pay future cash. The investing public needs to know the cost of the stock as it turns out and not just a speculative value of what might be. Cod roe might a one-in-million chance of surviving and the accounting rule is trying to measure the value of a mature cod, by counting its value as roe. The accounting profession is counting its mature cod, before they are hatched. But management likes rules which states its own compensation as having a hidden or trivial cost of a cod roe. No other form of compensation allows the venture to so dramatically understate compensation. Management also likes the inconsistent, but wise tax rule that allows the company to take the deduction for the full $100 million cost of issuing the stock.

The aggressive undervaluation of stock is not a tax ploy. Optimal tax planning requires minimizing employee capital gain to maximize the more valuable employer deduction. The option needs to be exercised as late as possible. A low value reported for the stock when the option is granted will reduce the option exercise price at the late exercise. Still the total bargain that the employee receives by exercising the late option will be taxed, whatever it is, without regard to whether or not the bargain is inflated by a low option exercise price. What the aggressive undervaluation does affect is the real economic bargain. Employees are able to buy the stock for a trivial option price instead of for $5 million. That hurts other shareholders, who sell a share of the venture that is worth $100 million to the employee for a dime, instead of for $5 million, but the shareholders never find out about it because the exercise bargain is not an accounting event for published earnings. The aggressive undervaluations do not hurt the government or the SEC, they just cheat on other nonemployee shareholders.
The advantages of stock options, moreover, depend on the ability to convince public shareholders, who are well presented at the IPO by investment bankers, to ignore the real cost of compensation. One should be skeptical about the ability to deceive the smart market, as discussed next.

C. Protecting Earnings.

A final theory is that the VC investors and portfolio ventures accept the draconian and confiscatory taxes to massage earnings on their published financial statements. Accounting Standards require that a public corporation treat R&D not as investments but as lost costs, reducing earnings immediately. It is said that “public companies . . . tend to avoid investment structures that depress book earnings.” Investing companies, Professor Bankman reports, are looking for high accounting earnings and getting the tax deductions for R&D is inconsistent with that. One of the experts in the pilot survey here identified corporations not wanting to take an earnings reduction as one of the four major reasons why VC funds did not use pass-throughs. Under the argument, public corporations do not seek the 35% tax savings deductions from investments in ventures because in order to achieve the tax savings they would have to reduce their pre-tax earnings by 100% of the R&D deduction. Public corporations do not bid up the price for R&D ventures because the R&D would reduce their reported earnings.

On the exit end, it is possible that VC funds are sending their successful ventures to the market stripped of most of the R&D deductions of the fund as a whole because the R&D would reduce reported earnings. VC fund managers create draconian or

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104 Andrew Needham & Anita Beth Adams, supra note 56, at A-6.
confiscatory taxes because if the market could see all the R&D of the fund, then the market would punish the venture. Managers are possibly protecting reported earnings from an R&D reduction both on the investor end and the IPO end of VC funds.

We can construct a thought experience that would test whether management protection of earnings explains the VC fund structure. Suppose that the Financial Accounting Standards Board wrote an exception to its standards requiring immediate expensing of R&D, such that after amendment, R&D costs within a diversified VC fund venture would be an investment. A single venture is a high risk, not very likely to pan out, but a pool of ventures is not especially high risk, certainly not worse than many investments that are routinely considered to be accounting assets. FASB might set some minimum degree of diversification to consider some R&D is an investment. A fund with 100 diversified ventures would clearly be on the investment, rather than expense, side of whatever line is drawn.

Would the new standard make a difference?

1. Affirmative: Reaction to End of Earnings Penalty would be Dramatic

If management commonly foregoes tax benefits to bolster earnings, then the end of the earnings hit would mean a quick and dramatic response. Public corporation would seek the 35% tax savings since they no longer would bear an accounting earnings penalty for R&D investing of the qualified sort. The affirmative (change would make a difference) would be proved by public corporations quickly bidding up the price of VC funds to exclude the nontaxable competitors who could not use the tax deductions. If potential VC investors and the VC managers are myopic earnings manipulators under
current conditions, then ending the earnings advantage would free them to go for the tax subsidy.

Reported earnings are important to corporations. As Professor Douglas Shackelford has argued, “if saving one dollar of taxes does not increase the firm’s book earnings, and thus cannot be observed by outside investors, then the tax savings have no effect on the stock price.” Conversely if the earnings statement management publishes for the market shows bad news, the bid price for their stock will plummet, management assumes, even if the earnings reduction is not reflecting a real loss of economic value. “If the users of financial statements cannot distinguish between low earnings arising from poor profitability and low earnings arising from tax plans that increase cash flow at the expense of accounting earnings, then managers may be unwilling to minimize real taxes paid.”

Public companies sometimes imitate the VC funds, creating a pool of diversified projects in entities that are not part of the consolidated earnings report given to the public. A single corporate funder could get access to immediate R&D deductions if it owned at least 80% of the stock of the portfolio ventures and thus could file a consolidated return with them. Apparently the portfolio ventures are in unconsolidated entities, meaning that for both tax and accounting the R&D is not part of the public companies income. The single sponsor funds are thus also giving up the 35% tax

108 Intel Capital, for example, according to its website had invested more than $4 billion in 1000 separate venture, of which 150 have gone public separately. [http://www.intel.com/capital/about.htm](http://www.intel.com/capital/about.htm) (accessed Feb. 12, 2007)
deductions to avoid reporting the 100% reduction in public earning. The behavior of Intel Capital and similar public companies when they are the sole funder of a large pool of ventures is consistent with the failure of public companies to outbid non-tax-paying institutions in the multiple-investor VC funds. The single funder funds that use the same structure as the multiple investor funds does not explain why a draconian tax structure happens in either situation. Most of the single company sponsored VC funds have largely been failures, now liquidated, but the reason for their failure may well be independent of the decision to incorporate each venture separately.

Public companies are sometimes willing to pay some costs to bolster earnings outside of the R&D area, although it is not clear that they are willing to pay 35 cents per dollar of earnings. In Kamin v. American Express. Company, for example, the corporation gave up the ability to use a capital loss for tax in the amount of $26 million by distributing the stock as a dividend rather than selling it. If they had sold the stock, the tax loss would have saved the company $6.5 million worth of tax on current or future capital gains, at the then in effect 25% capital gain rate. The sale, however, would have reduced earnings by $26 million. The auditor allowed the company to avoid reporting the loss by distributing the stock instead. The loss was not private information, as indicated by the law suit over it. Management nonetheless thought the cost of avoiding a dollar of earnings reduction was worth 25 cents per dollar of earnings.

Companies reporting fraudulent earnings are sometimes willing to pay tax on the fake earnings. Professors Erickson, Hanlon and Maydew looked at a sample of 27 firms that had overstated earnings under circumstances in which the SEC alleged fraud. Not all

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109 See, supra note 46, and accompanying text.
110 383 N.Y.S.2d 807 (1976)
of the overstated earnings increased taxable income. Still the firms overall were willing
to pay $320 million tax on $3.36 billion of nonexistent earnings, or a little over 10% in
taxes, because the firms decided that the inflated accounting earnings were worth the
taxes.¹¹¹ Management caught with fraudulent statement of earnings are undoubtedly on
the short-term, dangerous-behavior end of the business spectrum. Fraudulent behavior
firms undoubtedly have more of a take-the-money-and-run attitude than does the run of
the mill firm. The taxes that they are willing to absorb, moreover, are under 10%, and
that hardly proves that a noncriminal corporation would bear 35% tax to bolster earnings.

Public Corporations that lobby Congress are not happy about proposals to allow
the corporations to expand the investments that they could deduct immediately if they can
get credit for the tax relief on their published earnings statement. If the expensing is
allowed for investments that the accounting profession considers to be assets, then
accounting will set up a 35% tax expense, called a deferred tax account, and pretend in its
reports to the stock market that the taxpayer has not saved any tax.¹¹² The public
corporation would prefer a rate cut that is not as generous as an exemption-equivalent
expensing, but which would show up in as an improvement in after-tax earnings.¹¹³

There is additional evidence that is more ambiguous. Professors Lys and Vincent
look at a transaction in which they claim a public corporation paid 40% per dollar of
earnings enhancement without any economic benefit. When ATT took over NCR in

¹¹¹ Merle Erickson, Michelle Hanlon, Edward L. Maydew, How Much Will Firms Pay for Earnings that
Do not Exist? Evidence of Taxes Paid on Allegedly Fraudulent Earnings, 79 ACCOUNTING REV. 387
(2004). Some earnings increased accounting income without creating taxable income, for example,
overstated earnings in foreign subsidiaries could sometimes be included in domestic income but not taxable
income.
¹¹² FINANCIAL ACCOUNTING STANDARDS BOARD, Financial Accounting Statement No. 109, Accounting
¹¹³ Thomas Neubig, Where’s the applause? Why Most Corporations Prefer a Lower Rate. Tax, 111 TAX
NOTES 483 (2006)
1970 by hostile bid for shares, they paid an extra ½ billion dollars to redeem back stock that had recently been issued by NCR, so to be allowed to use pooling rather purchase accounting for the acquisition.\textsuperscript{114} Lys and Vincent call the transaction a half billion dollar “value destruction.” The NCR business generated no extra cash flows because of the redemptions. But redeeming back stock at fair market value is not a value reducing transaction because ATT would get a larger percentage of the reduced corporation. In retrospect, ATT paid too much for NCR stock, including the redeemed stock, but of course they undertook the acquisition in the first place only because they did not think they were overpaying for any stock.

Public firm reaction to LIFO accounting is also ambiguous. Section 473 of the Code provides that firms may adopt a tax-favorable LIFO accounting for inventory for tax purposes only if they also reduce earnings in conformity with their LIFO tax method. The empirical research shows the firms usually choose the tax benefits, but not always.\textsuperscript{115} The difficulty with the LIFO example is that the LIFO conformity requirement has become a not very meaningful requirement. Management can take the tax benefits, and publish footnotes and special schedules using FIFO-earnings which are higher than the

\textsuperscript{114} Thomas Lys and Linda Vincent, \textit{An Analysis of Value Destruction in AT&T's Acquisition of NCR}, 39 J. OF FIN. ECON. 353 (1995). Lys and Vincent find that the extra earnings was 17\% in $7.5 billion acquisition which would be $1.28 billion over time. The $500 million redemption costs were about 40\% of $1.28 billion.

Pooling accounting, now prohibited, allowed the acquiring company to use old cost accounts carried over from the NCR’s records to compute profit. For many assets, especially LIFO inventory, the target company’s stated cost accounts can be few cents on the dollar of the real value. ATT company paid for the value in the form of stock, but ATT’s earnings would look better (and be less accurate as a sample of the future) if could use the target’s old trivial costs in computing its expense. The 1970 pooling rules prohibited customizing a target in preparation for a merger, however, and NCR had just issued some stock to management that had to be redeemed back.

\textsuperscript{115} B. Cushing and M. LeClere, \textit{Evidence on the Determination of Inventory Accounting Policy Choice}, ACCOUNTING REV. 355 (1992) (survey based); Professors Shackelford and Shevlin, \textit{Empirical Tax Research in Accounting}, 31 J. ACCOUNTING & ECON. 321, 328-330 (2001) (finding that tax was the apparently dominant consideration but earnings management was sometimes more important and finding the results the research “inconclusive and puzzling”).
LIFO earnings. Bank lenders can be shown the FIFO reports by means other than the published financial statements. FIFO can also be used internally for compensation bonuses, and for cost management to allocate capital internally and to set selling price.\textsuperscript{116}

Especially before the Tax Reform Act of 1986, public companies often sponsored R&D limited partnerships sold to high wealth individuals as tax shelters.\textsuperscript{117} The R&D shelters kept the R&D expenses off of the earnings reports of the sponsoring company. The shelters bore heavy transaction costs, so that one might posit that the willingness of the firms to bear those costs was an indication of willingness to pay for reported earnings protection. The shelters, however, had too many other benefits to the sponsoring firms, however, to prove that earnings protection was the key factor. The R&D partnership got R&D borrowing off the balance sheet of the sponsoring company. It attracted enough capital from individuals seeking shelter to convince a lender to extend the loan.

Individual rates were higher than corporate rates, before 1986, so that they were willing to pay more for the R&D deductions than the sponsoring company lost by foregoing the deduction. Shelter investors, moreover, were amateur, even push-over investors who did not insist on hard currency beyond their tax shelter. The earnings advantage was thus not the only advantage of the R&D partnership, so that there existence is not proof that the sponsors were choosing earnings over tax benefits.

\textsuperscript{116} Edward Kleinbard, George Plesko & Corey Goodman, \textit{Is it Time to Liquidate LIFO?}, 113 TAX NOTES 237 (2006) (also nothing that low cost modes of LIFO are used for nontax, and high cost modes are used for tax).


The Tax Reform Act of 1986 by enacting passive activity loss limitations of IRC \textsection{469} ended the ability of individuals to report the losses from R&D.
The puzzle of the burning of R&D is not just a matter of public corporations not monopolizing the VC funds, at the front end, but also, on the back end, a matter of the VC funds selling their successful ventures, stripped of the R&D deductions of the failed ventures. The exit end of the ventures might plausibly be driven by same earnings protection motives that front end make corporation avoid going into VC Funds as investors. The managers of the VC funds make the judgment that they are better off sending their successful ventures into the IPO without the R&D of the whole fund because of a perception that they can not communicate to the market that the R&D was an investment and not a loss.

Two recent serious studies have come to opposing conclusions about the role of the VC funds in earnings manipulation. Professors Morsefield and Tan found that VC Funds did not suppress the earnings manipulation in newly launched IPOs, in comparison to the general norm. They found that all IPOs state earnings for their businesses that can not be sustained by the business over a longer period of time. The IPOs sponsored by VC funds, however, had less inflated earnings by comparison to their eventual level of earnings than were IPOs not sponsored by VC funds.¹¹⁸ Morsefield and Tan conclude that “institutions are sophisticated investors who typically serve a monitoring role in reducing pressures for myopic behavior.”¹¹⁹

By contrast Professors Cohen and Langberg, looking at 6700 IPOs, found that sponsorship by VC funds increased the inflation of the earnings reported in the IPO and

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¹¹⁸ Suzanne G. Morsefield & Christine E.L. Tan, *Do Venture Capitalists influence the decision to manage earnings in initial public offerings?* 81 ACCOUNTING REV. 1119 (Oct. 2006)
¹¹⁹ Consistently Brian Bushee. *The Influence of Institutional on Myopic R&D Investment Behavior.* 73 ACCOUNTING REV. 305 (1998) found that managers are less likely to cut R&D to reverse an earnings decline when institutional ownership is high, implying that institutions are sophisticated investors who typically serve a monitoring role in reducing pressures for myopic behavior.
reduced the informativeness of the accounting earnings statement, compared to future earnings and value. Cohen and Langberg conclude that venture capitalists are transient investors who achieve their returns by quick exit and who therefore “myopically focus on short term reported accounting earnings given their limited investment and ownership horizon.” The draconian taxes that VC funds bear overall is consistent with the findings that the VC funds are myopic earnings manipulators, although the taxes do not prove it.

2. Negative: Fund Reaction to R&D as Assets would be Modest.

The experts on the pilot survey leaned toward thinking that a new hypothetical FASB standard allowing VC fund R&D to be treated as an asset rather than an immediate expense would not make any difference. Experts said they thought that earnings did not matter to corporations and that corporations avoided the VC funds because they concentrated on their core business. On a scale of plus 10 for strongly agree to minus 10 for strongly disagree, the experts came in at negative 2.25, disagreeing mildly to the proposals that “If FASB allowed VC funds to capitalize their R&D costs, then corporate investors would dramatically increase their participation in VC funds.”

If the stock market is already cognizant of the investment value of a venture’s R&D and takes it into account in value bid for public stock, then a change in the accounting standards to allow R&D within VC funds to be treated as an asset could not

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be expected to have any further impact on the fair market value of companies making R&D investments, nor any impact on public firm willingness to invest in R&D funds.

A number of recent studies have found that the market already considers R&D to be an investment and not lost as paid. Professors Lev and Sougiannis found that the market gave positive market value to R&D investments implying that the market treated the expenditures as investments rather than as lost expenses in the year paid.¹²¹ Professor Hand has recently looked at the internet start-ups and concluded again that the market valued added R&D, albeit with an assumption of the lesser marginal returns as the size of the R&D increased. The market also treated advertising as an investment, albeit with a life shorter than it accorded to R&D.¹²²

Professors Armstrong, Davila and Frost of Stanford, however, studied venture-backed post-IPO firms and found inconsistent results as to whether the public market valued R&D investments, depending upon the yardstick they used. Under some regression methods, they found that the venture funds R&D increased value and for other methods, they found R&D decreased value.¹²³ If VC fund R&D is associated with confiscatory or draconian taxes, of course, one should expect the market to have certain amount of ambivalence toward R&D as a positive good.

Outside of venture capital, corporations seem to have been reasonably successful even when the accounting profession will not treat their investments as an asset.

Pharmaceutical companies, for example, are required to expense their costs of developing new drugs and yet they have been successful in convincing the market that their successful drugs have value. Advertising costs are treated just like R&D as expenses and never as investment. Coca-Cola, Nike, Proctor & Gamble and other consumer products businesses are nonetheless willing to make massive investments in advertising. Microsoft and Intuit, to take another example, are in the business of developing and selling software programs and they have been quite successful. The costs they incurred to create the software is treated just like R&D for accounting purposes, entirely lost as paid. The accounting misdescription does not seem to have prevented them from creating the software or being quite successful on the stock market. Internet applications, like those created by Yahoo, Amazon, Google, eBay, and YouTube, are R&D investments, but the stock of those firms has been selling quite well.

Indeed the theory that R&D expensing depresses a firm’s stock market price probably should require us to write an alternative history of the dot Com bubble. Under the theory that expensed investments are underappreciated by the market, the dot Coms must have gone into a recession when they were offered and they must now just be ready to rise in their stock price to a value that reflects their true economic merit. In the real history, the dot Coms investments were expensed for accounting purposes and yet they

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124 For an argument that firms should be able to capitalize the value of their brand names under GAAP (although they do not), see Peter Farquhar, Julia Han & Yuri Ijiri, Brands on the Balance Sheet, Stephen Zeff & Bala Dharan, Readings and Notes on Financial Accounting at 351 (5th ed. 1997).

125 Financial Accounting Standards Board, Statement No. 86, Accounting for The Costs of Computer Software to be Sold, Leased or Otherwise Marketed, Financial Accounting Standard No. 86 para. 3-6 (1985) (requiring immediate expensing of research and development costs of software prior to technological feasibility and general capitalization of development costs after technological feasibility is established).
seem to have been overvalued rather than underappreciated. A bubble in price implies that there is no penalty on R&D.

As a matter of theory, it is not very plausible that the market would undervalue VC fund R&D if the R&D expenses reduced published earnings. For isolated R&D, it is plausible that the market is skeptical about value. There is an information asymmetry. Investors in public corporations have to rely on very imperfect information about corporate investments, and in the face of ignorance of the real dangers they must rationally offer only very low prices even for investments that are indeed meritorious. Any investment might be a lemon, for all the outsiders can ascertain. The market can not tell the difference between brilliant R&D investments and money down a rat hole and does not and should not trust the firm that has incurred the cost to help it identify the losers. Indeed, for high risk ventures, the odds against commercial success are very high. Zero investment value might be a fine rough assessment of value.

The VC fund, however, overcomes much of the problems of high risk by collecting the risky ventures into a large pool. The individual ventures remain high risk. Indeed the most highly skilled VC managers can screen to exclude unpromising ventures, but they too do not know which ventures will succeed commercially and which will fail and they too must rely on the law of averages. There is no strong information beforehand because no one knows which ventures will succeed. Still with enough ventures in the pool, some ventures will succeed and high risk becomes a normal percentage of investments determined by the law of averages. Outsiders should be able to assess the

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value of ventures in a pool about as well as the managers can. They should at least be able to see that R&D of a large pool can be expected to have positive value.

Under the efficient market thesis, investors get their information from all published sources and not just from the reported income figure. It does not matter, moreover, what format a corporation uses to disclose information to the public because the smart market will digest the information quickly and incorporate it in pricing decisions.\(^{128}\) Current price of a share represents the summation of vectors representing millions of dollars of investment research incurred by investors who are working intensely in their own self interests.\(^{129}\)

Within a smart market, earnings are just a messenger about the underlying economics within the firm, but not a critical messenger. There are alternative ways for the stock analysts to get the information. Indeed if the institution of FASB earnings were abolished, we could expect some alternative means to develop quickly to allow a company to communicate its economic health to its shareholders and potential investors. “Perhaps Merrill-Lynch or Fidelity Investments, Morningstar or Bloomberg, Standard and Poor or Value Line, or some other company could become the company that administers a new standard rating system”.\(^{130}\)

The smart market should not be hobbled by an erroneous accounting method treating a VC fund investment as if it were a worthless expense, and it should be able to look through the current treatment and evaluate the R&D. A new standard allowing VC


fund R&D to be capitalized would not provide any new information to the market and
would not certify or undercut any value for the R&D determined by outsiders by other
means. Within the domain of a smart market, one should thus not expect that
capitalization of R&D would have a material effect on the price paid for R&D stocks. If
VC managers, corporate investors and investment bankers are smart, then making VC
fund R&D into an asset should not provide them with any new education, one way or the
other.

I find the smart side of the debate to be more persuasive. It is not very plausible
that corporate investors or the VC funds can succeed materially in fooling the market to
their advantage. But the thesis that VC funds are creating separate funds to bolster
reported earnings can not be dismissed with quite the same confidence that one can
dismiss claims based, e.g., on employee capital gain or inertia.

Note that neither side of the debate is praise for the VC funds or the system they
adopt. If the market reacts strongly to expensing of R&D on the earnings statement, then
the parties to the structure are choosing a false message to manipulate market price.
Corporations are avoiding sound investments so as to spin earnings, that is, choosing the
cosmetics of earnings and rejecting sound investments and economic health. They are
acting as myopic earnings manipulators. They are bearing the draconian and
confiscatory taxes to fool the public buyers of corporate stock.

The other side of the debate is not very much more attractive. If the price of
corporate stock is not sensitive to the treatment of earnings, then the VC funds are
bearing unnecessary taxes, for no reason at all. VC funds are on a slippery foundation
whether earnings matter or not.
Summary

Venture capital funds are large pools of high risk ventures that fund R&D investments. R&D investments can be deducted immediately for tax purposes to reduce otherwise taxable income. That should imply that VC fund investments should be made exclusively by taxable corporations, because only taxpayers with taxable income to shelter get the reimbursement of 35% of their investment. Taxable corporations do not exclude other investors in VC Funds, however. The VC funds, moreover, destroy value by incorporating each venture into a separate corporation. The separate incorporation of each start up means that when a risky venture fails it ends the value of the R&D deductions entirely. When ownership of a venture turns over, including by reason of additional funding in return for preferred stock, the value of the deductions are cut back to no more than about 21-22% of the value of the venture at the time of turn over. The result is that successful ventures pay tax on their gross receipts without use of most of the overall costs of the funds. The result is that the tax is sometimes greater than the profits of the fund overall and the tax is always high, higher than the statutory tax rate, and much higher than it needs to be.

The explanations offered on why the funds accept such high taxes do not justify or explain the taxes. The results can not be justified by drafting habits in a billion dollar fund because the stakes are too high to be justified by inertia. It is not necessary to incorporate to become a corporation in time for a public offering of stock. Employee capital gain, reported under the structure, compounds the anomaly by giving up the available compensation deduction.
Stock options make sense only as a means to understate compensation to the owners and potential investors. The structure might be part of an elaborate earnings manipulation to keep R&D off of earnings, except that it is difficult to see that the deception succeeds by enough to justify the tax. The explanations for why the VC funds chose a structure with such draconian taxes are not very satisfying.

Masters of the Universe should not destroy value. If tax benefits of R&D are being so cavalierly thrown away, perhaps it is not necessary to give the tax subsidy inherent in R&D. The puzzle of why the VC funds burn R&D deductions is an important puzzle even if this article has not succeeded in solving it.
Appendix

Statistics compiled by Katherine Litvak, University of Texas Law School of outcomes of ventures in venture capital funds.\textsuperscript{131}

<table>
<thead>
<tr>
<th></th>
<th>All Years</th>
<th>Before 1997</th>
<th>1997-2001</th>
<th>After 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bankrupt companies</td>
<td>2.83%</td>
<td>3.89%</td>
<td>2.01%</td>
<td>0.52%</td>
</tr>
<tr>
<td>Defunct companies</td>
<td>7.09%</td>
<td>7.81%</td>
<td>7.52%</td>
<td>1.86%</td>
</tr>
<tr>
<td>Sum: Failed companies&quot;</td>
<td>9.92%</td>
<td>11.71%</td>
<td>9.54%</td>
<td>2.39%</td>
</tr>
<tr>
<td>Privately held companies</td>
<td>63.59%</td>
<td>51.92%</td>
<td>72.38%</td>
<td>90.07%</td>
</tr>
<tr>
<td>Merged companies</td>
<td>2.16%</td>
<td>3.18%</td>
<td>1.16%</td>
<td>0.74%</td>
</tr>
<tr>
<td>Acquired companies</td>
<td>23.86%</td>
<td>32.47%</td>
<td>16.69%</td>
<td>6.79%</td>
</tr>
<tr>
<td>Sum: “Ambiguous Results”</td>
<td>89.62%</td>
<td>87.58%</td>
<td>90.23%</td>
<td>97.59%</td>
</tr>
<tr>
<td>IPO companies</td>
<td>0.46%</td>
<td>0.71%</td>
<td>0.24%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Sum: “Successful”</td>
<td>0.46%</td>
<td>0.71%</td>
<td>0.24%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Sum</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

All results are summed to 100%, dropping out cases of data not available. Results for post 2001 are lower for both failures and IPO successes because some ventures have not yet matured into success or failure.

\footnote{The ventures were selected from top-100 venture capital managers by reputation from VentureXpert database. The selection process gives a bias toward higher quality and the sample does not necessarily represent a fair sample of all ventures.}