WHY DO VENTURE CAPITAL FUNDS BURN RESEARCH AND DEVELOPMENT DEDUCTIONS?

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ABSTRACT

Venture capital (VC) funds form a separate C corporation for each venture that they support within their portfolio of diverse ventures. The separate incorporation of each portfolio venture loses tax value that could be achieved from deducting research and development (R&D) costs. The tax deductions of the ventures are trapped within a corporation that cannot use them. The resulting taxes are draconian, sometimes confiscatory. If R&D deductions were used optimally, taxable investors could achieve a tax regime that would not reduce their pre-tax return.

The justifications offered for separate incorporation of each portfolio venture do not survive scrutiny. Separate incorporation is said to be required to protect tax-exempt investors, but if R&D deductions were passed out to taxable investors, 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 any event, do not justify the draconian taxes the VC funds bring upon themselves through their structure.

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 their 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 VC funds. None of the attitudes, views, or errors of this paper can be fairly attributed to anyone who provided help.
Other justifications also do not work. A venture must be a C corporation once it is sold on established market, but it is not necessary to incorporate before an initial public offering (IPO) or before the VC 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 because the time-value-of-money cost to the employer is so high for time-value-of-money value given to executives. Options also 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. However, R&D expenses 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. Accordingly, even the best of the surviving explanations does not explain the anomaly of why the VC funds incorporate each venture separately.

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

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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 $100
invested. 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 ordinarily a privilege as valuable
as not paying any tax on the profit from the investment.

VC funds waste the R&D deductions, however, by incorporating
each venture in their portfolio as a separate corporation subject to tax
under subchapter C of the Internal Revenue Code. Separate
incorporation as regular or “C corporation” traps the R&D
deductions for each venture within a new corporation that does not
have any income against which to use its R&D deductions. The R&D
deductions are delayed at least 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 reasonable 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 venture does need to be a C corporation if sold on a public market, but a successful venture does not need to be a C 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 actually increases total tax paid to the government, once the venture level effects are considered. The C corporation status is said to be required to use compensatory stock options. Stock options are, however, 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. Even if options did provide 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 and R&D deductions are accounting losses. However, the market does not impose any substantial penalty on expensing of R&D investments, nor does it require firms to avoid the expensing. This is evidenced by the fact that many successful ventures, including Amazon, eBay, Microsoft, Nike, Coca-Cola and the pharmaceutical industry, live off investments that are expensed. Government regulation plays no significant role. Once the usual explanations are scrutinized and discounted, there is little promise left of 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, The UCLA Tax Policy Conference: Structure of Silicon Valley Start-Ups, 41 UCLA L. REV. 1737, 1738, 1768 (1994).} This article optimistically took up the challenge, examined the arguments offered to justify the structure, and failed to find any merit in the proffered justifications.

The justifications that observers offer vary a great deal. Different observers cite different factors and assign different weights to factors...
when they do cite the same factors. Some reasons seem better than others. Still, the VC 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 out 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 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 that finding numbers from the conversations would require many arbitrary decisions, and that I would not be able to find the reasons for the burning of R&D deductions with a larger survey of the same kind. Among the five experts, there was a wide variation in explanations

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2 The five lawyers volunteered in response to an e-mail solicitation I sent to thirty lawyers who were partners in major law firms and whose listing in the 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 graciously gave. When I asked them to talk to me, I was sure I could solve this puzzle. The conditions of the interview were that I would give them confidentiality where they might be embarrassed. I err on the side of confidentiality.

3 While I had a questionnaire that the participants saw in advance, I invited participants to treat it merely as a guide to the conversation. They did so, and often restated what they thought was important in ways that did not fit the questionnaire tabulations. The reasons given for why each venture incorporated separately were 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 factors and assign a percentage weight for the importance of each. Their answers on rank were often inconsistent with their percentage weight, and the percentages usually did not total 100%.
given for the choice of separate incorporation. For reasons set out in this paper, none of the offered explanations convinced me that the separate incorporation was justified on the merits.

In addition, my colleague, Kate Litvak, selected ventures from high quality funds for the period before 1997, the period from 1997 to 2001, and the period after 2001 to then-present 2007. The results of the sample are included in the appendix to this article. As with the pilot survey, the small Litvak sample convinced me that I would not be able to find an explanation of why the burning of R&D deductions happened with a larger sample of the same type.

I quote experts from the pilot survey and give the results of the Litvak sample 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 VC fund is an investment pool that supports the R&D expenditures of a large number of high-risk, but high-potential, start-up “portfolio” ventures. Funds seem to diversify their portfolio ventures rather than specialize. A single fund might invest in ventures in biomedicine, telecommunications, computer software, and new “killer apps” for the Internet.

A VC 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

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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.\(^5\)

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 eighty to one hundred different portfolio ventures into a single pool or fund, which modulates the risk. Any single venture within the fund might have the same chance of success as throwing dice to make an eleven. Just as throwing the dice one hundred times makes that outcome more stable, however, the outcome in a diversified portfolio is less volatile. The VC fund 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.

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. They would then be taxed like partnerships and be able 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 allocates out the total to the various owners. Under

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\(^5\) Thomas Hellman & Manju Purin, *Venture Capital and Professionalism of Start-up Firms*, 57 J. FIN. 169, 176–77, 182, 190, 194 (2002) (finding that VC fund 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); Tian, *supra* note 5, at 1, 27 (finding that VC funds give ventures greater access to both the stock market and product markets).
what are called check-the-box regulations, limited liability companies can qualify as partnerships or pass-through entities for tax purposes.\(^6\) Thus, there is no need to give up limited liability in order to qualify as a pass-through, tax partnership.

Conversely, separate incorporation of each venture traps the R&D deductions within a start-up corporation that will not have any income for some time if ever.\(^7\) The separate incorporation commonly means that a significant fraction of the deductions are lost permanently. This 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 benefits.

With separate incorporation of each venture, tax can turn otherwise acceptable returns into post-tax losses. Assume, for example, 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 R&D expenses that qualify for immediate deduction under section 174 of the Internal Revenue Code (Code).\(^8\) Since the tax treatment of ordinary business expenses and R&D expenses is the same, the $10 million covering both can be described as simply R&D deductions. Assume that funding for 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. Venture capital-backed ventures are high-risk operations even with the backing of a fund. The pilot survey estimated that a mean of only 7% of ventures made it to a clear profit, that is, an initial public offering (IPO) of the stock. The Litvak sample found that less than 1% of ventures made it to IPO.\(^9\) Assume in this


\(^7\) Deductions of a subsidiary corporation can be used by other corporations within an affiliated group, I.R.C. § 1501 (2009) (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.

\(^8\) See I.R.C. § 174(a)(1).

\(^9\) In the pilot survey, the mean estimate of ventures that made it to IPO was
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In the 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. Pre-tax, in the model, 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, deductions must be mated against taxable income, but 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 against which to use the deductions.

Since 1986 reform legislation, enacting what is now section 382 of the Code, net operating losses of 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), multiplied by the purchase price of the venture when it changes hands. Under the section 382 limitations, the tax deductions for past R&D can have a worth of no more than about 20% of the value of the purchase price when the venture changes hands. For the

7.2% with a standard deviation of 4.4%. The Litvak sample found 0.46% of ventures in the overall sample made it to IPO, with the more mature, pre-1997 sample 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.

The assumption that the pool returns all of its $140 million at once at a terminal point is a simplified 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. Also note that income is ordinarily measured as interest-like annual percentages, and that 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.

I.R.C. § 172(b)(1)(A), (c).
I.R.C. § 382(g).
The limitation on net operating carryforwards under section 382 allows, at
ventures that are worthless, the limitations reduce net operating losses (NOLs) to 20% of a worthless amount. In sum, when the 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 not 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 on its reported income under section 11 of the Code.\textsuperscript{15} The successful venture will be able to use its own R&D deductions but not the R&D deductions of the other failed 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, less $10 million, for a total of $130 million. Tax at the section 11 rate of 35% on $130 million is $45.5 million.\textsuperscript{16} 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 million returned after tax. The tax at $45.5 million exceeds 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 ten ventures, a 10% success rate. Table 1 shows a range of tax rates, all high, with different assumptions about profit and success rates. The underlying method for taxation for all cases is the 35% corporate tax imposed on the one successful venture, which can use only its own R&D deductions.

\begin{table}
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Profit} & \textbf{Tax} \\
\hline
$40 million & $45.5 million \\
\hline
$80 million & $91 million \\
\hline
$120 million & $106.5 million \\
\hline
\end{tabular}
\caption{Range of tax rates for different assumptions.}
\end{table}

\footnotesize{\textsuperscript{15} I.R.C. § 11(a).
\textsuperscript{16} I.R.C. § 11(b)(1)(D).}
Empirically, the success rate of a single venture within existing funds is at or near the bottom row, where the real tax burden is especially high. Even for high success rates, however, higher up in the rows of Table 1, the tax on the fund is higher than the 35% tax rate nominally imposed on the fund and much higher than the zero effective tax rate that expensing ordinarily accomplishes.

Investors in the VC fund are often tax-exempt institutions. If the investors in the VC fund are taxable, however, there is also a second level of shareholder tax imposed when the shares of the successful venture are 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 at the fund level. Taxable investors, however, will have to pay tax on the capital gain of the stock of the successful venture when they sell their shares, typically some time after an IPO of the successful venture. Corporate investors, for example, must pay an added 35% tax on their capital gain from the 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 might avoid the second level of tax

Table 1. Real Tax Rate as Percentage of Profit with Nominal Rate of 35%.17

<table>
<thead>
<tr>
<th>Success Rate of single venture</th>
<th>Profit of whole fund</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>45%</td>
<td>83.1%</td>
</tr>
<tr>
<td>35%</td>
<td>91.9%</td>
</tr>
<tr>
<td>25%</td>
<td>100.6%</td>
</tr>
<tr>
<td>15%</td>
<td>109.4%</td>
</tr>
<tr>
<td>5%</td>
<td>118.1%</td>
</tr>
<tr>
<td>1%</td>
<td>121.6%</td>
</tr>
</tbody>
</table>

17 The formula is: $35\% * \left[(1 + P – s) / P \right]$, where $P$ is rate of profit on the over all fund, 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 $I$, where $I$ is the unit expenses. But in the VC fund with separate incorporation, only the costs of the successful venture $s*1$ are deducted from the gross profit of $1 + P$, for a taxed amount of $1 + P – s$.

18 Had the VC fund 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. I.R.C. §§ 311(b), 336. Section 731 has no parallel recognition when the fund is organized as a partnership and it distributes stock of the successful venture.
on subsidiaries if 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.

Shareholder level tax ameliorates the loss in those cases in which the venture level tax exceeded profit, 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 tax on shareholder capital gain from sale of the ventures. Even when the taxes do not exceed profit, the taxes shown in Table 1 and Table 2 are very high.

Table 2. Shareholder Capital Gain Tax at 35% Added on to Venture Level (Table 1) Tax.

<table>
<thead>
<tr>
<th>Success Rate</th>
<th>40%</th>
<th>60%</th>
<th>100%</th>
<th>200%</th>
</tr>
</thead>
<tbody>
<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>
<tr>
<td>25%</td>
<td>100.4%</td>
<td>86.2%</td>
<td>74.8%</td>
<td>66.3%</td>
</tr>
<tr>
<td>15%</td>
<td>106.1%</td>
<td>90.0%</td>
<td>77.1%</td>
<td>67.4%</td>
</tr>
<tr>
<td>5%</td>
<td>111.8%</td>
<td>93.8%</td>
<td>79.4%</td>
<td>68.6%</td>
</tr>
<tr>
<td>1%</td>
<td>114.1%</td>
<td>95.3%</td>
<td>80.3%</td>
<td>69.0%</td>
</tr>
</tbody>
</table>

19 I.R.C. §§ 243(b), 332, 337 (allowing distributions from or liquidation of an 80% owned subsidiary without tax).
20 I.R.C. § 382(b).
21 The formula is: \( \text{vt} \ast p + 35\% \left( p - \text{vt} \ast p \right) / p \), where \( p \) is the profit from the entire venture, and \( \text{vt} \) is the venture level tax rate computed in Table 1. Success percentage \( s \) does not show up in the the shareholder level formula because of the assumption that the investor’s full $100 million basis invested in the stock reduces the shareholder level gain.
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Tax-exempt institutional investors, however, do not face the extra
taxes in Table 2; 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 of ten ventures fail. Full success, an IPO, is
rare—indeed rarer than the 10% chance used in the simple Model A.
VC funds, however, will typically have a large portion of ventures that
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,” in the slang of the trade. 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 attracts no new capital
and does 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. Since the R&D deductions of a zombie
are used eventually within the venture, the deductions are not burned
in full.

The estimates of how large a fraction of a VC fund is represented
by zombies are very far apart. Published estimates put zombies at
about 20%. The five-lawyer pilot survey estimated a range from 33%
to 65%, with an average of 46%. The Litvak pilot sample found 10%
of ventures were bankrupt or defunct, only 0.5% 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, and some good results, but probably not home
runs. It would also include many zombies as well. The edges of how to

22 John C. Ruhnka, Howard D. Feldman & Thomas J. Dean, The “Living Dead”
23 Id. at 143.
24 The standard deviation was 10.7%, but the sample was only five lawyers.
Their answers were commonly in the form of ranges, and I had to re-interpret these
ranges so that their totals would reach 100%. These estimates were also intended as
both back-of-the-envelope estimates and the results of actual counts.
define zombies are not sharp. The definition of what it means for a venture to be worth about what was invested in it varies, as the assumed discount rate varies.

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 funds go to companies that are already showing their success and are, therefore, less likely to be failures or zombies. For the earliest stages, success is rare and failures and zombie-state ventures dominate.

Adding to the complexity is that, under section 382 of the Code, net operating losses are reduced not just by the failure of a venture, which would terminate the net operating losses in full, but also by a 50% turnover in ownership of stock within a three-year period.25 Venture capital investors almost uniformly get preferred stock that is convertible into common stock in return for their cash invested.26 VC funds pay for ventures in stages. In each stage, the investors receive more of the preferred stock. A single stage of funding might well constitute a change 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 multiplied by 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.27 The limitation is not serious for ventures that have grown to 175% of their invested R&D—because 20% of 175% would allow the full 35%-of-cost value for a deduction—but the zombies are not worth that much. The 50% change in ownership thus drops the deductions from a worth of 35% of investment to 20% of the 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. In addition, a refinancing

25 I.R.C. § 382(g)(1).
26 Denis, supra note 5, at 311 (stating that 96% of financings in Silicon Valley ventures gave preferred stock to the investors).
27 Id. 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 present value of net operating deductions when ownership changes hands. The simplicity of terminal tax as a percentage of terminal value makes it worth using the models for narrative purposes, even though they do not capture impact of timing on tax value.
that constituted a change in ownership of the venture that did not change 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 survey and the Litvak sample indicate that the information necessary to calculate the impact of zombies on the terminal value taxes is difficult to determine, given the complexities of multi-stage investments and section 382 limitations. Assume, somewhat arbitrarily, a model in which 50% of 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. When the success rate is high, as at the top rows of Table 3, the VC fund is deducting almost all its R&D expenses. When success rate is low, as at the bottom rows 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.

Table 3. Tax as Percentage of Terminal Income with Nominal Rate of 35%. Fund is Half Zombie (just returning capital).\textsuperscript{28}

<table>
<thead>
<tr>
<th>Success Rate</th>
<th>Profit of whole fund</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>45%</td>
<td>39.4%</td>
</tr>
<tr>
<td>35%</td>
<td>48.1%</td>
</tr>
<tr>
<td>25%</td>
<td>56.9%</td>
</tr>
<tr>
<td>15%</td>
<td>65.6%</td>
</tr>
<tr>
<td>5%</td>
<td>74.4%</td>
</tr>
<tr>
<td>1%</td>
<td>77.9%</td>
</tr>
</tbody>
</table>

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

\textsuperscript{28} The formula is $t * (1 + P - \frac{1}{2} - s) / P$ with $t$ at 35%. 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.
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Table 4. Tax as Percentage of Terminal Income with 35% Tax on Venture and 35% Tax on Shareholder.
Half Zombie (just returning capital).

<table>
<thead>
<tr>
<th>Profit of whole fund</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>60.6%</td>
<td>74.8%</td>
<td>68.0%</td>
<td>62.9%</td>
</tr>
<tr>
<td>35%</td>
<td>66.3%</td>
<td>71.0%</td>
<td>65.7%</td>
<td>61.7%</td>
</tr>
<tr>
<td>25%</td>
<td>72.0%</td>
<td>67.2%</td>
<td>63.4%</td>
<td>60.6%</td>
</tr>
<tr>
<td>15%</td>
<td>77.7%</td>
<td>63.4%</td>
<td>61.2%</td>
<td>59.5%</td>
</tr>
<tr>
<td>5%</td>
<td>83.3%</td>
<td>59.6%</td>
<td>58.9%</td>
<td>58.3%</td>
</tr>
<tr>
<td>1%</td>
<td>85.6%</td>
<td>58.1%</td>
<td>58.0%</td>
<td>57.9%</td>
</tr>
</tbody>
</table>

The terminal taxes computed for Tables 3 and 4, in which half of the 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. However, the terminal taxes in Table 3 and 4 are still quite high. The loss of the value of the R&D costs for the failed companies drives real tax well above the nominal 35% statutory maximum and requires 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 of zero on the profits. 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

1. Yield Exemption

The best use of the $100 million in deductions would be to distribute the deductions to taxable investors who can immediately use the deductions. 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

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29 The formula is $\frac{vt + t * (P - vt)}{P}$, just as for Table 2, but here vt, or venture tax, is the tax computed in Table 3 (rather than Table 1). As with Table 2, the model assumes that the investor’s entire $100 million basis invested in the stock will reduce the shareholder level gain.
deduction, the R&D expenses would give investors a result under which tax does not reduce the pretax profit.

Ordinariliy, under an income tax an investor cannot 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, which is useful later, but not an immediate deduction. However, for a technological development, R&D, we ignore the investment value and allow the costs to be deducted immediately or expensed. Tax law treats R&D expenditures as if they were lost costs as soon as they are paid. Truly speculative investments might in fact have such a small chance of succeeding 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 a hundred 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. This is the functional equivalent of the government reimbursing the taxpayer and reducing its cost for the investment. The reimbursement allows the taxpayer to increase, or gross up, its investment by counting on the tax savings. Assume that a venture within a VC fund is worth $10 million in the absence of 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 an LLC or partnership that passes through its tax losses to the owners. The funds themselves are already organized as 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

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30 I.R.C. § 174. Section 174 allows immediate deduction for investments in “research and experimental expenditures,” but it is generally assumed that the expensing covers not just experimentation, but also development, and the language describes the expenditures as “research and development.”
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 income taxed at a 35% rate 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 a 35% tax 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 at which the R&D deductions are used.31

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 tax-exempt institutions and individual investors. The gross-up for the 35% bracket taxpayer means the strike price of that taxpayer is 154% of what an investor who cannot 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 to win the competition need only bid a small amount more than the $10 million that tax-exempt investors can pay. 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.32 It is one of the foundational tools of tax economics. In the

31 The gross-up formula for a tax deductible investment is Equation 1: \[
\frac{\text{post-tax investment}}{(1 – t)} = \frac{\text{pretax investment}}{(1 – t)} = \frac{\text{pretax investment}}{1 - t} = \frac{\text{pretax investment}}{(1-t)}
\]. If some amount of \( p \) investment ("\( X \)") can be deducted, saving tax at \( t \), then the after tax cost of the investment will be \( X - t * X = \text{post-tax investment} \). From this it follows that \( X * (1 – t) = \text{post-tax investment} \) and that \( \frac{\text{post-tax investment}}{(1-t)} = \frac{\text{pretax investment}}{(1-t)} = \text{pretax investment} \), which is Equation 1.

model, in absence of tax, the overall investment would involve a $100 million input and a $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. The investor would make 140% of the bigger slice of the fund, or $216 million, paying tax at 35% to return to $140 million. With both 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.

Tax favors, including expensed investments, create what Myron Scholes and Mark Wolfson have called a clientele effect. 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 the 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 low-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

Algebraically, $\frac{100}{1-t} * (1+r)^n * (1-t) = 100 * (1+r)^n$, 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 the 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 the amount invested is sensitive to tax. Assume a taxpayer has $100 unit income, subject to income tax. An income tax reduces the amount investable to $100 * (1-t)$, and with growth of $(1+r)^n$ the terminal value before tax is Equation 1: $100 * (1-t) * (1+r)^n$.

If the return is tax-exempt, Equation 1 also reflects the post-tax return. With expensing, there is no reduction of the $100$ income for tax because the deduction avoids the upfront tax. The full $100$ grows to $100 * (1+r)^n$. Because expensing consumes basis, all of the terminal value is subject to tax and the after tax position is Equation 2: $1 * (1+r)^n * (1-t)$.

Equations 1 and 2 are equal to each other if the $r$ and $t$ values used in the comparison are the same. Hence, expensing, as in Equation 2, equals yield exemption, as in Equation 1. The equivalence depends on the amount invested in Equation 1 being reduced by upfront tax, avoided in Equation 2.

return is high. High-tax investors move to tax favored investments such as R&D.

The phenomenon of tax-exempt institutions buying R&D ventures is much like a charity buying tax-exempt municipal bonds. Municipal bonds pay a discounted interest rate because holders pay for their tax exemption on interest, and the lower interest makes it irrational for charities to buy the bonds. The charities get exemption from real tax, but not the implicit tax in the drop in pretax returns.

Individual investors are also subject to tax rates as high as 35%, but individuals can only get access to the R&D deductions only within the parameters of the anti-shelter “passive activity loss limitations.” Under the passive activity loss limitations of section 469 of the Code, 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 skeptical belief that ordinary tax accounting allows artificial tax losses and it allows the loss to be treated as 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, which is more than a quarter of the time of a 40-hour workweek schedule. For high-income, remote investors, the quarter-time hurdle is prohibitive and 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 for an 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, even if the passive activity limitations apply. 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.

35 I.R.C. § 1.
36 I.R.C. § 469.
37 I.R.C. § 469(f), (g).
39 If a worker works for forty hours a week for fifty weeks, taking two weeks of vacation, she will work 2000 hours a year.
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Under one set of typical facts, expensing of R&D within the section 469 passive activity loss limitations means that tax reduces pretax return by an effective rate of 11%.40 If the individual faces a tax rate greater than 11% 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%. They should, in turn, drive out the individual investors who get 11%-taxed returns.41

2. What Actually Happens

Notwithstanding that taxable corporations should dominate the source of funds for venture capital, Table 5 shows they, in fact, do not. In 1994, only 9% of investors were corporations; thus, 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.

40 Assume, for example, a venture in which $10x is invested immediately and there are two years of no revenue and ten years of revenue sufficient to give a 10% pretax rate of return. Under these 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>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></td>
<td>$10</td>
<td>0</td>
<td>0</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></td>
<td></td>
</tr>
</tbody>
</table>

Those 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 an effective tax rate of 11%.

41 Individual investors are also disfavored by the separate decision in typical VC fund structures to incorporate each portfolio venture. Because of the incorporations, the costs of the VC fund managers paid by the individual are treated as investment costs, rather than business expenses. Investment costs are itemized deductions, allowed only when they exceed a threshold of 2% of adjusted gross income, I.R.C. § 67(a), and then phased out for taxpayers with more $150,000 of taxable income, I.R.C. § 68, with the current phaseout start adjusted by inflation to $150,500. Rev. Proc. 2005-70, 2005-2 C.B. 979. The biggest expense, however, is the VC fund managers’s fee, and that fee is taken out as an allocation of partnership income, rather than as an expense.
and individuals constituted 30% of investors. Some of the individual investors might well have been able to use the R&D deductions against outside passive activity income. But by 1999, 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 VC 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 1994 and 55% in 1999. The fact that there exists a single investor who cannot use the R&D deductions immediately is a puzzle.

Table 5. Source of VC Funds.\textsuperscript{42}

<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>30%</td>
<td>16%</td>
</tr>
<tr>
<td>Individuals</td>
<td>12%</td>
<td>13%</td>
<td>19%</td>
</tr>
<tr>
<td>Pension funds</td>
<td>47%</td>
<td>40%</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 sum, the venture capitalists 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, in which each portfolio venture is incorporated 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 II.A concludes that the seven

Theories sometimes offered as the best explanations by the literature or experts in the field are unhelpful to explain the wasting of R&D:

1. **UBIT**

   Attorneys who represent VC funds often say that the 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 (UBIT). One participant in the pilot 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.\(^{43}\)

   Section 512 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

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\(^{43}\) Consistently in the published sources, see., e.g., Jack S. Levin, Structuring Venture Capital, Private Equity, and Entrepreneurial Transactions 10-6 to 10-8 (Martin D. Ginsburg & Donald E. Rocap eds., 2006) (listing blocker corporation as one of the remedies for UBIT); Andrew W. Needham & Anita Beth Adams, Private Equity Funds, 735 Tax MG'M’T A-34 to A-39 (2004) (citing UBIT as a reason for blocker corporations).
income tax. A start-up venture does not ordinarily have any income after its R&D and ordinary business expenses are subtracted, but when it finally makes a profit that income would be subject to UBIT on an otherwise tax-exempt institution. Tax-exempt institutions usually insist that a VC fund warrant that the ventures will never generate income that would be subject to UBIT before they will invest in the fund. Venture income received directly would be subject to UBIT, but shareholder income, i.e., dividends, redemption proceeds, and gains from sale of the stock, are exempted from unrelated trade or business tax. Thus, if each portfolio venture is organized as a separate C corporation, the pension fund or charity 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 gains from selling corporate stock. Both foreign and U.S. tax-exempt institutions demand covenants that give them no taxable business income. They also 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 pass-throughs, 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 it also traps the valuable R&D deductions, so that they are useless and then it creates a section 11 tax on the venture level. An incorporated 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 showed that, under some assumptions, the tax at the venture level will exceed the profit from the whole venture.

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44 I.R.C. § 512(a)(1).
45 I.R.C. § 512(b)(1), (b)(5).
46 I.R.C. § 872(a)(2).
49 I.R.C. § 11(a).
50 Id.
Even when the tax is not greater than the profit, it is a very high, at greater than 70%. The tax-exempt investor can avoid the shareholder level tax on a sale of successful ventures, but by then the damage from the draconian rates has already been done.

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 enough taxable income 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, if tax-exempt institutions must participate, they 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 was organized as a pass-through entity, that is, as 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 VC 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 would 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 slice of a VC fund with ten different ventures that returns $140 million pretax. If only one of the ventures succeeds and the rest fail, the successful venture will incur a $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 in costs, use $60 million of its R&D deductions, and incur a $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 of its R&D deductions, and the tax on the $40 million profit would equal $14 million, or a 35% terminal-value tax rate. The usual measure of the impact of tax on investments, moreover, is the effective tax rate, which measures the drop in annual internal rate of return from the investment.51 Use of

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51 Effective tax rate is a measure of how far tax reduces the internal rate of return (IRR) of an investment. Effective tax rate is \( \frac{(\text{IRR pretax} - \text{IRR post-tax})}{\text{IRR pretax}} \).
pass-through entities drops the effective tax rate on the investment to below the statutory tax rate. 52 The tax-exempt institutions are absorbing terminal tax rates of 70% or 114% in order to avoid a UBIT that only imposes 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 pilot 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 cannot. Corporations, in general, are 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.

One respondent in the pilot survey who represented VC funds said that VC funds sponsored by a single company have largely been failures. 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’s PARC, and the VC funds of Boeing, Dell, and AMD are all funds that no longer exist because they did not give adequate returns to their sponsor.53

52 If we assume a five-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 * (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 (6.9% – 4.7%) / 6.9% = 31.8%, which is slightly lower than the 35% statutory tax rate.

There is no good reason, however, why a taxable corporation needs to become 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 venture capital managers to pick, nurture, and diversify ventures. A well-diversified fund with a hundred 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 its tax reimbursement.

In a related vein, a colleague has argued that corporations do not buy up R&D-rich ventures because they have access to investments that bear an effective tax rate that is considerably less than the 35% statutory corporate rate specified by section 11. Indeed, taxable corporations accept lesser returns from tax-exempt interest on municipal bonds, but the drop in interest that they accept is less than 10% of the interest. The modest discount on tax-exempt bonds is evidence they are paying only modest rates elsewhere.

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 investments with a zero effective tax rate because expensing investments is ordinarily equivalent to yield exemption. However, it has cash flow from business and investments including the expensed investments 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. Those corporations should be bidding up the price of portfolio ventures to drive out the tax-exempt institutions.

54 I.R.C. § 11(b)(1)(D).
55 Calvin H. Johnson, A Thermometer for the Tax System: The Overall Health of the Tax System as Measured by Implicit Tax, 56 SMU. L. REV. 13 (2003) (finding that maximum tax on capital is around 10% as measured by the market for municipal bond interest).
56 INTERNAL REVENUE SERVICE, STATISTICS OF INCOME DIVISION, SOURCE BOOK 2004: ACTIVE CORPORATION INCOME TAX RETURNS, PUB. NO. 1053 (2-2007), 11, available at http://www.irs.gov/pub/irs-soi/04co01accr.xls (reporting corporate taxable income for 2004 as $857.4 billion, and tax, before credits, as $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.
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 IPO. A business cannot be taxed as a pass-through entity once it is actively traded on some kind of market. Even a partnership unincorporated under state law is taxed as a C corporation if interests in the partnership are publicly traded and if it conducts a business.\(^{57}\)

It is sometimes said that the venture must incorporate initially since it will have to be a corporation if it undertakes an IPO of its stock.\(^{58}\) 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 be zero or nearly so. The successful company would be worth considerably more than the depleted or zero basis. Incorporation of an entity is tax-free under section 351 of the Code. However, 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.\(^{59}\)

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.\(^{60}\) The Internal Revenue Service (Service) 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.\(^{61}\) The Service 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.\(^{62}\)

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57 I.R.C. § 7704.
59 I.R.C. § 351(a).
60 Rev. Rul. 70-140, 1970-1 C.B. 73.
61 Id.
62 In Rev. Rul. 70-140, 1970-1 C.B. 73, for example, an incorporated entity
The fear that an IPO will destroy a tax-free incorporation is, however, wildly overstated. There is no realistic danger that the IPO will fail to be a tax free transaction. The Service 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 made through underwriters and take a little time. Thus, the public can easily be made part of the group you look to in determining whether parties contributing to the new corporation control 80% of its stock afterward. Revenue Ruling 70-140, which held that an incorporation was not tax free, is also distinguishable from the pattern of an IPO because it involved an acquiring corporation that made no contribution of assets to the newly formed corporation and, therefore, could not have been included in the group that had to control 80% of the corporation. By contrast, public shareholders contribute the proceeds of 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, when the public contributes cash to the corporation in exchange for newly issued 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 distributes the R&D deductions to the investors, and there is ordinarily a natural lag between the use of the big R&D deductions by the investors and the IPO. If the incorporation is “old and cold” when the IPO takes place, the IPO is not an issue as to nonrecognition for 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 Service ruled that the incorporation did not qualify as a tax-free incorporation because the planned B reorganization prevented the old owners from being considered as holding 80% of the new corporation.

63 Treas. Reg. § 1.351-1(c)(3) (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, which was 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 it could not sell. If the underwriter was buying for its 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.

64 Rev. Rul. 70-140, 1970-1 C.B. 73.
the old owners, even if an IPO were inconsistent with a tax-free incorporation. One of the experts in the pilot survey 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. The purpose is to protect the public from indirect sales by the issuing corporation, in which the public is not provided information about the issuer that it normally receives in a prospectus. Rule 144 under the Securities Exchange Act provides a safe harbor, allowing substantial investors to sell stock without the SEC-approved registration and prospectus, but only with limitations on the sales.

Before amendments to Rule 144, enacted in December 2007, the investor had to hold the stock for at least one year. Also, sales were subject to a dribble-out rule, under which the shares sold within a three-month period could not exceed the higher of 1% of the stock outstanding or the weekly trading volume for the stock. In December 2007, the SEC eased Rule 144, requiring a holding of only six months. Also the old dribble-out rules repealed, so that once the holder meets the six-month holding rule, the holder can make unrestricted sales. Rule 144 sales of restricted stock are still allowed only if the issuer provides periodic reports to the SEC, but the reports are simpler than a full registration and prospectus.

Two of the experts in the pilot survey said that the most important reason that ventures were incorporated initially is that a later

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68 Id. at § 230.144(e)(1). The weekly trading volume was determined by looking to the average over the four weeks prior to the sale.
70 Id.
71 Id. at § 230.144(c).
incorporation started the one-year (now six month) holding period requirement of Rule 144 and prevented backers from dumping their stock in connection with or soon after the IPO. The holding period does not start again for stock splits, change in state of incorporation, distributions from a partnership to partners, and recapitalizations, which bear a functional resemblance to the incorporation of pre-existing businesses 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 holding period started over if a venture was incorporated in preparation for an IPO.

Satisfying the holding period of Rule 144 looks like it is a modest advantage at best. The portfolio ventures could be incorporated six months (formerly a year) before the IPO, and long after the R&D deductions have been passed out of an unincorporated venture. Before the IPO, there is no meaningful market. Under a private placement exemption, Rule 144 allows a substantial investor to sell unregistered stock, even without satisfying the holding period, to a small group of sophisticated investors, including other institutions. Before the IPO, there are no buyers other than institutions or sophisticated investors, and investors do not need the Rule 144 holding period for those sales. Before the 2007 change, there was also the dribble-out requirement that imposed a ceiling on sales as low as 4% of the outstanding stock per year, so that investors could not bail out of the company at a very fast rate even after meeting the holding period. Before the IPO, there was little advantage gained in meeting the Rule 144 holding period, and little lost by failing to meet it.

The change to Rule 144 in December 2007 shortened the holding period to six months, a period 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. Thus, even if the holders met the

75. The SEC’s description of the typical underwriter’s lock up is found at Initial Public Offerings, Lockup Agreements, http://www.sec.gov/answers/lockup.htm (last visited May 29, 2009). The usual explanation for the underwriter’s lockup is to achieve market stabilization, which insider dumping of stock might disrupt, but Mira Ganor suggests that the lock up may in fact be motivated by the desire to let friends of the
six-month period before the IPO, they would still have to wait for six months. Before the 2007 change, the typical underwriter’s lock-up was only half the period of the one-year holding period. Both the old one-year period and the 180 days are long enough to prevent sellers from relying on short-term factors, using the sale for emergency liquidity needs, or just dumping the stock to avoid known weaknesses.

The VC funds have not carefully appraised the value of starting the one-year holding period by comparison to the use of R&D deduction to reach the appropriate balance. As one expert said, the VC funds simply never think about tax at all, no matter what the value of the deductions. In a large billion-dollar fund, the value of the tax reimbursement from R&D deductions is $540 million after gross-up is considered. Meeting the holding period does not plausibly add enough value 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 incorporation could follow after use so that there would be no significant delay in starting the Rule 144 holding period. Even for tax-exempt investors, it is possible to keep the ventures as pass-through entities until revenue from some of the ventures allows use of the R&D deductions of them all.

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 stated “the VC funds come in and say ‘This is our form, and we don’t 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 reuse the same templates and structures,

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underwriter sell their stock first. See Ganor, supra note 69, at 33–35.

76 Larry E. Ribstein, Ethical Rules, Agency Costs, and Law Firm Structure, 84 VA. L. REV. 1707, 1712 (1998); ANTHONY MANCUSCO, LLC OR CORPORATION? HOW TO CHOOSE THE RIGHT FORM FOR YOUR BUSINESS 4/18 (1st ed. 2005) (“Institutional investors . . . and venture capitalists generally prefer to fund corporations, because they are accustomed to the way standard corporate paperwork and instruments define and protect their interests.”).
even the same standardized forms, to save legal fees and to avoid the hard work of figuring 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.”

“[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.”

For 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. It would be logical to 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 would 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. If anything, tax rates were once higher, which meant an even 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%. With tax rates of 50%, the grossed-up investment is twice as large a bid as exempt investors can make because a taxable investor can count on the government tax reimbursing half of its R&D investment. When this ill-chosen structure arose, the economics were even more strongly weighted against it than now.

The venture capitalist professionals also sometimes say that they do not give much thought to tax. They do worry about relatively petty tax issues like unrelated business income and effectively connected income, so not all tax is ignored. Considering the size of

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78 *Id.* at 882.
80 *Cf. infra* Part II.C (sensitivity of business behavior to tax).
81 *See, e.g., Needham & Adams, supra* note 45, at A-13; Robert D. Blashek & Scot A. McLean, *Investments in Pass-Through Portfolio Companies by Private Equity*
the stakes and the value added by thinking about tax, however, ignoring tax is hardly a justification or an explanation. The stakes are too large to justify the ignorance.

One apologist 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.”\textsuperscript{82} That is not a very convincing explanation because the venture capitalists should be selling the product to the highest bidder. Destroying so much of the value of the product does not seem to be a very productive strategy in selling for the highest price. Does Wal-Mart destroy inventory because Wal-Mart cannot personally use the inventory? Do lawyers write bad wills on purpose because they cannot 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 EBITDA as a yardstick for measuring portfolio performance, which ignores tax to be paid. The acronym EBITDA stands for “Earnings Before Interest, Tax, Depreciation, and Amortization.”\textsuperscript{83} Under EBITDA, the tax paid, at 35% of gross proceeds, is ignored because the method examines earnings before tax.\textsuperscript{84} Firms apparently

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\textsuperscript{83} The acronym used is sometimes “EBITD,” which drops mention of the “A,” or “amortization,” since amortization is usually not material. “Depreciation” is the deduction of costs of tangible property over its life and “amortization” is the deduction of costs of intangible property over its life, but “depreciation” can be used to cover both.

\textsuperscript{84} See, e.g., Jennifer Francis, Katherine Schipper & Linda Vincent, \textit{The Relative and Incremental Explanatory Power of Earnings and Alternative (to Earnings) Performance Measures for Returns}, 20 CONTEMPORARY ACCT. RESEARCH 121 (2003) (finding that traditional accounting earnings explain subsequent stock returns better than EBITDA). The cynical translation of EBITDA is “Earnings Before I Tricked the Dumb Accountant,” which announces that the users are displaying distrust of
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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 current 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 will reduce the shareholder’s share, even after tax, but EBITDA is a creditor measure and shareholders do not matter for creditor coverage.

While EBITDA might be a rough but acceptable measure for short-term creditors, EBITDA is a disaster as a measure of equity returns. The equity of a healthy C corporation bears tax at 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 high of a cost. The equity investors also cannot ignore interest payments, which might absorb all the EBITDA earnings. Overall, VC fund management is poking out its eyes with EBITDA, accepting taxes in excess of profits overall, while using an EBITDA measure that seems to justify being 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 EBITDA measure might also contribute to the use of stock to pay expenses. VC fund ventures use a lot of stock and stock option compensation. More stock does no harm to creditors even if issued as excess, or even wasted compensation because creditors get paid 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 here is overcynicism that is swamping judgment about real effects.

before shareholders. If one billion dollars of stock were issued to a worthless employee, the creditors would not care. But, issuing more stock hurts other shareholders. New shareholders share with the old 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 for wasting R&D deductions. Use of EBITDA by VC funds is part of the puzzle itself and not part of the explanation.

7. Employee Capital Gain

Professor Ron Gilson and Dean David Schizer have argued that VC fund 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.\(^6\) Capital gain is subject to tax rates of no more than 15%, while an employee's compensation would be subject to tax at up to 35%.

The drawback of this 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 generates revenue for the government by wasting employer compensation deductions, which is much like the wasting of R&D deductions. Consequently, if employee capital gain is the motive for corporate stock, then that premise compounds the mystery rather than explaining it.

\(a\). The Suppression of Stock Value

VC funds undervalue stock given to executives. The strategy is not only counterproductive, because it gives up more compensation deduction, but it is also legally risky, inviting even criminal penalties.

The money provided by outside investors for R&D is ordinarily given in exchange for preferred stock that is convertible into common stock.\(^7\) Typically, if the venture is a success, the preferred stock will

\(^6\) Gilson & Schizer, supra note 77, at 891–94.

\(^7\) Denis, supra note 5, at 311 (finding that 96% of financings in sample were in
be converted into 60% of the common stock of the company. This leaves the founders and key employees who provided the ideas and the services with a 40% share if the venture is a success (the boom leg). If the venture is a zombie (the zombie leg) worth about what the funders paid in, the investors will not convert and will get the entire net worth of the company through ownership of the preferred stock. If the venture is a failure (the bust leg), neither founders nor 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 fund 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 as high as 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, converts compensation, taxed at 35%, into capital gain, taxed at 15%.

Employees also claim a lower value for compensatory stock than an 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 to start with a negative $10 million net worth. Until the venture makes $10 million in subsequent operating profit, which will take a while, the balance sheet will show a negative value for the common stock.

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

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88 See Gilson & Schizer, supra note 77.
89 Id. at 876, 901.
90 See Chris Armstrong, Antonio Davila & George Foster, Venture-Backed
assumption that the outside investors pay $10 million and get 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 a 60% share is worth $10 million, then 100% is worth $10 million divided by 60%, or $16.67 million. The employee common stock representing 40% of $16.67 million is worth $6.67 million or two-thirds of the funding.

If half of all ventures are zombies, worth roughly $10 million each, then the employee 40% share of the whole enterprise is worth approximately $3.33 million. The preferred stock will take all of the value of the zombie under its preference. The preferred stock holders’ interest in the 50%-likely zombie leg has an expected value of 50% of $10 million, or $5 million. If the venture is a bust, neither preferred stock holders nor employees get any value. The boom leg must therefore be worth $5 million to the funders or they would not have paid in $10 million. If a 60% interest in the boom leg is worth $5 million, then the 100% interest is about $8.33 million and the employee 40% share of the boom leg is worth around $3.33 million or one-third of the funding.

If the employee reports that the stock when received is worth zero or next to nothing, then he is underreporting his compensation on his tax return. That is dangerous behavior. The simple logic from funders’ willingness to pay $10 million for their share puts the employees’ share at between $3.33 and $6.67 million. Tax at 35% on $3.33 million to $6.67 million is between $1 million and $2 million. The federal sentencing guidelines require 3½ to 5¼ years of jail time for a first offense with this amount at stake for willful behavior of a taxpayer with no aggravating factors.91 The undervaluation is not in good faith, because it is not a good faith attempt to value the stock received. The employee will not get a jury instruction stating that is a defense that is part of the industry tradition to cheat on value.

Moreover, the first $3.33 million to $6.67 million worth of capital gain that the employee eventually reports 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

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expiration of the dangerous-behavior undervaluation when the real value is proven upon 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.\(^92\) Proposed regulations would confirm the result.\(^93\) In VC funds, the employee interests have no immediate liquidation or balance sheet value. The funding that buys the R&D creates no balance sheet assets and the preference given to the funders would absorb anything that is listed on the balance sheet. The valuation at zero for partnership interests is as erroneous as zero valuation for shareholder interests in the same circumstances, but the zero value for partnership interest has the imprimatur of an IRS ruling.

Professor Fleischer has argued that there is no reason for VC funds to switch to pass-through entities for the portfolio ventures, even though 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.\(^94\) The IRS is an overstretched agency that may take some time to get to tax problems, but it does not make law nor grant indulgences, and if and when it moves for $3.33 to $6.67 million valuations in our continuing hypothetical, there are no reasonable defenses even in a criminal prosecution. Even assuming, counterfactually in the ordinary case, that employee capital gain strategies made some sense, choosing fraudulent undervaluation and incorporation of each venture seems to be a far riskier strategy than

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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.

just avoiding the separate incorporation of each venture in the first place.

c. Employee Capital Gain Is Myopic

Employee capital gain is a money-losing tax strategy. The dangerous behavior of gross undervaluations of value are foregoing the employer deduction for compensation, which means that the VC fund tax plans are making money for the government, again. Employee capital gain on venture stock requires the employer venture to give up its compensation deduction. The employer compensation deduction is ordinarily more valuable than achieving employee capital gain. Assume that an employee adds enough to the enterprise to be is compensated $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. Successful ventures, where the stock options have value, could certainly use the employer deduction because the planning has stripped most of the R&D deductions of the pool, and the successful venture is paying tax on almost all its incoming cash flow. By reporting the transaction as a capital gain, the parties have generated $150,000 more revenue for the government than they needed to. An employee who reports capital gain and gives up the corporate deduction makes money for the treasury.

If the employer shares the value of the deduction, an employee would come out ahead with ordinary income compensation rather than capital gain. Assume that the employee receives stock, reports zero compensation, the stock appreciates to $1 million, and the employer redeems it back for its value.\(^5\) If the $1 million is capital gain, the employee tax is $150,000, leaving the employee with $850,000. By contrast, if the employer could get a deduction, the employer would get a reimbursement at 35% for its cost. The employer could gross-up the total deduction to $1.54 million because

\(^5\) If the corporation does not redeem it back, then it is no better off because the market’s appraisal of the $1 million 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.
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 the capital gain alternative, which was an end result of $850,000, by exactly the amount of the capital gain. Employee capital gain is a 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. Consequently, employee capital gain might both make money for the government in comparison to ordinary income compensation, and also be profitable for insiders because the benefits go to the employees while the harm is borne by public shareholders. There are several strands of the argument that VC fund structure is justified by fooling the market. The overall discussion is deferred to Part C, which 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 is 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, just at the time the employee will sell the stock to get cash from it, 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.

96 The specific conclusion that the 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.

97 Employee terminal value with capital gain tax (tgc) is $10 * 1 – tgc, and with employer gross-up, employee terminal value is $10 * (1 – tx) / (1 – tc). If (1 – tx) / (1 – tc) > (1 – tgc), then employee capital gain yields less 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%.
The VC funds rely heavily on stock options. VC funds will impose stock option compensation on candidate 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. Stock options are said to require incorporation. One author wrote that “[M]ost practitioners, the author included, are of the view that traditional, venture backed companies that intend to incent and retain key employees 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 fifteen to twenty years. Table 6 shows the results of two samples of ventures sponsored by VC funds that went through an IPO. The first sample, consisting of fifteen firms, is from 1992 to 1999. The second sample, consisting of sixteen firms, represents VC fund-backed ventures that had their IPO in the first quarter of 2007. The percentage of stock represented by stock options is measured by assuming that all stock options outstanding at the time of the IPO are ultimately exercised. The percentages of the various stock option programs for each venture are aggregated, and each firm is weighted by the value of the stock after the IPO. Table 6 indicates that stock options have been growing in importance, from 5.92% of stock in 1992-93, to 13.80% of stock in 2007.

Table 6. Unexercised Stock Options at IPO as Percent of All Stock (assuming exercise of option).

<table>
<thead>
<tr>
<th>Period</th>
<th>Sample Size</th>
<th>Percentage</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>. . .</td>
<td>. . .</td>
<td>. . .</td>
</tr>
<tr>
<td>2007 (1st Quarter)</td>
<td>16</td>
<td>13.80%</td>
</tr>
</tbody>
</table>

98 Hellman & Purin, supra note 6, at 180.
100 Details on the thirty-one total firms in the sample, including name, size, stock, and stock options for each venture, are on file with the author.
At the levels at which they are used, stock options are not as important as the R&D deductions. A high-tech start-up firm consists almost entirely of R&D and start-up expenses in its early years, and the deductions are optimally worth 35% of the costs. Even if options constitute, for example, 13.80% of the firm, that does not mean that their value to the venture is 13.80% more valuable than the next best form of compensation. Stock options, in sum, do not seem to constitute 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 make it unlikely that they are any better than another form of compensation.

2. The Drawbacks of Stock Option Compensation

Stock options are a dubious way to compensate employees because they entail discount rates used to value future cash the corporation must pay out on stock that are higher than necessary. Reducing the discount rate would either improve the employee’s benefit or reduce the employer’s cost or both.

Stock options are a means to acquire stock. Stock is itself a very expensive way for the employer corporation 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 a 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 eventually pay on the share, 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 necessarily adverse to the company. Stock is a volatile investment and, as Enron and MCI have shown, is subject to fraud. Consequently, the market reacts to risk and the possibility of fraud by acidic skepticism and 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 thirty-year life from start to finish that could pay with debt or stock, both worth $1 now, and will pay the cash on either instrument at the end of the thirtieth year. Assume, further, that the historical average discount rates for small corporations apply to the venture. Further, interest on corporate debt is deductible. For stock the comparable interest-like cost is the expiration of the discount on future cash flows paid out on the stock and the expiration of the discount rate on stock
is not deductible. The market also considers debt to be safer than stock, perhaps questionably so.\footnote{101} Under the assumptions, it would take ten times more cash to satisfy the $1 stock than it does to satisfy the $1 debt.\footnote{102} 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 they act as if the debt was 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. Consequently, underdiversified employees need to discount the future cash on stock to determine value of venture stock even more skeptically than the market as a whole does.\footnote{103} For instance, employees with an instrument that will pay them cash in thirty years need to discount cash on stock by more than ten times the amount by which they discount the cash paid on the debt.

\footnote{101} 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 twenty-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 & Richard H. Thaler, Anomalies: The Equity Premium Puzzle, 11 J. Econ. Persp. 191, 194–95 (1997).


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 a 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.

If the parties could lower the discount rate with another form of compensation, then employees would get more present value from 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.  

The high discount rate on cash yield from 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, because substantially all of the volatility of stock is market-wide or industry-wide, and beyond the employee’s control. The high discount rates that arise from volatility and market distrust of management are not a necessary part of a reasonable compensation plan. Rationally, the extraordinary discounts should be avoided.

Stock options are even a more expensive way to compensate than the stock itself because they give an incentive to managers to 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. As a result, risks that would properly scare the flesh off a shareholder are a matter of indifference to the option holder. Thus, 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.

For example, the executive might get more present value. In the example in note 102, supra, the executive got $1 present value from $33.34 paid by the corporation on stock in 30 years. With a discount rate of 3.85%, instead of the 12.4% used, the executive would have a present value of $10.89 from the payment. See also Ingolf Dittmann & Ernst Maug, Lower Salaries and No Options? On the Optimal Structure of Executive Pay, 62 J. Fin. 303 (2007) (finding that if the 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).

There have been a number of suggestions to filter out market-wide volatility. See, e.g., Rick Antle & Abbie Smith, An Empirical Investigation of the Relative Performance of Corporate Executives, 24 J. Acct. 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 inducing the executive to make the corporation take risks.

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% * $25 billion) – $5 billion cost, which is a negative expected value of $2.5 billion. Assume, however,
Finally, if stock options were an advantage to the venture, it would be possible to mimic stock options even if a venture is organized as a partnership or pass-through for tax purposes. 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. Thus, they shy away from playing with options on partnership equity. Still, considering again that the tax reimbursement from $1 billion dollar fund is worth $540 million with the gross-up, there is enough money at stake that one would think to educate people about partnership equity options.

3. The Understatement “Advantage” of Stock Options

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 if they were free or trivial in cost because they believe, probably correctly, that they can earn 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 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 $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.

For recent discussions, see, e.g., Richard Upton, Proposed Regs, Rev. Proc. on Transfers of Partnership Equity Interests for Services: Did the IRS Get it Right?, 109 TAX NOTES 791 (Nov. 7, 2005); Thomas I. Hausman, Planning for Receipt of a Partnership Compensatory Interest, 114 TAX NOTES 529 (Feb. 5, 2007); Karen C. Burke, Taxing Compensatory Partnership Options, 100 TAX NOTES 1569 (Sept. 22, 2003); Lee A. Sheppard, The Fairies, the Magic Circle, and Partnership Options, 90 TAX NOTES 721 (Feb. 5, 2001).
Options were always granted such that there was no initial bargain and, consequently, 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, however. 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, but avoids any loss on unsuccessful ventures by letting the option lapse. The higher the risk, the closer the option for current value comes in value to the value of the whole underlying stock.

The tax rule, in contrast with the accounting rule, has, throughout the same period of 1972 to present, 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 as multi-million dollar deductions on tax returns is an inconsistency that benefited the employer companies on both sides of this inconsistency.

The Financial Accounting Standards Board (FASB) has adopted a new rule for financial accounting, applicable generally in 2006 and thereafter, under which the firm must report 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 applied to VC fund ventures. The new standard retains the grant of the option as the date for measurement of compensation. It uses volatilities in calculating values that are too low for the startup 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 would 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 five years and receive stock worth $100 million. Assume further that the venture is risky,

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111 Statement No. 123, supra note 109.

112 Id.
with 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 $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 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 what the VC fund venture will, in fact, experience.

Assume, for instance, that using industry average figures, the stock is worth $5 million because it is similar to 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 $6.25 million for an option exercise price of $5 million, or $1.25 million, while in 20% of the cases, it will not be exercised. Therefore, 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 \(0.1 \times (\$50\text{ million} - \$5\text{ million})\), or $4.5 million. Thus, using the lower volatility suppresses the value of the option from $4.5 million to $1 million, or to about 22% of the real value.

Under Statement 123(R), the option value found at grant is also written off 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)

\[113\] The present value calculation at 15% is \( \frac{\$100}{(1.15)^5} = \$49.6\text{ million} \).

\[114\] Statement No. 123, supra note 109, at para. 23; id. para. A46 n.65 (telling the company to use Dow Jones website for the appropriate industry sector index).

\[115\] The expected value of the stock is 80% * $6.25 million + 20% * 0, or $5 million. If the industry-wide discount rate is 10% rather than 15%, then the calculated $6.25 assumes the company will be worth $10 million in 5 years: $6.5m \times 1.1^5 = \$10\text{ m}.$

\[116\] Statement No. 123, supra note 109.
upon an IPO, 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 0.2%, of what the $100 million venture has, in fact, paid out in the form of stock. More typically, VC fund options have a ten-year term, and if there is ten years between the grant and vesting, the annual compensation cost is $100,000, or only 0.1%, of the $100 million stock that is issued. In effect, the firm is reporting the compensation of the CEO who strikes it rich at $100 million as if its cost were that of the salary of a modest, middle manager.

The amortization of the cost also starts as soon as the option is granted. Financial statements provided at 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 ten-year option, for example, or $100,000 per year cost, and that the IPO occurs after ten years. Only five of the $100,000 annual amortization amounts will appear on the five years of income statements required of the IPO, and the other five will be gone before anything needs to be reported to the public. Thus, 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 hypothetical 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 and 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% to 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{118} When the options are granted for a VC fund venture, there is no public market for the stock or public record of price volatility, so the tax measurement is deferred for all VC fund 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{119} On the earnings statements, by contrast, the $95 million cost is a nonevent, already “adequately” reflected by that portion of the $100,000 to $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 reporting to the shareholders, who are hurt by compensation cost, that the option cost only $100,000 to $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 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 have a one-in-a-million chance of surviving, and the accounting rule is trying to measure the value of a mature cod by counting its value as roe. Consequently, the accounting profession is counting its mature cod before they are hatched. But management likes rules that state 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.

\textsuperscript{119} I.R.C. § 83(h) (requiring that the employer’s deduction match the employee’s income as to amount and timing); Treas. Reg. § 1.83-6 (2003).
Why Do VC Funds Burn R&D Deductions?

The aggressive undervaluation of stock is not a tax ploy. 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. However, 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, but instead just cheat other nonemployee shareholders.

The advantages of stock options, moreover, depend on the ability to convince public shareholders, who are well represented 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—Would the New Standard Make a Difference?

A final theory is that the VC fund 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.120 “[P]ublic companies . . . tend to avoid investment structures that depress book earnings.”121 Investing companies, Professor Bankman reports, are looking for high accounting earnings, a goal that is inconsistent with getting the tax deductions for R&D.122 One of the experts in the pilot survey identified corporations not wanting to take an earnings reduction as one of the four major reasons why VC funds do not use pass-throughs. According to this argument, public corporations do not seek the deductions—worth 35% in tax savings—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

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120 Accounting for Research and Development Costs, Statement of Financial Accounting Standards No. 2, para. 49 (Fin. Accounting Standards Bd. 1974) (requiring the immediate expensing of R&D costs).
121 Needham & Adams, supra note 45, at A-6.
122 Bankman, supra note 1, at 1762–63.
corporations do not bid up the price for R&D ventures because the R&D would reduce their reported earnings.

On the exit end, moreover, 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 confiscatory taxes because if the market could see all the R&D of the fund, then the market would punish the venture. Thus, VC fund managers may be protecting reported earnings from an R&D reduction both on the investor end and the IPO end of VC funds.

A thought experiment may be utilized to test whether management protection of earnings explains the VC fund structure. Suppose that the FASB 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 that is not very likely to pan out, but a pool of ventures is no riskier than many investments that are routinely considered to be accounting assets. FASB might set some minimum degree of diversification to consider some R&D an investment. A fund with a hundred diversified ventures would clearly be on the investment, rather than expense, side of whatever line is drawn.

Would the new standard make a difference? The following sections set forth the arguments as if in a classical debate, first, for the affirmative that a new standard ending the impact of R&D on immediate earnings would make a substantial difference and then for the negative. I lean toward accepting the negative, but set forth both sides of the debate.

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 penalty would generate a quick and dramatic response. Public corporations would seek the 35% tax savings since they would no longer bear an accounting earnings penalty for qualified R&D investing. The effects of the change would be evidenced by public corporations quickly bidding up the price of VC funds to exclude the competitors who could not use the deductions. If potential VC fund investors and the VC fund managers are myopic earnings manipulators under current conditions, then ending the earnings advantage would free them to pursue 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 that management publishes for the market shows bad news, management assumes the bid price for their stock will plummet, even if the earnings reduction is not reflecting a real loss of economic value. “[I]f 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 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 thirty-five 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 twenty-seven firms that had overstated earnings under circumstances in which the SEC alleged fraud. Not all of the overstated earnings increased taxable income. Still, the firms overall were willing to pay a $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. Companies caught with fraudulent statements of earnings are undoubtedly on the short-term, dangerous behavior end of the business spectrum. Firms engaged in fraudulent behavior 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%. This hardly


125 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 ACCT. 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. Id. at 391.
proves that a noncriminal corporation would bear a 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 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 represent in its reports to the stock market that the taxpayer has not saved any tax.126 The public corporation would prefer a rate cut that is less generous than an exemption-equivalent expensing that would show up as an improvement in after tax earnings.127

Public firm reaction to last-in-first-out (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.128 The empirical research shows that firms usually choose the tax benefits, but not always.129 The difficulty with the LIFO example is that the LIFO conformity requirement is not a very meaningful one. Management can take the tax benefits and publish footnotes and special schedules using FIFO earnings, which are higher than the LIFO earnings. Moreover, 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, for cost management to allocate capital internally, and for setting selling price.130

127 Thomas Neubig, Where's the Applause? Why Most Corporations Prefer a Lower Rate, 111 TAX NOTES 483, 483 (Apr. 24, 2006).
128 I.R.C. § 473(a).
129 Barry E. Cushing & Marc J. LeClere, Evidence on the Determinants of Inventory Accounting Policy Choice, 67 ACCT. REV. 355, 364–65 (1992) (survey based); see also Douglas A. Shackelford & Terry Shevlin, Empirical Tax Research in Accounting, 31 J. ACCT. & ECON. 321, 328–330 (2001) (finding that tax was apparently the dominant consideration, but earnings management was sometimes more important and finding the results of the research “inconclusive and puzzling”).
130 Edward Kleinbard, George Plesko & Corey Goodman, Is it Time to Liquidate LIFO?, 113 TAX NOTES 237, 245 (Oct. 16, 2006) (noting also that low-expense modes of LIFO are used for nontax, and high-expense modes are used for tax).
Public companies in the past have attempted to immunize themselves from the earnings reduction in their own sponsored R&D projects. Public companies have imitated 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 could thus file a consolidated return with them. Apparently the portfolio ventures are in unconsolidated entities, meaning that for both tax and accounting purposes the R&D is not part of a public company’s income. The single sponsor funds are thus also giving up the 35% tax deductions to avoid reporting the 100% reduction in public earnings. 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 nontaxpaying institutions in the multiple-investor VC funds.

The isolation of single-funder funds, so that they do not reduce earnings, does not, strictly speaking, 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.

The puzzle of the burning of R&D deductions is not just a matter of public corporations not monopolizing the VC funds at the front end, but also a matter of the VC funds selling their successful ventures stripped of the R&D deductions of the failed ventures on the back end. The exit end of the ventures might plausibly be driven by the same earnings protection motives that, at the front end, make corporations avoid going into VC funds as investors. The VC fund managers 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 cannot communicate to the market that the R&D was an investment and not a loss.

Two recent studies have come to opposing conclusions about the role of the VC funds in earnings manipulation. Professors Morsfield and Tan found that VC funds did not fully suppress the earnings manipulation in newly launched IPOs, in comparison to the general

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131 Intel Capital, for example, has invested more than $7.5 billion in 1000 separate ventures, of which 168 have gone public. Intel Capital—Portfolio Value, http://www.intel.com/capital/news/earnings.htm (last visited Apr. 10, 2009).

132 Chesbrough, supra note 55, at 33.
norm. Instead, they found that all IPOs state earnings for their businesses that cannot 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 did IPOs not sponsored by VC funds. As a result, Brian Bushee concludes that, “institutions are sophisticated investors who typically serve a monitoring role in reducing pressures for myopic behavior.”

By contrast, Professors Cohen and Langberg looked at 6700 IPOs and found that, compared to future earnings and value, sponsorship by VC funds increased the inflation of the earnings reported in the IPO and reduced the informativeness of the accounting earnings statement. 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 surveyed 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 +10 for strongly agree to -10 for strongly disagree, the experts came in at

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134 Id.
135 Id. at 1135.
-2.25, disagreeing mildly to the proposal that, “[i]f 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 valuing a 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 be expected to have any further impact on the fair market value of companies making R&D investments, nor any impact on the willingness of public firms to invest in R&D funds.

A number of recent studies has 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 a 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. If FASB allowed VC funds to capitalize their R&D costs, then corporate investors would dramatically increase their participation in VC funds.

Professor Hand has recently looked at Internet start-ups and concluded again that the market valued 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.

Professors Armstrong, Davila, and Foster, 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’s R&D increased value, while under other methods they found R&D decreased value. If VC fund R&D is associated with confiscatory or draconian taxes, of course, one should expect the market to have a 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

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141 Id. at 639.

treat their investments as an asset. Pharmaceutical companies, for example, are required to expense their costs of developing new drugs, yet they have been able to convince the market that their successful drugs have value. Additionally, 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, as another example, are in the business of developing and selling software programs, and they have been quite successful. The costs they incur to create the software are 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 stocks of those firms have 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 depression of value when they were offered and must just now be ready to rise in their stock price to a value that reflects their true economic merit. In reality, the dot-com investments were expensed for accounting purposes and yet they 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-funded R&D if the R&D expenses reduced published earnings. For isolated R&D, it is plausible that the market is skeptical about value, as there is an information asymmetry.

143 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, IN READING AND NOTES ON FINANCIAL ACCOUNTING 351 (Stephen A. Zeff & Bala G. Dharan eds., 5th ed. 1997) (1964).

144 ACCOUNTING FOR THE COSTS OF COMPUTER SOFTWARE TO BE SOLD, LEASED, OR OTHERWISE MARKETED, Statement of Financial Accounting Standards No. 86, para. 3–6 (Fin. Accounting Standards Bd. 1985) (requiring immediate expensing of R&D costs of software prior to technological feasibility and general capitalization of development costs after technological feasibility is established).

Investors in public corporations have to rely on imperfect information about corporate investments. To protect themselves from the real dangers in a state of imperfect knowledge, they must rationally offer only very low prices even for investments that are indeed meritorious. For all the outsiders can tell, any investment might be a lemon. The market cannot tell the difference between brilliant R&D investments and sure losses, and it 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 an appropriate rough assessment of value.

The VC fund, however, overcomes many 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 fund managers can screen to exclude unpromising ventures, but they too do not know which ventures will succeed commercially and which will fail, and 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 ventures become a normal percentage of investments determined by the law of averages. Outsiders should be able to assess the value of ventures in a pool about as well as the VC fund 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. The 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.

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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 . . . .”

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 materially affect the prices paid for R&D stocks. If VC fund 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 negative position to this debate to be more persuasive primarily because firms with very high R&D and advertising deductions have been treated quite well by the stock market. It is not very plausible that corporate investors or the VC funds can succeed materially in fooling the market to their advantage for an extended period of time. The thesis that VC funds are creating separate corporations for each portfolio venture because they cannot attract taxable corporations to ventures that report R&D losses and to bolster reported earnings on the ventures they send to the market, however, cannot be dismissed with quite the same confidence that one can dismiss claims based, for example, on employee capital gain, EBITDA or inertia.

Note that neither side of the debate praises 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

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economic health. The VC funds 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 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 good reason at all. VC funds are on a slippery foundation whether earnings matter or not.

III. Summary

VC 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. However, taxable corporations do not in fact exclude other investors in VC funds. 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 20% of the value of the venture at the time of turnover. The result is that successful ventures pay tax on their gross receipts without use of most of the overall costs of the funds. As a result, 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 destruction of the tax benefits. The results cannot be justified by drafting habits in a billion dollar fund because the stakes are too high to be justified by inertia. The EDITDA measure is self-deluding. It is not necessary to incorporate to become a corporation in time for an IPO. 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 potential investors. The structure might be part of an elaborate earnings manipulation to keep R&D out of earnings, except that it is difficult to see that the deception succeeds well enough to
justify the tax. The explanations for why the VC funds chose a structure with such draconian taxes are not very satisfying.

Even if the VC funds are the “Masters of the Universe,” they 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 one, even if this article has not succeeded in solving it.
Appendix

Outcomes of Portfolio Ventures in VC funds. Statistics compiled by Katherine Litvak, University of Texas Law School.

<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: &quot;Ambiguous Results&quot;</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: &quot;Successful&quot;</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 after 2001 are lower for both failures and IPO successes because some ventures have not yet matured into success or failure.

160 The ventures were selected from top-100 VC fund 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.