Citations and Sources

Footnote citations are required for all statistics and quotations. Such citations must either include a page number (for journal articles or books) or a URL linking to the exact web page that provided the information. An example page from the 2010 journal is provided on p. 2 as an example.

All graphs and charts must be cited with a footnote.

Wherever you can add sources to support your claims, you enhance the validity of your article for the reader.

Provide full names for authors (or organizations), rather than initials, wherever possible.

Chicago style will be applied by the managing editor.
As long as healthcare costs continue to rise, someone has to pay the bill. Money is going to come out of our paychecks to pay an ever increasing healthcare bill, whether it be through reduced wages in employer-based insurance, higher taxes in government sponsored programs (Medicare, Medicaid), or higher out of pocket costs. Worse yet, the higher healthcare costs could result in loss of jobs because a higher relative cost of U.S. employees, which includes healthcare costs, drives business overseas.

What is behind this dramatic rise in healthcare costs? Medical technology has been blamed as a driver of the increase. It is difficult to calculate this cost directly, but one analysis estimates that advances in medical innovation and the care it enables (including drugs, medical technology, and all related patient care) accounts for as much as 50% of the increase in healthcare cost. Of course, medical technology is not simply a cost driver; it has been contributing to a steady rise in longevity and quality of life. Slowing innovation would likely result in a trade-off in the advancement of medical care.

Two major demographic trends are also driving healthcare costs: the aging population and the obesity epidemic. Annual healthcare expenditures are $8,776 for someone over 65, compared to $2,330 for someone between ages 25 and 44. This cost differential will become even more important as the first Baby Boomers turn 65 this year; by 2030, the population over 65 is projected to rise to 20% of the total population.

The obesity epidemic is having perhaps the most significant impact on healthcare costs. Obesity is clearly implicated in diabetes and in cardiovascular and orthopedic costs. The annual cost of obesity nearly doubled between 1998 and 2008, from $78.5B to $147B. Between 1987 and 2001, the rise in U.S. obesity was responsible for more than a quarter of the increase in healthcare spending; during that same time, obese people cost the healthcare system an average of $1,429 more per year (Figure 7). Given that a third of U.S. adults and 17% of U.S. children are obese, the aggregate cost to our system is evident.

A Different Problem Altogether
I originally got into reimbursement to understand how to get medical devices reimbursed and how much that would cost our companies, so I could add value and differentiate myself within venture. I took the job no one wanted because I realized how important it was becoming to our portfolio. Ultimately, I came away with a new investment thesis: removing costs from our healthcare system. Limiting rising healthcare costs will be an imperative to our economy and therefore could represent the next big wave of healthcare investment.

Cost reduction is a path fraught with political landmines, as evidenced by our healthcare reform debate. Little progress has been made on the cost control aspect of healthcare; the larger effort focused on increased access. Our current systems, as detailed above, do not reward

up from just 12% in 2000. The future cost implications are staggering.

has generated $35 billion in proceeds from the short term. The average year in the 2000s vintage-year performances of venture funds as a D1, as reflected in the return profile of 1994 the right. The Internet era caused a shift of D to venture investments was likely lower than in over time. In 1970, the ability to find attractive the demand curve to shift to the right gradually cumulative effects of innovation on society cause shift due to one of two factors. First, the gradual available (10 multiple on exits has decreased by 50% (above and shown in expect that supply of capital will over-correct in demand curve over-corrected to a point where! On the demand side, we can use a sample of 1991-2000 Invest: white with a black border, and medium blue with no border: Figure 9. Ratio of Companies Funded: medium blue, no border: Black plus one color: medium blue, no border:

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of Companies Funded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981-1990</td>
<td>12.2 to 1</td>
</tr>
<tr>
<td>1991-2000</td>
<td>11.9 to 1</td>
</tr>
<tr>
<td>2001-2009</td>
<td>19.0 to 1</td>
</tr>
</tbody>
</table>

Black plus two colors: white with a black border, and medium blue with no border:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Companies</th>
<th>Number of Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981-1990</td>
<td>1,534</td>
<td>694</td>
</tr>
<tr>
<td>1991-2000</td>
<td>4,053</td>
<td>1,346</td>
</tr>
<tr>
<td>2001-2009</td>
<td>7,506</td>
<td>2,797</td>
</tr>
</tbody>
</table>
***Black plus three colors***: dark blue no border, light blue no border, white with a black border:

![Bar Chart](image)

**Axes:**

Use an X axis and label it. No Y axis if possible—if the reader can understand without the Y axis, leave it out. If a Y axis is necessary, label it. An example of a useful Y axis:

![Diagram](image)

*Figure 1. A Spectrum of Capital.*

Instead of a Y axis, it is better to put the numbers on top of the bars:

![Bar Chart](image)
Example layout and colors for trend graphs:

- **Kauffman Fellows Report Submission Guidelines**

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**Ecosystem (Billions).**

**Figure 2. Total Money in Venture Companies and Investors Active Annually.**

4 Thomson Reuters.

**Figure 4. Total Money in Venture Companies and Investors Active Annually.**

5

1,534

**Figure 5. Total Money in Venture Companies and Investors Active Annually.**

The up-and-to-the-right trends of the virtuous cycle have continued unabated despite the decrease in the short term. The average year in the 2000s was likely lower than in the 1990s, the ratio of funding to exit has been 17 to 1. However, while the pace of exits has slowed in the 2000s, funding relative to exits increased by over 50% of exits to 1981 levels.

What does this mean for the future? We expect that supply of capital will over-correct in the short term. The average year in the 2000s was likely lower than in the 1990s, the ratio of funding to exit has been 17 to 1. However, while the pace of exits has slowed in the 2000s, funding relative to exits increased by over 50% of exits to 1981 levels.

Returns have trended down for the last decade. However, the supply of capital invested by GPs has almost doubled from growing, exits have stalled. Proceeds from exits capital committed and invested has continued secular growth trend across decades.

To them, the current downturn is understood. To Stuart's and Jim's assumptions about investors and companies funded, to serve the purely financially motivated LPs and corporations stepping in and universities, family offices, and other constituents such as governments, financial investors are the traditional proxy for the number of attractive investments available (sovereign wealth, corporate innovation funds) that could shift venture return criteria (S1), but we do not have the data to show this change.

The future of venture capital is a central concern for investors on both sides of the table. Without exits, the cycle of venture breaks down.

The rolling 10-year IRR for the venture capital industry continued to grow through the 1980s and 1990s, the ratio of funding to exits has been 17 to 1. When “the party ended,” the demand curve over-corrected to a point where returns were no longer included in the calculation. When the exit market was especially active in Q3 2009 as venture returns for the first half of the year, the pace of exits dropped from 26.2% in Q2 2009 to 14.3% in Q3 2009.

The Future of Venture Capital
Illustrations

Clean lines, and spare use of fill and color are desired.

Software:
Word, Excel, or TIFF/JPG at 350dpi only. PowerPoint will not be accepted.

Size:
One-column width: 3” wide, height flexible
Two-column width: 6.6” wide, height flexible

Font:
Arial 9 or 10, or Trebuchet MS 8-11
Black or one of the three blues listed below

Color codes:
Light blue: 200, 241, 255
Medium blue: 102, 204, 255
Dark blue: 0, 102, 204

Use of color:
All black is acceptable:

Black plus one color: light blue:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Case-by-case reimbursement</td>
<td>Hospital-by-hospital profitability</td>
<td></td>
</tr>
</tbody>
</table>

- Establish demand by driving volume
- Develop champions willing to fight for policies

<table>
<thead>
<tr>
<th>Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan-by-plan policies</td>
</tr>
</tbody>
</table>

- Drive additional volume
- Establish credibility
- Apply for code at end of year 2

<table>
<thead>
<tr>
<th>Stage 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
</tr>
</tbody>
</table>

Figure 1. Reimbursement: A Three-Stage Process.
**Black plus two colors:** light blue and dark blue or light blue and medium blue:

**Figure 1. The Virtuous Cycle of Venture.**

- **Exit**
  - Concentration of success
  - Exit trends (M&A/IPO)

- **Macro Environment**
  - Economic cycles
  - Technology cycles

- **Companies**
  - Exit strategies
  - Capital structure
  - Management teams
  - Size of rounds
  - Sectors/geographies

- **Limited Partners**
  - Portfolio diversification
  - Investment vehicles
  - Risk appetite
  - Return requirements
  - Historical trending

- **General Partners**
  - Investment opportunities
  - Sector, geography
  - Stage of investment
  - Average investment cycles
  - Fee structures

**Figure 4. Reimbursement Timeline for St. Francis Hospital.**

- Oct 2005: Inpatient ICD-9 procedure code effective, **covered by existing payments**
- Jan 2006: **U.S. Launch** Using general surgery CPT codes (physician and outpatient)
- Mar 2006: St. Francis **Profitable**
- Aug 2006: CMS approves inpatient add-on & outpatient pass-through payments
- Dec 2006: **$725M acquisition**
- Oct 2007: Outpatient pass-through code effective (and CPT Cat III Code)
- Oct 2005: FDA Approval
- Nov 2005: FDA Approval

**Notes:**

- Both Thomson Reuters and Dow Jones have historical data on the venture industry over the last half-century.
- The Virtuous Cycle of Venture has been fueled by the enormous growth of the venture capital industry, driven by macroeconomic climate and innovation cycles. Positive returns for every participant and a virtuous cycle generate more and more size and performing investment opportunities, which are covered by existing payments.

**Conclusion:**

When every element in this cycle is optimally tailored, a virtuous cycle of venture is initiated, with each component driving the next. The cycle is initiated by **Exit** strategies, which allow **Limited Partners** to reallocate their investment pools to venture opportunities. The resulting **General Partners** can then identify and invest in new opportunities, leading to an increase in **Companies**. This cycle is further fueled by macroeconomic and innovation cycles, resulting in a continuous growth ofventure capital globally, and higher activity and returns for every participant.
**Tables**

Clean lines, and spare use of fill and color are desired.

**Software:**
Word or Excel only. PowerPoint will not be accepted.

**Size:**
One-column width: 3” wide, height flexible
Two-column width: 6.6” wide, height flexible

**Font:**
Trebuchet MS 8-11, black
Use bold for row and column headings

**Color codes:**
Light blue: 200, 241, 255
Medium blue: 102, 204, 255
Dark blue: 0, 102, 204

**Use of color:**
Instead of horizontal lines, use shading of alternate rows—see examples below.
One row with no shading (i.e., white), and the next with light blue shading.

**Vertical and horizontal lines:**
Do not use.

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reimbursement Support</strong></td>
<td>8 field support (3 ramping to 10) $120K per year per FTE 3 years = $2.9M</td>
<td>8 field support (3 ramping to 10) $120K per year per FTE 5 years = $4.8M</td>
</tr>
<tr>
<td><strong>Clinical Trials</strong></td>
<td>300 patients $10K per patient = $3.0M</td>
<td>500 patients $15K per patient = $7.5M</td>
</tr>
<tr>
<td><strong>Revenue Ramp</strong></td>
<td>40% of unconstrained demand $400K per month average additional burn 18 months = $7.2M</td>
<td>33% of unconstrained demand $700K per month average additional burn 18 months = $12.6M</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>= $ 13M</td>
<td>= $25M</td>
</tr>
</tbody>
</table>
Again, the for-profit model presents a mutual benefit recognized by the institutional IP sources, the emergent companies, and the investors where IP is most effectively commercialized by experts in the production and management of new businesses with little or no outlay of public funds.

This analysis of bioscience incubator program best practices shows that dedicated venture capital funding, intellectual property, and talent sources are critical for the generation of viable businesses. Additionally, the Biotechnology Industry Organization has stated the following complementary best practices for sector development.

**Affiliated universities:**
- Engage in economic development
- Commit to technology transfer
- Create vehicles for technology commercialization

**Funding mechanisms:**
- Create programs to address the commercialization, pre-seed, and seed financing gaps to help establish and build firms
- Have active informal angel networks investing in the biosciences

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<table>
<thead>
<tr>
<th>Concept</th>
<th>Translational Research/ Pre-commercialization</th>
<th>Pre-Seed/Seed</th>
<th>Early-Stage</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities</td>
<td>Conduct R&amp;D Identify discoveries with possible commercial potential</td>
<td>Assess potential of technology Identify market Develop prototype Test and validate Demonstrate proof-of-concept at lab scale Protect IP Optimize engineering License or form business</td>
<td>Establish business function Secure initial financing</td>
<td>Prepare business strategy Put serial management team in place Secure follow-on financing Begin initial sales and marketing</td>
</tr>
</tbody>
</table>

| Financing Sources | Concept | Conventional peer-reviewed federal grant support | Within university: Grants funded with university, state, or industry dollars Non-university: Grants funded by public and philanthropic support SBIR I | Friends and family Pre-seed/seed funds Angel investors SBIR II | Early seed-stage venture capital Publicly-supported investment funds | Venture funds Equity Commercial debt Industry: strategic alliances, mergers and acquisitions |
|---|---|---|---|---|---|
| Investment | Varies | $50,000 – $500,000 | < $1 million | $1-2 million | >$2 million |

*Figure 1. Bioscience Startup Company Growth Stages and Funding Requirements.*