

Venture Capital and Seed Activity in NYS:

Statistics for Upstate and Downstate 2005-2008

Part II of a Two-Part Series

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Note: Unless otherwise referenced, all data in this report is from PriceWaterhouseCoopers / National Venture Capital Association (NVCA) MoneyTree report with data provided by Thompson Financial (www.pwcmoneytree.com).

I. Introduction

This paper is the second part of a two part series. The first paper entitled *Venture Capital and Seed Activity in NYS: Perception, Reality and Unrealized Potential* told the story about venture capital activity, particularly at the seed stage, and the unrealized potential in leveraging the incredible amount of Research and Development (R&D) that is being generated at pre-eminent universities across the region. There are many misperceptions and misunderstandings about these matters among our state, regional, and local community stakeholders. Data from many different sources was knit together to paint the picture of what is really happening in New York State (NYS). We also offered suggestions related to instituting a State-Supported Seed Fund for NY modeled after the Ben Franklin Technology Partners (BFTP) in Pennsylvania.

In this sequel report, we again address the important issue of venture capital (VC) investing in NYS. However, here we take a deep dive into one primary data source, i.e., the raw data on www.pwcmoneytree.com for both the Upstate and Downstate regions. We have created a data base for every venture deal reported to the National Venture Capital Association (NVCA) for a four-year period from January 2005 through and including December 2008 (2005-2008). We take a close look at the distribution of capital among the metro regions from Buffalo to Long Island and how capital is invested by development stage. Data on the number of deals by development stage paints a picture of the level of VC activity in each region.

In the venture world, “right-sizing” deals is an important consideration, particularly at the earliest stages of a company’s development. We consider the size of the deals by development stage by region. Because VCs, Angels, and State-Supported Seed Funds all participate to different degrees at the seed stage, we explore what constitutes a “real seed deal”.

The next question then becomes, where are the NYS investment dollars coming from, i.e., sources of capital. It appears that less than expected is coming from NYS VCs. Because of this, the NYS Comptroller’s Office has committed to providing Common Retirement Funds (CRF) to VC firms for in-state investing. We’ll say a few words about the impact of the CRF monies.

We’ll also explore some strange juxtapositions. In Upstate and Long Island there is an enormous amount of intellectual capital but a dearth of venture capital. In NYC, there is an enormous amount of intellectual capital in the life sciences, but the lion’s share of VC monies is invested in the “soft sciences” and services. We attribute these paradoxes to the lack of an entrepreneurial ecosystem both Upstate and Downstate for translating academic R&D into investable companies. We conclude by identifying the major missing components of the ecosystem and suggesting gap filling measures.

II. Distribution of Capital

Capital Invested Nationwide. Our paradigm in this paper will be to consistently present our state data in the larger context of what’s happening nationally. So, we’ll start “big picture” and ask the most fundamental question related to venture capital: how much is being invested?

Figure 1 shows that the venture market has been fairly stable during 2005-2008 and national investing levels have been in the range of \$23 - \$31B. The impact of the current economic crisis is already evident in the 2008 “dip” and recent reports are showing a continued decrease in VC activity for 2009.

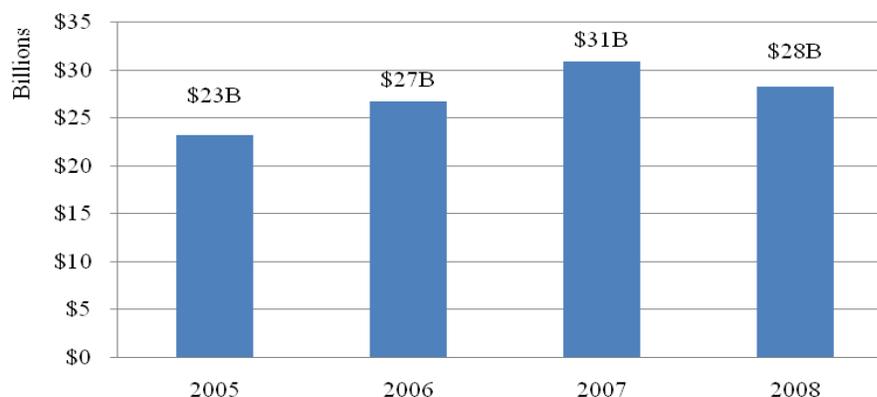


Figure 1: Annual National VC Investment

The next question then becomes: So, where is the money going? Figure 2 below shows cumulative numbers for the time period of interest and calculates a percentage for each region. So, with data aggregated over four years, at the top of the list we have (no surprise) Silicon Valley. Note that, in addition, LA/Orange County and San Diego totals (along with a small amount from Sacramento/N. Cal) combine to give California 48.5% of the venture capital in the nation. New England (which is basically Boston) comes in second place at about 12%. “NY Metro” has a respectable rank of #3 on the list.

Region	2005-2008 Cumulative Amount Invested (\$M)	% of Total	2005-2008 Cumulative Number of Deals
Silicon Valley	\$39,942	36.4%	4590
New England	\$13,160	12.0%	1814
NY Metro	\$7,596	6.9%	1023
LA/Orange County	\$7,188	6.6%	848
Southeast	\$5,625	5.1%	870
San Diego	\$5,504	5.0%	547
Texas	\$5,318	4.9%	674
DC/Metroplex	\$4,487	4.1%	815
Midwest	\$4,328	3.9%	879
Philadelphia Metro	\$2,908	2.7%	454
Colorado	\$2,711	2.5%	371
SouthWest	\$2,078	1.9%	333
Northwest	\$5,154	4.7%	767
North Central	\$1,976	1.8%	292
Sacramento/N.Cal	\$530	0.5%	78
Upstate NY	\$429	0.4%	125
AK/HI/PR	\$403	0.4%	113
South Central	\$283	0.3%	100
TOTAL	\$109,620	100.0%	14693

Figure 2: National VC Investments, Cumulative 2005-2008

However, there are two matters to note here. First, there is a big chasm between the more than 36% that Silicon Valley draws in venture capital versus the less than 7% for NY Metro. But even more

important is the fact that pwcmoneytree.com defines NY Metro as “the Metropolitan NY area, northern New Jersey (NJ), and Fairfield County, Connecticut (CT)”, the tri-state region. So, before we can continue, we need to make sure we really understand how much of NY Metro capital is actually staying in-state versus how much is headed to NJ and CT.

Distribution of Capital in “Metro NY”. The pie chart below is illuminating. 41% of the total NY Metro venture capital technically goes out of state while 59% remains in NYC and Long Island, i.e., Downstate NY.

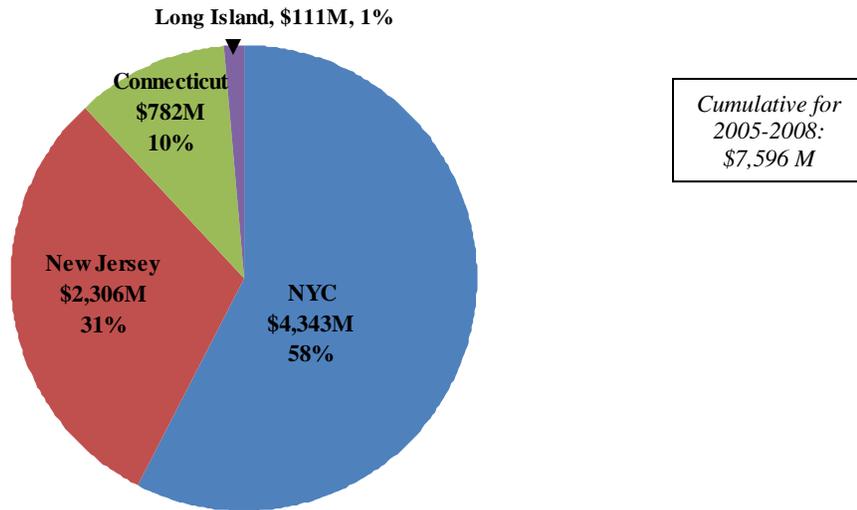


Figure 3: Distribution of Capital for “Metro NY”

But this paper is about NYS. It is Upstate and Downstate NY that are governed by the same legislative body in Albany and that contribute to the NYS economy. So, for our purposes moving forward, all data for NJ and CT will be deleted and, while they are disparate regions, we will “lump together” Upstate and Downstate NY. In fact, that’s what we did next.

Capital Invested in NYS. We combined the Upstate and Downstate totals to see what the bar graph would look like for 2005-2008 just for NYS. Fairly consistent with the national numbers, we see a picture of a fairly stable market, averaging about \$1.2B annually. (Although it is interesting that NYS totals for 2008 did not “dip”.)

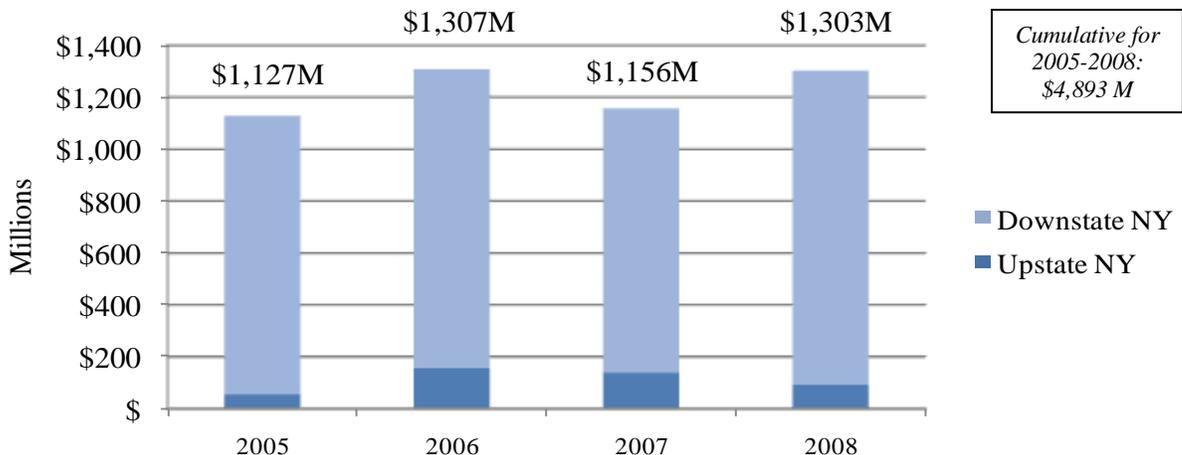


Figure 4: Annual NYS VC Investment

By eliminating NJ and CT data from NY Metro and combining what was left with the Upstate numbers, NYS ends up representing 4.5% of the national total for that time period. If we were to reconfigure Figure 2 and define NYS as a “region”, it would be #7 on the list. The chasm between NY and Silicon Valley widens. And now there is a big difference between NY and the Boston area.

Region	2005-2008 Investment (\$M)	% of Total
Silicon Valley	\$39,942	36.4%
New England	\$13,160	12.0%
LA/Orange County	\$7,188	6.6%
Southeast	\$5,625	5.1%
San Diego	\$5,504	5.0%
Texas	\$5,318	4.9%
New York State	\$4,893	4.5%
TOTAL	\$109,620	100.0%

Figure 5: If NYS were Recognized by PWC as a “Region”

Distribution of Capital in NYS. Now that we’re confident that we’re looking just at NYS numbers, we will again assess the distribution of capital, this time just for the state.

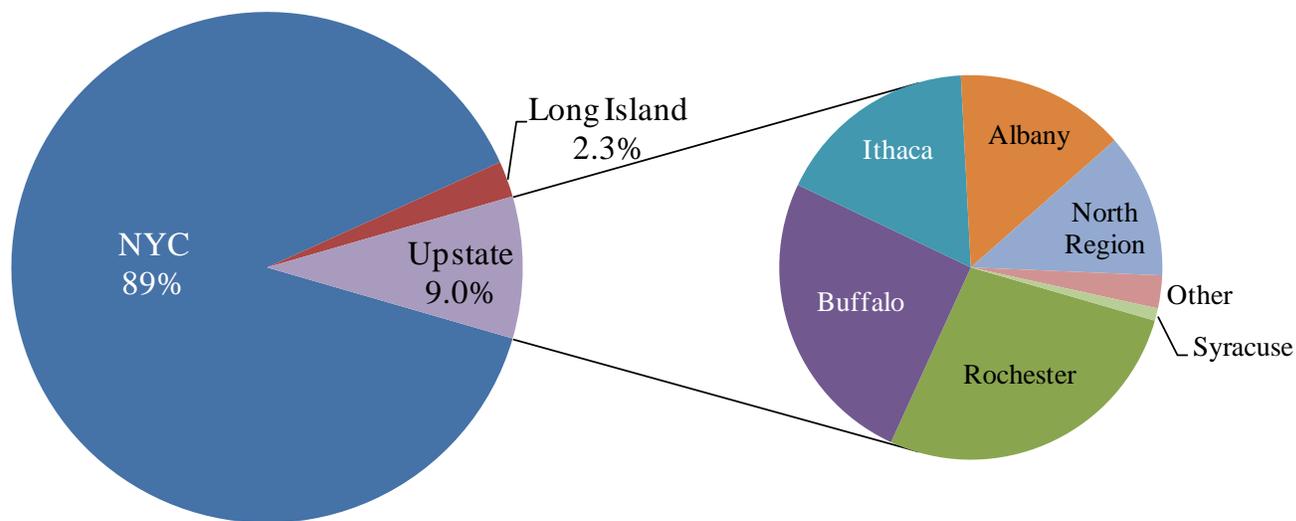


Figure 6: Distribution of Capital, NYS 2005-2008

As shown above in the left pie, NYC receives 89% of the venture capital in NYS. Long Island receives about 2% and all of Upstate is at 9%. In the “pie of pie” chart to the right, we magnify the Upstate region to determine where in Upstate the money goes. Buffalo and Rochester each receive about a quarter of the Upstate capital. (Keep in mind that this is a quarter of Upstate’s 9% share of NYS, so overall only 2% of the state’s total.) Ithaca is a small town which ranks with the major metro regions and is on par with Albany. We attribute this to the “venture investable” companies spun out of

Cornell, which is the largest R&D generating university in the state. The North Region’s share is a surprise (which we will explain later in this report.) Syracuse’s share is disappointingly low. The specific numbers for each region are tabulated below.

Metro Region	Amount Invested (\$M)	% of Total
NYC	\$4,343	88.8%
Long Island	\$111	2.3%
Rochester	\$120	2.5%
Buffalo	\$111	2.3%
Ithaca	\$75	1.5%
Albany	\$63	1.3%
North Region	\$54	1.1%
Other	\$12	0.2%
Syracuse	\$5	0.1%
Total	\$4,893	100.0%

Figure 7: NYS VC Investments, 2005-2008

It is very interesting to note the identical numbers for Long Island and Buffalo! It is surprising that Long Island doesn’t seem to benefit from the venture capital concentration in nearby NYC, its downstate neighbor. By a small margin, Rochester is leading the Upstate region.

III. Capital by Development Stage

National Capital by Development Stage. We now know how much and where venture capital is being invested. Another fundamental question related to venture capital is when, in terms of a company’s development stage, is the money being invested? Again, we’ll start “big picture” in terms of what’s happening nationally. Figure 8 shows an interesting and obvious national trend.

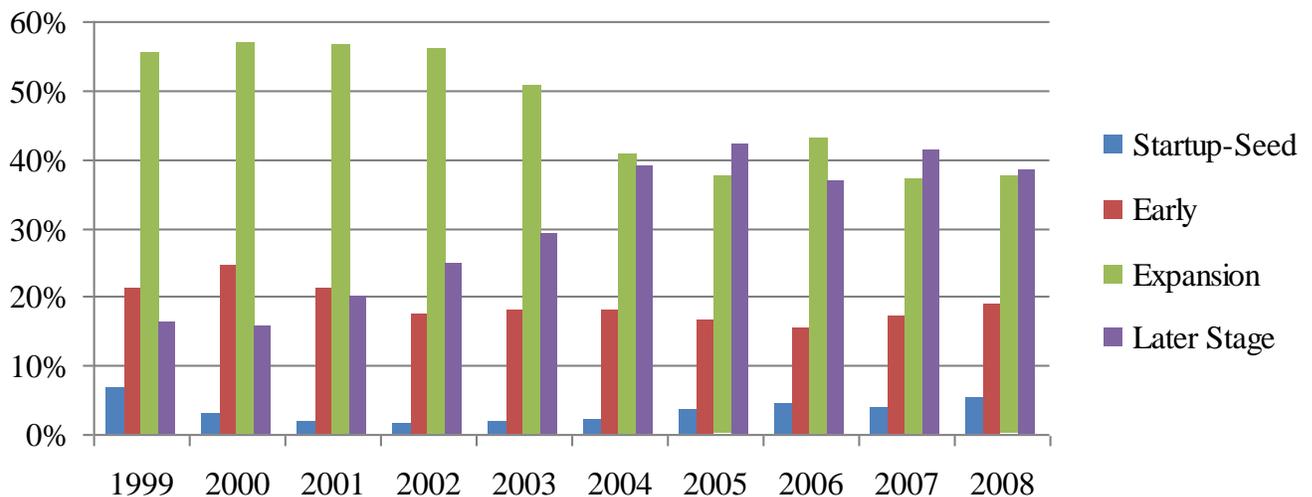


Figure 8: Capital by Development Stage, National Trend

For the most part, blue (seed), red (early) and green (expansion) bars have decreased over the last ten years. Purple (later stage) bars have increased. After losing billions in the telecom and dot.com bubble burst in 2000, VCs have been heading downstream towards “safer waters”. Looking at the most recent data in 2008 tells us that VCs invest in early, expansion, and later stage companies, but commit relatively little capital to seed stage companies.

NYS Capital by Development Stage. Trends in NYS have followed suit. Below, the data by development stage has been aggregated for 2005-2008. The distribution by development stage for both Upstate and Downstate is consistent with where VCs are today. They invest in early, expansion, and later stage companies, but commit relatively little capital at the seed stage.

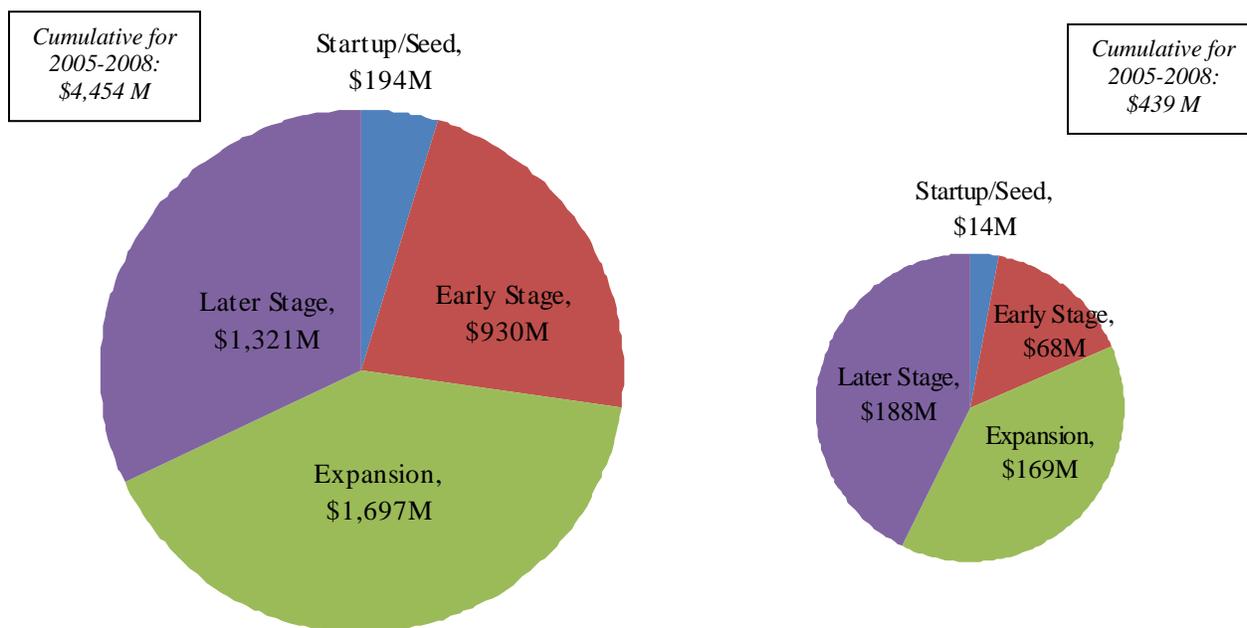


Figure 9: Downstate Capital by Stage

Figure 10: Upstate Capital by Stage

While the segmentation for the Upstate and Downstate pies above looks similar, there is an order of magnitude difference in the capital invested both overall and at each development stage.

Note: In 2005, pwcmoneytree.com listed, as a “seed stage” deal, an investment made in a NYC company called Integro, Ltd. for a whopping \$312M. This one deal is significantly greater than all the other seed stage deals made in four years in NYC combined! Clearly an outlier, the value of the Integro deal was subtracted from all the data related to seed stage investing in NYC above and moving forward because it skews the results. However, it is still included in the total VC values for NYC and NYS.

By Development Stage by Region. Figure 11 further breaks out capital by development stage by region. Because the upper graph is scaled for NYC, the data for Long Island is dwarfed as is Upstate’s. While there is a 10X difference between NYC and Upstate, there is a 40X difference between NYC and e.g., Rochester. Therefore, we had to magnify the Upstate data on a separate scale before we could visualize the data for the different Upstate metro regions.

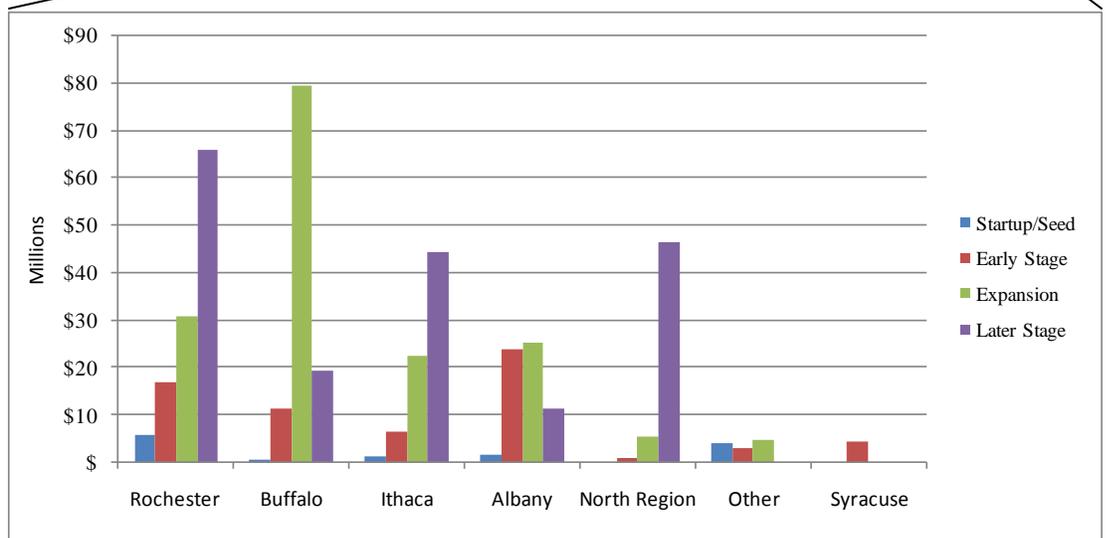
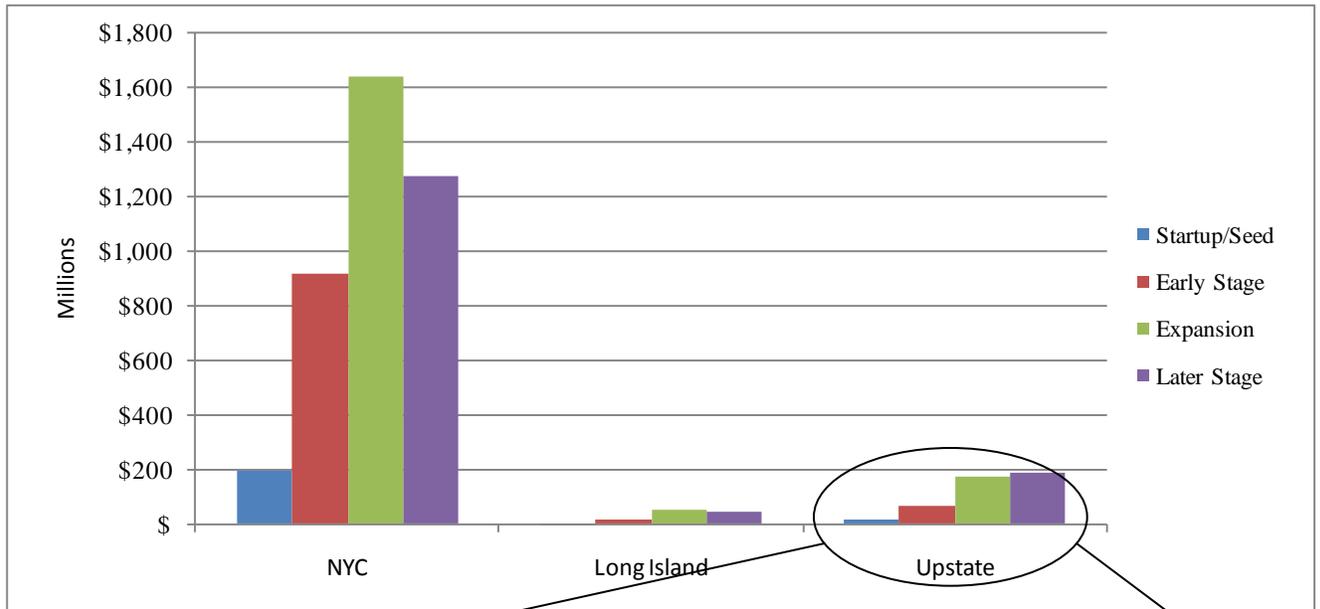


Figure 11: Capital by Metro Region by Development Stage, Cumulative 2005-2008

The patterns of investing seem a bit peculiar. Rochester has a disproportionate level of later stage capital. Buffalo has a disproportionate amount of expansion stage capital. The North Country has an unusual spike because of one \$47M later stage deal in a company called ICI.com. Syracuse is trailing.

But stepping back from the particulars, the take home message here is that both Upstate NY and Long Island are seriously underserved and practically invisible to the venture capital industry.

IV. Deals

Number of Deals. Obviously there should be a correlation between the capital invested by development stage and the number of deals by development stage. And certainly, that is the case here. The pies below look similar to the ones on page 8. And again, while the Upstate and Downstate pies look very similar to each other, this time there is a 5X difference in the values.

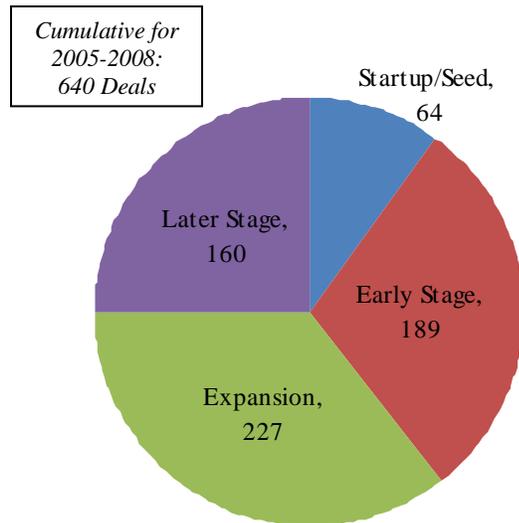


Figure 12: Downstate Deals by Stage

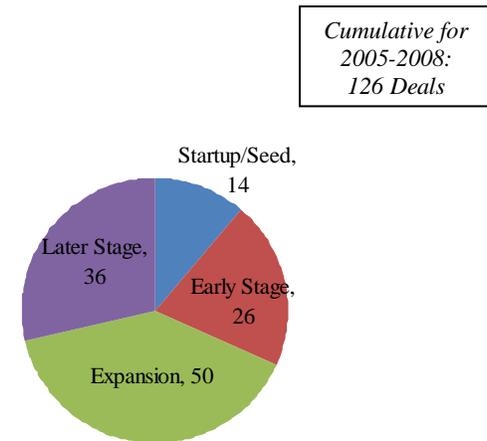


Figure 13: Upstate Deals by Stage

It is very interesting that there is 10X as much capital Downstate (as we saw in the previous section) but 5X as many deals. This suggests the deals Downstate are twice as large as the deals Upstate or stated conversely, the deals Upstate are half the size of deals Downstate. Deal size will be discussed in the next section. But what we really want to do in this section is explore the number of deals brokered in a region on an annual basis.

Deals per Year. Deals per year is one of the best ways to get a sense of the “tempo” in a region. What kind of “venture tempo” exists across NYS and how does this compare to the VC tempo in Silicon Valley and Boston? Figure 14 shows the number of companies funded by development stage in a typical year.

Metro Region	Start-up/Seed	Early stage	Expansion	Later Stage	Total
Silicon Valley	105	311	379	353	1148
New England	44	111	149	151	454
NYC	16	47	54	37	153
Upstate NY	4	7	13	9	32

Figure 14: Companies Funded in a “Typical Year” between 2005-2008

Of course, in Silicon Valley, the venture activity is enormous. There are, on average, 105 seed deals per year, 311 early stage deals, 379 expansion stage deals and 1148 deals total per year. Boston has a bit less than half that activity level. NYC has about one-third the activity in Boston. And if there was a Richter scale for venture activity, Upstate would barely register.

In Figure 15, we further break down the activity on an annual basis for the different Upstate cities and Long Island. It's not good news.

Metro Region	Startup/Seed	Early Stage	Expansion	Later Stage	Total
Rochester	2	2	3	5	11
Buffalo	1	1	5	1	7
Long Island	1	3	3	1	7
Albany	0	2	3	1	6
Ithaca	1	1	1	3	5
North Region	0	0	1	0	2
Other	0	0	1	0	1
Syracuse	0	0	0	0	0

Figure 15: Companies Funded in a "Typical Year" between 2005-2008

V. Deal Size

Deal Size. Now that we have documented both capital invested by development stage and the number of deals receiving capital, we are positioned to calculate deal size for each development stage. Capital divided by deals equals deal size.

As per usual, we include numbers at the national level for reference. The highlighted section of the table below tells us that, if VCs are involved in leading or syndicating a seed stage deal, the size of the deal will be, on average, \$3.3M. For an early stage deal, the average size is about \$5M. Expansion stage deals are around \$9M. And later stage deals are around \$10M.

Avg Deal Size (\$M)	Startup/Seed	Early Stage	Expansion	Later Stage
National	\$3.3	\$4.9	\$8.7	\$9.8
NYC	\$3.1	\$4.9	\$7.7	\$8.6
Long Island	\$1.0	\$4.4	\$4.1	\$3.9
Upstate	\$1.0	\$2.6	\$3.4	\$5.2

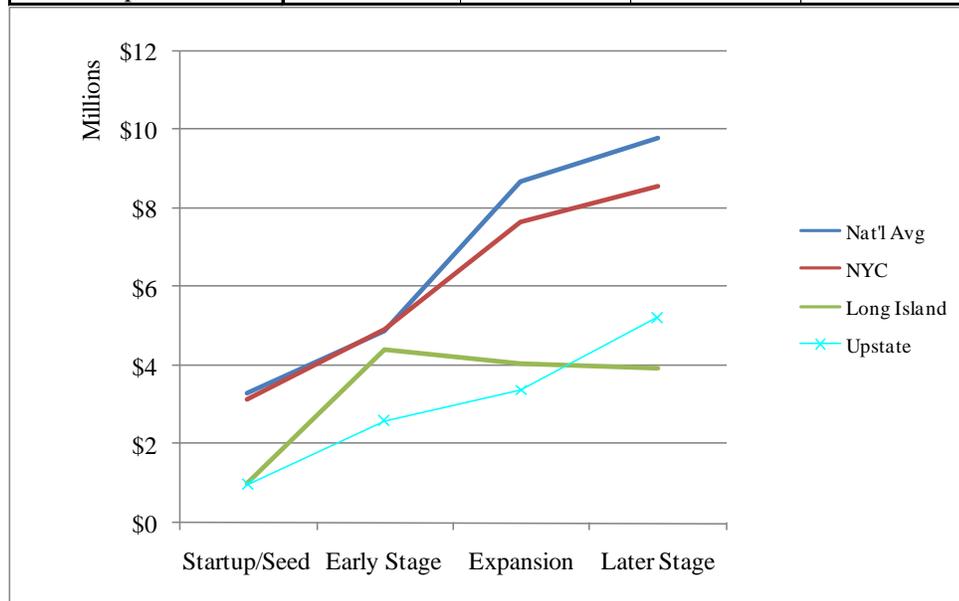


Figure 16: Average Deal Size, 2005-2008

If we illustrate the data graphically as in Figure 16, it becomes very apparent that venture deals being executed both on Long Island and in Upstate are below average at every development stage. And true to our earlier suggestion, they are about half the size of the deals in NYC. NYC deals are closer to average and likely more comparable to the deals being executed on the west coast, except NYC values drop below average at the expansion and later stages.

While we're on the topic of deal size, we want to hit "pause" for a moment here and go back to the deal size data for "seed". In our experiences with entrepreneurs, there seems to be quite a bit of confusion over what constitutes a seed stage investment. This is probably attributable to the fact that VCs, Angels, and State Supported Seed Funds all overlap at the seed stage and entrepreneurs receive "mixed messages". So, let's take a look at what entrepreneurs are "hearing".

What's a "Real Seed Deal"? In the previous section, we suggested that if VCs are involved in leading or syndicating a seed stage deal, the size of the deal will be on average \$3.3M. This is a lot of money for a seed stage company especially if their valuation is low! But VCs tend to have large funds (average size is nearly \$200M), so on the rare occasion that VCs do a seed stage deal (probably locally as in Silicon Valley or Boston), it will likely be a "big deal". For the most part however, as we saw earlier, VCs are moving downstream, limiting their participation in seed stage deals, and sending a message to the entrepreneurial community: "Find your seed money elsewhere and come back after you've matured."

If VCs are indeed suggesting to most start-ups that they "find their seed money elsewhere", where can they go? There are two other potential sources of capital: State-Supported Seed Funds and Angel Investors. Relative to State-Supported Seed Funds, there is limited data that aggregates information on a national level. But data is available for Angels. So, let's take a look at what the Angels are doing at the seed stage and contrast that to what VCs are doing.

Seed Deals Nationally	2005	2006	2007	2008
Angels Invested	\$23.1 B	\$25.6 B	\$26.1 B	\$19.2 B
VCs Invested	\$.9 B	\$1.2 B	\$1.3 B	\$1.5 B
Number of Angel Deals	49,500	51,000	57,120	55,480
Number of VC Deals	239	355	450	440
Angel Deal Size	\$467 K	\$502 K	\$455 K	\$346 K
VC Deal Size	\$3.8 M	\$3.3 M	\$2.8 M	\$3.4 M

Reference for Angel Data: Center for Venture Research, University of New Hampshire

Figure 17: VCs versus Angels at the Seed Stage

During 2005-2008, Angels were investing about \$25B annually at the seed stage while VCs invested about \$1.2B. Angels invested in, on average, over 50,000 deals while VCs averaged less than 400. While VCs were investing \$3.3M per deal, Angels were averaging about \$500K or less. The Angel deal size is better aligned with the anecdotal data available from the National Association for Seed and Venture Funds (NASVF) which suggests that, in today's climate, a typical non-bio seed stage deal from a State-Supported Seed Fund is \$500K and a typical bio deal is \$750K.

What can we conclude here about seed stage investing? An entrepreneur might gauge their expectations in accordance with who they are likely to be dealing with. Angels and State-Supported

Seed Funds are doing the bulk of the investing at the seed stage. Entrepreneurs have a much higher chance of securing a deal with an Angel group or a State-Supported Seed Fund than from a VC. Therefore, an entrepreneur might expect that if a State-Supported Seed Fund and/or Angel investors are leading the deal, the size of the deal will be somewhere between \$250K - \$1M. If they are one of the lucky few to get VCs involved at the seed stage, then the \$3.3M average number is probably more reasonable. A possible scenario for a high-tech company might actually be a syndicated deal of some or all of the above.

VI. Sources of Capital

VC Firms in NYS. At this point, we have determined *how much* money came in to NYS, *where* it was invested, and *when* it arrived. So, now let's determine *where it came from*. First, we simply wanted to know how many of the 741 VC firms in the US are located in NYS. Based on data from NVCA, Upstate Venture Association of New York (UVANY), and pwcmoneytree.com, we compiled the list below. We count 64 firms total, the vast majority in NYC.

21Ventures, LLC	Kodak External Alliances (FKA: Kodak Ventures Group)
Abbott Capital Management LLC	L Capital Partners
Advantage Capital Partners	Lambda Funds, The
Allegra Partners (FKA: Lawrence, Smith & Horey)	Mercury Capital Partners
Allen & Company	New Leaf Venture Partners LLC
Ascend Venture Group LLC	New Science Ventures, LLC
Baker Capital Corp.	New York City Investment Fund
Bessemer Venture Partners	Newlight Associates
Boldcap Ventures LLC	NGN Capital LLC
Cayuga Venture Fund	Novartis Venture Fund (FKA: Novartis Corp.)
Chart Venture Partners	Onondaga Venture Capital Fund, Inc.
Clayton, Dubilier & Rice, Inc.	OrbiMed Advisors LLC
Constellation Ventures (AKA: Constellation Growth Capital)	Patriot Capital
Corporate Fuel Partners	Radius Ventures LLC (FKA: NPV Capital Partners LLC)
Credit Suisse Private Equity (FKA: CSFB Private Equity)	Rand Capital Corporation
Cross Atlantic Partners, Inc.	Rho Ventures (AKA: RHO Management)
DeltaPoint Capital Management LLC	RRE Ventures LLC
Draper Fisher Jurvetson Gotham Venture Partners	Sandler Capital Management
Easton Hunt Capital Partners, L.P.	SAS Investors
Enhanced Capital Partners	Signet Healthcare Partners (FKA: Sanders Morris Harris)
Essex Woodlands Health Ventures (FKA: Woodlands Venture)	Small Business Technology Investment Fund (SBTIF)
FA Technology Ventures	Sprout Group
FirstMark Capital, LLC (FKA: Pequot Ventures)	StarVest Partners, L.P.
Greycroft Partners	Stonehenge Growth Capital
Harris & Harris Group, Inc.	Summer Street Capital Partners, LLC
High Peaks Venture Partners	TH Lee Putnam Ventures, L.P. (AKA: Thomas H. Lee Putnam)
Hudson Venture Partners	TopSpin Partners
Inter-Atlantic Group	Trillium Group, LLC
INVESCO Private Capital (FKA: Chancellor)	Union Square Ventures
Investcorp Technology Investments Group (AKA: TI)	W Capital Partners
Investor Growth Capital, Inc.	Warburg Pincus LLC
J.P. Morgan Partners (FKA: Chase Capital Partners)	Wheatley Partners

* Upstate VCs shown in Blue

Figure 18: List of VCs in NYS

In-State Investing. But more importantly, we wanted to know how much money these VC firms were collectively investing in NYS. We didn't have data readily available for 2005-2008, so we used 2007 as a representative year. In 2007, NY VCs deployed \$2,828M across the nation but only \$250M, or 9%, remained in-state. However, as shown in Figure 19 below, the \$250M that did remain in-state represented 21% of the total amount received by NYS that year. It is surprising that NY VCs don't invest more in-state.

Source of Capital (2007)	Amount(\$M)	% of Total
New York	\$250	21%
Massachusetts	\$221	19%
California	\$166	14%
Foreign Funds	\$100	9%
Connecticut	\$75	6%
Other	\$356	30%
Total	\$1,168	100%

Figure 19: Sources of Capital for Monies Received in NYS, 2007

Comptroller's Report. In an effort to encourage VC firms to invest in-state, the NYS Comptroller's Office launched the In-state Private Equity Investment Program in 2000. This program distributes NYS Common Retirement Fund (CRF) monies to VC firms to invest in NYS start-up companies.

A report was issued by the Comptroller's Office in April 2009 to document the program's performance. We took a careful look at the data and learned that since 2001, 17 firms have received a total of \$931M. Over a period of nine years, about half that amount has been invested in early, expansion, and later stage companies. Also, between 2005-2008:

- The monies invested **in-state** by these firms, represent about 7% of the total amount invested by VCs in general in NYS on an annual basis.
- The monies invested **in-state** by these firms, *plus the monies co-invested alongside the CRF monies*, represent about 17% of the total amount invested by VCs in general in NYS on an annual basis.
- The monies invested **Upstate** by these firms, represent an average of 42% of the total amount invested by VCs in general in Upstate on an annual basis.
- The monies invested **Upstate** by these firms, *plus the monies co-invested alongside the CRF monies*, represent on average 63% of the total amount invested by VCs in general in Upstate on an annual basis.

In reviewing these bullets, we can see that the Comptroller's monies are registering in a significant way in the state, particularly Upstate. However, despite the Comptroller's noble efforts, we will have to revert back to Figure 2 on page 4 of this white paper to see the impact of those monies in context. The Comptroller's positive report does not change the facts observed in that table, i.e., that in terms of its ability to attract venture capital, Upstate NY ranks at the bottom of the national list just above Alaska/Hawaii/Puerto Rico which are regions not even attached to mainland USA.

Not the Comptroller's Job. It is very important to remember though that the In-State Investment Program is not primarily intended for economic development. It is not the Comptroller's job to "fill gaps" in the venture investing continuum, e.g., at the seed stage, or to cause a sea-change in venture investing in the state. The Comptroller has a fiduciary responsibility to manage the CRF money wisely. Those monies are placed under the management of VC firms with the clear expectation of generating high returns. If the monies help NYS companies at the same time, then all the better. But at the end of the day, it's about maximizing ROI, not economic development.

VII. Intellectual Capital

The Visible and Invisible. So far in this document, we have learned that NYC is not on the same level as Silicon Valley or Boston in terms of attracting venture capital, but "the City" is at least "visible" to the venture capital community. On the other hand, Upstate NY and Long Island are practically "invisible" to VCs. If it wasn't for the Comptroller's dictating that some CRF monies be invested in-state, there might hardly be any investments made at all in these regions.

This is surprising because venture capital tends to go where there is **strong intellectual capital** and Upstate & Long Island are rich in intellectual capital. By intellectual capital, we mean *high-level academic research which attracts millions of dollars, primarily from the federal government on an annual basis, and which results in high-tech inventions that can potentially form the basis of high-potential start-up companies.*

In Part I of this white paper series, we introduced the table below, to the left. But now, let's segregate the R&D that's going on in the "visible" region *versus* the R&D that's going on in the "invisible" regions. This is shown on the reconfigured table to the right. What's amazing is that the level of R&D activity in Upstate & Long Island is essentially equal to the level of R&D activity in the "highly-venture-visible" Massachusetts. Further, keep in mind that these are university R&D numbers. If we include the non-university research centers such as Roswell Park, Hauptman-Woodward, Brookhaven and Cold Spring Harbor, that bumps the R&D number for Upstate and Long Island up to \$2,768 M.

Rank	State	2006 University R&D (\$M)
1	California	\$6,493
2	New York	\$3,789
3	Texas	\$3,270
4	Maryland	\$2,530
5	Pennsylvania	\$2,428
6	Massachusetts	\$2,158

Source: 2006 NSF Survey

Rank	"State"	2006 University R&D (\$M)
1	California	\$6,493
2	Texas	\$3,270
3	Maryland	\$2,530
4	Pennsylvania	\$2,428
5	Massachusetts	\$2,158
6	Upstate & Long Island	\$2,090
	NYC	\$1,699

Figure 20: R&D in Upstate and Long Island

How is it possible that with the same amount of intellectual capital as Massachusetts, Upstate & Long Island are “invisible” to VCs?! Probably because this research is not being translated into “venture investable” opportunities. And probably investable opportunities are not emerging from the universities to a large extent because **the entrepreneurial ecosystem to create and sustain those opportunities does not exist.**

But lest we too quickly conclude that NYC has it “all together”, we need to look at what the VCs are actually investing in there.

VIII. Investments by Industry

What about Biotech? The table below shows the top ten industries that attract venture capital in NYC.

Rank	Top Ten Industries in NYC	% of VC
1	Software	69%
2	IT Services	
3	Media and Entertainment	
4	Financial Services	
5	Business Products and Services	
6	Telecommunications	16%
7	Industrial/Energy	
8	Biotechnology	9%
9	Healthcare Services	
10	Medical Devices and Equipment	
	Other	5%
	Total	100%

Figure 21: Top Ten Industries Attracting VC in NYC

69% of the venture capital received in NYC is going into “soft” technologies, i.e., software, IT, media & entertainment, financial services, business products. Given that this is NYC, that makes sense! But these technologies are generally not the products of millions of dollars of federally-funded university-based R&D. The only “hard” physical sciences that make the list are “telecom” and “industrial/energy”. The life sciences only receive 9% of the total VC dollars invested.

Yet NYC has a number of resources in the life sciences sector that should generate excellent investment opportunities. There are nine major universities and medical centers heavily involved in life science research. As a region, NYC has routinely been the second largest recipient of NIH funding in the nation. 76% of the total university-based R&D in NYC is life science related. Could it be that this enormous amount of bio-related R&D is not being translated into investable opportunities?

When we queried some of the Tech Transfer Officers at the universities Downstate, they said that, normalized for the amount of R&D conducted at the respective institutions, they are spinning out just as many biotech companies as the universities in Boston and Silicon Valley but the vast majority leave

the state and locate elsewhere. Could it be that some of them are simply moving across state lines? A close look at the pwcmoneytree.com data suggests that the VC dollars going to “Metro NY” for biotech and medical devices is actually fairly significant but the lion’s share is headed to NJ and CT. The #1 industry for “venturing” in NJ is biotech. In CT, biotech is the #1 industry and medical devices is #2. Many of the NJ and CT investments may be attributable to companies originating in NYC.

Therefore ironically, our conclusion for NYC is about the same as for Upstate and Long Island. It appears that much of the academic research is not being translated into investable opportunities. And probably investable opportunities are not emerging because the entrepreneurial ecosystem to create and sustain those opportunities does not exist in NYS either Upstate or Downstate. Or if the research is being translated, the ecosystem does not exist to retain them in the region.

University Start-Up Probability of Success. This is all quite unfortunate because hundreds of university startups are created nationally each year based on federally funded R&D. And according to Scott Shane in his book “Academic Entrepreneurship: University Spinoffs and Wealth Creation”, they have a much higher probability of success than other emerging companies:

- “University start-ups are 108 times more likely to result in a liquidity event than other start-ups.”

Further, according to statistics posted on the National Council of Entrepreneurial Technology Transfer (ncet2) website:

- 68% of university start-ups created between 1980 to 2000 remained in business in 2001, while regular start-ups experienced a 90% failure rate during that same time period.
- 8 percent of all university start-ups go public, in comparison to a "going public rate" of only 0.07 percent for other U.S. enterprises -- a 114x difference.
- Google, Netscape, Genentech, Lycos, Sun Microsystems, Silicon Graphics, and Cisco Systems are some of the most notable university start-ups.

Before we leave this section, we should note here for the sake of comparison, that the top three industries receiving capital in the Upstate region are *Medical Devices, Semiconductors, and Industrial/Energy* in that order. The top three industries on Long Island are *Medical Devices, Industrial/Energy and Biotechnology* in that order. While only a small amount of venture capital is received by each of these regions, it does appear that the recipient companies are more of the “hard” science type opportunities that result from intensive federally-funded academic research.

IX. Entrepreneurial Ecosystem

Possibilities. If it is indeed the case that academic research is not being translated into investable opportunities in NYS, we might ask ourselves what an appropriate expectation might be if we did have the right ecosystem.

As presented at the AUTM 2008 Annual Meeting, researchers from Texelerate found that from 1991-2007, \$480B of primarily federally funded R&D resulted in the formation of 6,279 start-up companies.

This suggests that, on average, for every \$76M of research, we might expect one start-up company.

The reader may recall from Part I of this white paper series, that there is a total of \$4.5B of mostly federally funded R&D annually to NYS universities and non-university academic centers. Therefore, we might expect to launch 59 university spin-out companies annually in our state. The likely split would be about 26 Upstate and about 33 Downstate.

(As points of reference, recall Figure 14 on page 10. Silicon Valley alone launches over 100 “venture-funded” start-ups per year. In a typical year, 44 “venture-funded” start-ups are launched in or near the city of Boston. The Ben Franklin Funds reported launching 29 start-ups just in Philadelphia in 2008 through their State-Supported Seed Fund.)

In theory, NYS universities collectively may have enough commercializable technologies to start 59 start-ups per year. (Our experiences could easily validate that number.) But in reality, to be successful, university spin-outs need:

- 1) seed capital to launch
- 2) management teams to execute

These two major elements (and several other supporting elements) are weak or missing from NYS’s ecosystem.

Filling the Gaps. The need for Seed Capital was discussed in Part I of this white paper series where we suggested that NYS establish a State-Supported Seed Fund similar to the Ben Franklin Technology Partner (BFTP) Funds in Pennsylvania. Pennsylvania provides \$20M a year to four Ben Franklin centers across the state. (In addition, the state used their tobacco settlement money to set up three \$20M “Greenhouse” funds exclusively for seed stage life sciences companies.) NYS has nearly twice as much R&D as PA – we can argue that a seed fund in NYS should be closer to \$37M a year!

This amount should not sound unreasonable. Launching 59 start-ups per year across the state at an average of \$.5M each (plus matching capital) plus operating costs adds up quickly. A State-Supported Seed Fund would need to be large enough to support this level of deal flow. There continue to be conversations in Albany about a seed fund... a million here, a million there. That’s not what we’re suggesting. We’re suggesting a large commitment annually from the state for two State-Supported Funds – one Upstate and one Downstate.

Keep in mind, that what the Comptroller is doing with CRF monies **is not** the same as a State-Supported Seed Fund. Firms with CRF monies typically invest in growing companies that are already generating revenues and expanding their operation. A separate State-Supported Seed Fund would work synergistically with the early stage funds that are deploying CRF monies. Stronger seed stage companies means better “de-risked” investment opportunities for follow-on investors.

Relative to finding start-up managers, there are many ex-patriots from the regions who have gone elsewhere, made it big, and would like to return “home”. There are alumni from our universities who want to see start-ups from their alma mater succeed and are willing to champion them. However, it is

very difficult to recruit experienced start-up managers into companies that have no money. A seed fund would also go a long way in solving this problem as well.

Finally, NYC entrepreneurs also complain about the lack of affordable space. Hopefully, recent initiatives to create incubator space such as at the Brooklyn BioBAT and the East River Science Park may help in that regard. Or Upstate incubators would be more than happy to offer a starting location to their Downstate neighbors!

X. Conclusions

This white paper series is being written during a time when the entire nation is talking about economic stimulus. Considerable sums of money are going to large corporations and infrastructure projects. Yet, “Studies suggest that new firms are more efficient job creators than large corporations sopping up most of the stimulus funds. Statistics from Pennsylvania's Department of Community and Economic Development...bear this out: In 2007, a total of \$90 million in private investment yielded 8,150 jobs, at a cost of \$11,000 per job. Compare that with the Obama administration's \$800 billion stimulus bill, with its hopes of creating 4 million jobs--at \$200,000 a pop.” *Ref: Jim Jaffe, President of the NASVF, Forbes.com, 4/27/09*

If indeed new firms are better job creators, then this should be good news for NYS. Second only to California, NYS has the highest number and concentration of world-class universities and academic research centers in the country! Their research can be leveraged to create many new companies.

The bad news is that it's “not happening”. All the evidence presented in Part I and Part II of this white paper series suggests that we are not optimizing the potential that exists for translating cutting-edge research into investable opportunities in NYS. We simply haven't developed the ecosystem.

This white paper series was inspired by the need to educate our legislators and community stakeholders throughout NYS as to the “possibilities”. It is intended to:

1. Put a spotlight on the unrealized potential that lies within our state's pre-eminent universities and academic research centers
2. Highlight the paradoxes (summarized in the appendix) that exist in the venture investing patterns within NYS and relative to other states
3. Offer solutions
4. Equip members of our entrepreneurial community with resources to educate their local constituency.

Across the nation, universities are now being recognized as engines of economic growth. *They are the nation's principal source of new scientific discovery and technological advance.* Many of the innovations generated within our universities can form the basis of start-up companies. Their creation is essential to the continued growth and prosperity of this country because the companies formed today are the jobs of tomorrow. NYS stands on the threshold of its tomorrow. Its economy can be transformed into a globally competitive knowledge-based economy through new cutting-edge technology start-up companies. To our legislators and community stakeholders we say: Let the transformation begin.

APPENDIX:

A SUMMARY OF THE PARADIGMS AND PARADOXES OF VENTURE INVESTING IN NEW YORK STATE

NYS Venture Investing Compared to Other States

California ranks #1 in the nation for university-based R&D, and receives ~ 48% of the nation's venture capital	NY ranks #2 in the nation for university-based R&D, but receives only 4% of the nation's venture capital
MA expends about \$2.2 B annually in university-based R&D, and receives ~ \$3.3 B annually in venture capital	Upstate NY & Long Island combined expend ~ \$2.1 B annually in university-based R&D and together receive ~ \$.1 B annually in venture capital
~ 72% of capital invested by CA VCs remains in-state	~ 9% of capital invested by NY VCs remains in-state
In an effort to encourage in-state investing, the NYS Comptroller has committed CRF monies to NYS venture capital firms to be used for In-State Private Equity Investing; 55% of the NYS CRF monies have gone to Upstate NY; the CRF Funds plus syndicated capital represent ~ 67% of total capital invested in Upstate NY in a typical year	Despite the Comptroller's efforts, Upstate NY still ranks third from the bottom of 18 regions across the US for total venture capital received -- just above Alaska/Hawaii/Puerto Rico, which are not even attached to mainland USA
<i>Caution when looking at the data:</i> "Metro NY" typically ranks high on most VC lists for venture capital received	"Metro NY" is defined as "metropolitan NY, northern NJ and Fairfield County CT" ; 41% of the venture capital received by "Metro NY" leaves the state for NJ and CT

NYC Venture Investing versus Upstate and Long Island

NYC expends ~ \$1.7 B annually in university-based R&D and receives ~ \$1 B annually in venture capital	Upstate NY & Long Island combined expend ~ \$2.1 B annually in university-based R&D and together receive ~ \$.1 B annually in venture capital <i>If we include the non-university research centers such as Roswell Park, Hauptman-Woodward, Brookhaven and Cold Spring Harbor, the R&D number for Upstate and Long Island is increased to \$2.8 B.</i>
NYC receives 10X as much capital as Upstate and 5X as many deals, which means that ...	In Upstate and Long Island, venture deals at every development stage are half the size of the deals in NYC

References: NSF Survey for University Based R&D 2006, NVCA report on Venture Capital 2007, and/or pwcmoneytree.com data for 2005-2008

Venture Investing in NYC

<p>Only ~ 29% of the venture capital received in NYC is invested in "hard science" opportunities, i.e., the "stuff" of university-based R&D</p>	<p>69% of the venture capital received in NYC is invested in Software, IT, Media, Financial Services, and Business Services</p>
<p>NYC has 9 major universities and medical centers involved in Life Science research; NYC regularly ranks #2 in the nation for NIH funding; 76% of the total university-based R&D in NYC is Life Science related.</p>	<p>Only ~ 9% of the venture capital received in NYC is invested in Life Science opportunities</p>
<p>Among the "top industries" receiving venture capital in NJ, Biotech ranks #1 In CT, Biotech ranks #1 and Med Devices ranks #2</p>	<p>Among the "top industries" receiving venture capital in NYC, Biotech ranks #8 and Med Devices ranks #10</p>

Seed Stage Investing in NYS

<p>VCs typically invest relatively little capital in Seed stage companies unless they are "local"; Nevertheless Silicon Valley VCs invest in over 100 seed stage companies in a typical year at an average investment of \$3.3M</p>	<p>In NYC, about 16 seed stage companies receive VC in a typical year at an average investment of \$3.1M In all of Upstate NY and Long Island combined, about 4 seed stage companies receive VC in a typical year at an average investment of \$1M</p>
<p>PA commits \$20 M annually in a State-Supported Seed Fund (BFTP); this effort has been underway for the last 25 years; In addition, tobacco settlement monies were used to set up 3 \$20M Greenhouse Funds for Life Science start-ups TX established a \$200M State-Supported Seed Fund in 2005 MD's seed fund was established 25 years ago and is one of the most successful State-Supported Seed Funds in the US</p>	<p>NYS started a State-Supported Seed Fund (Excell-NY) with \$3M and has committed \$700K annually in the last 2 years with no commitment to future funding</p>

NYS Governor's Office and their view of "Economic Stimulus"

<p>Project proposals to secure economic stimulus monies can be submitted to the Governor's office on the website www.economicrecovery.ny.gov/system/proposal.cfm</p>	<p>The proposals must fit into one of the following categories: Crime and Public Safety, Poverty, Education, Healthcare, Energy and Environment, and Infrastructure There are no categories for small business, entrepreneurship, start-up companies, venture investing, etc.</p>
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References: NSF Survey for University Based R&D 2006, NVCA report on Venture Capital 2007, and/or pwcmoneytree.com data for 2005-2008

Excell Partners Inc. manages a venture capital fund which provides pre-seed and seed stage financing to high-tech start-up companies. It was formed in partnership with the University of Rochester and the State of New York to support regional economic development. Excell's mission is to bridge the pre-seed and seed stage funding gap which exists in the Upstate New York region and prepare companies for their next major round of financing. Excell focuses on technology companies emerging from regional universities and research centers.

Since 2005, Excell has invested:
\$2.4 Million Dollars
In 21 Companies
In Ithaca, Geneva, Rochester, and Buffalo
In the fields of Biotechnology, Medical Devices, Industrial/Energy,
Electronics & Instrumentation, and Consumer Products
Excell's average investments are matched more than 3:1 by Co-Investors
for an average total Seed Round raise of about \$500K per company

Total for Co-Investor and Follow-on Funding for our Portfolio Companies has been \$28M
and 117 jobs have been created with much potential for future growth.

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