Public Policy Forum
on Venture Capital and Innovation

Participant's Guide
Including important background information on each session

Message from the Quebec City Conference President & Chair

It is our great pleasure to warmly welcome you to the Quebec City Conference's Public Policy Forum on Venture Capital and Innovation.

Each year our distinguished participants from throughout the world grow in number, as do the countries from which they hail. This year is no exception.

None of this would be possible without our wonderful sponsors, volunteers and organizers and everyone else who has worked so hard to make this Conference a success. We can never thank you enough.

We would like to thank, in particular, the governments that supported this Public Policy Forum, financially and logistically. We salute the government of France, through OSEO, and the US Department of Commerce, which joined the governments of Canada, Quebec and Ontario as partners in this project. They came together based on the conviction that joining forces, resources and expertise is the right strategy to maximize value for each participant. We believe this generous and visionary precedent will also benefit other jurisdictions faced with a common challenge of creating wealth through innovation.

We hope all of you enjoy and benefit from your participation at the Public Policy Forum on Venture Capital and Innovation, while seeing old friends and developing new and lasting relationships.

Sincerely,

Mr. Christian Racicot
Co-Founder & President
The Quebec City Conference
Lawyer, BCF LLP

Mr. Stephen A. Hurwitz
Co-Founder & Chair
The Quebec City Conference
Partner
Choate, Hall & Stewart LLP

Location

The Public Policy Forum will be held at the MUSÉE NATIONAL DES BEAUX-ARTS DU QUÉBEC which is about 10 minutes away by car and 30 minutes walking. Shuttles will pick up participants at the Chateau Frontenac every 10 minutes starting at 7:20 am.

A breakfast will be served at the Museum between 7:30 and 8:30.

Map and itinerary

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Résumés

Dr. Gilles Duruflé

Executive Vice President
The Quebec City Conference
President
Public Policy Forum on Venture Capital

Gilles Duruflé is presently Executive Vice President of the Quebec City Conference and President of the Public Policy Forum. He is also an independent consultant advising venture capital and private equity funds, institutional investors and governments.

He was until 2004 Senior Partner at CDP Capital Technology Ventures, the venture capital subsidiary ot the Caisse de dépôt et placement du Québec, in charge of the Funds of funds portfolio, investing in North American and European VC funds.

He was previously Head of strategic studies at the Caisse de dépôt et placement du Québec. From 1979 to 1991, he worked as Senior Partner in strategic consulting firms in the CDC Group (Caisse des dépôts et consignations, Paris) in Europe and North America.

He is a Vice-President of the Canadian Venture Capital Association (CVCA) and sits on the International Private Equity Valuation (IPEV) Board.

M. Duruflé obtained his Masters in Philosophy from the CERP (Paris), his Ph.D. in Mathematics from the Paris VI University and the Diploma of the Centre d'Études des Programme Économiques (Ministry of Finance, Paris). He is a CFA and has published numerous books and articles on various subjects related to economics and finance.

Mr. Yigal Erlich

Chairman
Public Policy Forum on Venture Capital
Founder, Chairman and Managing Partner
The Yozma Group

Mr. Yigal Erlich is the founding father of the Israeli venture capital industry and one of the most prominent figures in the Israeli high-tech arena in the past 15 years.

At the beginning of the 1990s, Mr. Erlich identified a market failure and a huge need in to establish for the first time a professionally-managed venture capital industry that will fund the exponential growth of high tech ventures coming out of.

In late 1992, Mr. Erlich convinced the Israeli government to allocate $100 million for his venture capital vision. Within a period of three years, Erlich, along with the other members of the core team at Yozma, established ten venture funds. These ten funds, which include Gemini, JPV, Nitzanim (Concord), Polaris, STAR and Walden , are the backbone of the vibrant and sophisticated venture capital market that has today.

Mr. Yigal Erlich is the founder of the Israel Venture Association and currently serves as its Chairman. Between 1984 and 1992, Mr. Erlich served as the Chief Scientist of 's Ministry of Industry and Trade. During his eight-year tenure as Chief Scientist, Mr. Erlich commanded an annual budget of $200 million, primarily directed at research and development projects of high-technology companies. In addition, Mr. Erlich initiated the Generic Technology program which fostered cooperation on long-term R&D activities through the creation of consortia of companies with research institutes and universities worldwide.

Mr. Erlich also started the Technology Incubator Program that led to the creation of 24 Incubation Centers throughout . Mr. Erlich was instrumental in the establishment of several bi-national industrial and technology R&D cooperation agreements with , , the , and . Mr. Erlich was the Chairman of the Executive Committee of the US-Israel Bi-national Industrial Research and Development Foundation (BIRD), and a Director of the Dead Sea Works, Israel Chemicals, Israel Oil Refineries, Hadassah's commercialization company - Hadassit, and the Technion Research and Development Co. Ltd.

Mr. Erlich holds B.Sc. and M.Sc. in Chemistry and an MBA from the Hebrew University of Jerusalem.

Introduction by the President & Chairman of the Public Policy Forum

Since its beginning four years ago, the Public Policy Forum has explored the conditions for the development of a buoyant venture capital and innovation ecosystem and the role governments and public policies to support this objective.

Two years ago, with the launch of Josh Lerner's book ("Boulevard of Broken Dreams – Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed and What to Do about it"), we concentrated on the case for government intervention to support the VC industry, but also on its pitfalls (why so many efforts have failed) and, finally, its conditions for success. A broad high level consensus was reached on these topics, which was reflected in the Main conclusions of the Forum.

Last year echoed the many questions surrounding the viability of the VC model itself, especially outside the US, in the absence of positive returns, and the possibility of implementing successful public policies to support the industry in such a context. As those of you who were present may remember, among the four scenarios explored in the initial presentation, the scenario of LP desertion appeared to be the most probable to most participants and panelists in North America and Europe, but not in emerging markets. Alternative sources of financing, such as business angels or corporations, appeared to be avenues that should retain the attention of policy makers.

This year again, the PPF shall start with Josh Lerner and Thomas Hellmann by assessing how the venture capital industry is transforming itself through the ups and downs of the cycles and especially during the present trough, and what this could imply for public policies. However, compared to previous years, we shall broaden the perspective by focussing the panels not primarily on capital supply, but rather on the necessary conditions in the environment for the venture capital industry and innovation ecosystem to be successful and the role of public policies in setting these conditions right:

- Exits and the IPO market (First panel).

This panel appears to be particularly timely as Kate Mitchell, Chair of the Small Company IPO Task Force (US) will be able to share some of the conclusions of this Task Force and you will find in this year's Participant's Guide the final report of the task Force which was just released last week:

- Setting the environment right: lessons learnt from the Singapore experience (Third panel).
- Why has the Chinese IPO market been so hot at a time when IPOs have been so slow in most places in the world? (Harvard Business Case on Chinext, the Shenzhen junior stock exchange).

The second panel will focus on corporations as alternative sources of money at a time when fund raising is proving particularly difficult for venture capital funds outside a handful of brand names.

Year after year, a community is building around the Public Policy Forum which translates in a request for more interaction among participants. In order to meet this request, first we have moved to a different location, the Musée National des Beaux Arts du Québec, where we have more space and which allows for a better and more interactive setting and, second, at the end of the day, we shall have a series of roundtables designed for interaction among peers on themes they will have chosen in advance.

A one day Forum can only cover so many topics. These roundtables will also allow for discussions on themes which will not have been covered by the panels and are ongoing concerns related to the development of the ecosystem.

When organizing the tables, we have tried as much as possible to respect your choices of themes. This is an experiment and we hope it will meet your expectations.

Our speakers and panelists, as well as our audience, are composed of public policy makers and industry leading GPs, LPs, academics and other industry experts from North and South America, Europe, China, Israel and the Middle East, Australia and New Zealand who all have interest and high level experience in advocating, designing and implementing public policies in support of a buoyant venture capital ecosystem to finance emerging technology companies. This should set the stage for what we hope will be intense discussions and high quality networking.

We would like to thank all of those who contributed to this Forum: our Advisory and Organizing Committees, as well as the directors of the Québec City Conference who have wholeheartedly supported this endeavour.

A special "thank you" goes to the Governments of Quebec, Canada, Ontario, France through OSEO and the US Department of Commerce, which partnered with the Québec City Conference to develop this Forum and have provided a great deal of financial and technical support.

We hope you will find the documents contained in this Participant's Guide interesting and wish you a very successful Forum.

Dr. Gilles Duruflé
Executive Vice President
The Quebec City Conference
President
Public Policy Forum on Venture Capital

Mr. Yigal Erlich
Chairman
Public Policy Forum on Venture Capital
Founder, Chairman and Managing Partner
The Yozma Group

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Josh Lerner
Jacob H. Schiff Professor of Investment Banking
Harvard Business School

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Yigal Erlich
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Thomas Hellmann
Professor
Sauder School of Business

Frank Landsberger
Senior Managing Director
INKEF Netherlands Manager B.V.

Stephen A. Hurwitz
Co-Founder & Chair
The Quebec City Conference
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Program

8:30 to 8:50 am	**WELCOME REMARKS**  Mr. **Stephen A. Hurwitz** *Co-Founder and Chair* **The Quebec City Conference**  Mr. **Christian Racicot** *Co-Founder and President* **The Quebec City Conference**  Mr. **Yigal Erlich** *Founder, Chairman and Managing Partner* **The Yozma Group** *Chair* **Public Policy Forum on Venture Capital** **INTRODUCTION**  Dr. **Gilles Duruflé** *President* **Public Policy Forum on Venture Capital**
8:50 to 9:50 am	**KEYNOTE PRESENTATION** **"Entrepreneurial Finance in the Broader Environment: Lessons from Challenging Times"**  Dr. **Josh Lerner** *Jacob H. Schiff Professor of Investment Banking* **Harvard Business School**  Dr. **Thomas Hellmann** *B.I. Ghert Family Foundation Professor in Finance and Policy* **Sauder School of Business, University of British Columbia**

9:50 to 10:50 am	**FIRST PANEL** **Subject:** Exits: Decline in IPO Markets – Causes, Solutions, New Public Policies **Moderator**:  Mr. **Stephen A. Hurwitz** *Partner* **Choate, Hall & Stewart, LLP** *Co-Founder and Chair* **The Quebec City Conference** **Panelists**:  Mr. **Jeffrey Bussgang** *General Partner* **Flybridge Capital Partners**  Ms. **Anne Glover** *Chief Executive* **Amadeus Capital Partners** Member of the EVCA Stock Exchange Roundtable & Task Force  Dr. **William H. Janeway** *Managing Director & Senior Advisor* *Technology Media and Telecommunications* **Warburg Pincus**  Ms. **Kate Mitchell** *Managing Director* **Scale Venture Partners** Chair of the Small Company IPO Task Force
10:50 to 11:10 pm	**NETWORKING BREAK**

11:10 to 12:15 pm	**SECOND PANEL** **Subject:** Corporations as Alternative Sources of Capital: New Models of Corporate Involvement in Venture Capital – Lessons from the Life Science Sector **Moderator**:  Dr. **Frank Landsberger** *Senior Managing Director* **INKEF Capital** **Panelists**:  Mr. **Laurent Arthaud** *Deputy CEO* **CDC Entreprises**  Dr. **Hubert Birner** *General Partner* **TVM Capital**  Mr. **Darren Carroll** *Vice President - Corporate Business Development* **Eli Lilly and Company**  Mr. **Philippe Tcheng** *Vice President, Public and Government Affairs France* **Sanofi Aventis** *Chairman of the Strategic Committee* **Innobio Fund**
12:15 to 1:30 pm	**NETWORKING LUNCH**

1:30 to 2:15 pm	**THIRD PANEL** **Subject:** Setting the Environment Right: Lessons Learnt from the Singapore Experience **Interviewer :**  Mr. **Yigal Erlich** *Founder, Chairman and Managing Partner* **The Yozma Group** *Chair* **Public Policy Forum on Venture Capital** **Panelist**:  Mr. **Cheong Boon Png** *Chief Executive* **Spring**
2:15 to 3:45 pm	**HARVARD BUSINESS CASE** **Subject:** Oriental Fortune Capital: Building a Better Stock Exchange – The Case of ChiNext, the Shenzhen Junior Market **Case Researchers:**  Dr. **Josh Lerner** *Jacob H. Schiff Professor of Investment Banking* **Harvard Business School** Mr. **Keith Chi-ho Wong** *Senior Researcher* **HBS-Asia Pacific Research Center**
3:45 to 4:00 pm	**NETWORKING BREAK**

4:00 to 4:55 pm	**ROUNDTABLES** Participants will be invited to choose their table in advance among the following themes: **Theme 1:** Are new incentives needed to attract private sector investors back to venture capital? If so, which ones are the best? Several countries have shown renewed interest in guarantee schemes and protection against first losses. Will these approaches work? **Theme 2:** In many countries, venture capital funds are subscale in size and expertise. Are cross-border funds a way to address this issue? If so, how can they be created and funded? **Theme 3:** More and more countries are considering policies to support business angel investment: what are the best examples of these new policies? The worst? Which will work, and why? **Theme 4:** Can government agencies and other public entities attract and retain the talent needed to implement programs to support venture capital and innovation, in the absence of an ability to pay them compensation at private industry level? How is this problem solvable? **Theme 5:** What is the role of growth equity in building an entrepreneurial ecosystem in emerging markets? Will that growth equity be available? **Theme 6:** What new fund models will align interests of LPs and GPs, including in the many ecosystems other than Silicon Valley? What are the most promising new developments? **Theme 7:** Technology transfer from universities and research centers: who owns the IP? Who should own the IP? Who should do the transfer, and under which terms? What universities are doing it right? MIT? Harvard? Oxford? Toronto?
4:55 to 5:00 pm	**CLOSING REMARKS** **Dr. Josh Lerner** and **Dr. Gilles Duruflé**
5:00	**All attendees are invited to the Quebec City Conference immediately following**

About the Public Policy Forum

Held annually within the Quebec City Conference, the Public Policy Forum on Venture Capital and Innovation ("PPF") has evolved into the premiere gathering of public policy designers and industry leaders (GPs, LPs academics and experts) responsible for encouraging high-potential entrepreneurship and venture capital from all major economies. Its objectives are to give participants an opportunity to exchange views, experiences and concerns regarding public policies in support of a buoyant venture capital ecosystem to finance emerging technology companies. Now in its fifth year, it is an invitation-only event building upon the international audience already developed by the Quebec City Conference.

About The Quebec City Conference

Now in its eighth year the Quebec City Conference ("QCC") is a private, by invitation-only and not-for-profit annual conference for leading international venture capital and PE firms, institutional and strategic investors, sovereign wealth funds and family offices whose activities produce tangible economic gain and societal benefit, and for public policy makers, industry experts and leading academics in this investment field, in a format intended for high level exchanges and reflection.

All participants meet, network and hear distinguished keynote speakers on subjects such as the economy and markets, innovation, emerging markets and venture capital and private equity. Service providers are not invited. No other conference of this kind exists anywhere else in the world. In 2010, the Conference attracted 440 participants from 22 countries from North America, Europe, Asia, Middle-East and South America. This year, to preserve the unique attributes of the Conference, we are targeting a limited attendance of 450 guests.

In addition to the main Conference described above, held from 5:00 pm on Monday, October 24 to 6:30 pm on Tuesday, October 25, the Quebec City Conference also comprises special forums. Each forum is by-invitation-only and is held from 9:00 am to 5:00 pm on Monday, October 24 before the official opening of the Conference: Institutional Investors Roundtable ("IIR"), Family Offices Forum ("FOF"), Global Investors Leadership Forum ("GILF") and Public Policy Forum on Venture Capital and Innovation ("PPF").

Finally, the Quebec City Conference is partnering with Thomson Reuters to offer the "QCC-Thomson Reuters Partner Connection Program" to the attendees. This program is a series of targeted one-on-one meetings between "LPs" (i.e. institutional investors, family offices and funds of funds) and "GPs" (private equity and venture capital). The meetings are arranged based on surveys of these LPs and GPs to determine the most appropriate matches for them.

Keynote Presentation

"Entrepreneurial Finance in the Broader Environment: Lessons from Challenging Times"

Keynote Speaker

Dr. Josh Lerner
Jacob H. Schiff Professor of Investment Banking
Harvard Business School

Josh Lerner is the Jacob H. Schiff Professor of Investment Banking at Harvard Business School, with a joint appointment in the Finance and Entrepreneurial Management Units. He graduated from Yale College with a Special Divisional Major that combined physics with the history of technology. He worked for several years on issues concerning technological innovation and public policy, at the Brookings Institution, for a public-private task force in Chicago, and on Capitol Hill. He then obtained a Ph.D. from Harvard's Economics Department.

Much of his research focuses on the structure and role of venture capital and private equity organizations. (This research is collected in two books, The Venture Capital Cycle and The Money of Invention.) He also examines technological innovation and how firms are responding to changing public policies. (The research is discussed in the book, Innovation and Its Discontents.) He founded, raised funding for, and organizes two groups at the National Bureau of Economic Research: Entrepreneurship and Innovation Policy and the Economy. He is a member of a number of other NBER groups and serves as co-editor of their publication, Innovation Policy and the Economy. His work has been published in a variety of top academic journals.

In the 1993-94 academic year, he introduced an elective course for second-year MBAs on private equity finance. In recent years, "Venture Capital and Private Equity" has consistently been one of the largest elective courses at Harvard Business School. (The course materials are collected in Venture Capital and Private Equity: A Casebook, whose fourth edition is forthcoming.) He also teaches a doctoral course on entrepreneurship and in the Owners-Presidents-Managers Program, and organizes an annual executive course on private equity in Boston and Beijing. He recently led an international team of scholars in a study of the economic impact of private equity for the World Economic Forum.

Keynote Speaker

Mr. Thomas Hellmann
B.I. Ghert Family Foundation Professor in Finance and Policy
Sauder School of Business, University of British Columbia

Dr. Thomas Hellmann is the B.I. Ghert Family Foundation Professor in Finance and Policy at the Sauder School of Business at the University of British Columbia. He holds a BA from the London School of Economics and a PhD from Stanford University. He is the director of the W. Maurice Young Entrepreneurship and Venture Capital Research Centre at UBC. Prior to joining UBC, he spent ten years as an Assistant Professor at the Graduate School of Business, Stanford University.

He teaches executive, MBA and undergraduate courses in the areas of venture capital, entrepreneurship and strategic management. His research interests are venture capital, entrepreneurship, innovation, strategic management and public policy. He is also the founder of the NBER Entrepreneurship Research Boot Camp, which teaches the frontiers of entrepreneurship economics and entrepreneurial finance to PhD students.

Recently he wrote a report about the role of government in venture capital for the World Economic Forum in Davos. He also led the evaluation report of the venture capital program in British Columbia. His academic writings have been published in many leading economics, finance and management journals. He has also written numerous case studies on entrepreneurship and venture capital, and led the development of a library of case studies focused on high technology companies in British Columbia. Currently he is writing a textbook on venture capital and private equity.

Thomas Hellmann is currently visiting the Harvard Business School.

Panel 1

Decline in IPO Markets – Causes, Solutions, New Public Policies

Moderator: **Mr. Stephen A. Hurwitz**
Co-Founder & Chair
The Quebec City Conference
Partner
Choate, Hall & Stewart LLP

Panelists:

Mr. Jeffrey Bussgang
General Partner
Flybridge Capital Partners

Ms. Anne Glover
Co-Founder and Chief Executive
Amadeus Capital Partners Limited

Dr. William H. Janeway
Managing Director and Senior Advisor
Technology, Media and Telecommunications
Warburg Pincus LLC

Ms. Kate Mitchell
Managing Director
Scale Venture Partners

Panel's background information:

Introduction

Growing evidence exists that beyond cyclicality, there are major structural problems in the IPO market, especially in the US which for decades has been the leading market for technology IPOs. This market has been in decline for more than ten years. Has the decline in the VC industry fuelled the IPO decline? Or is it the IPO decline that has fuelled the VC decline? As one of last year's participants said: "We are still struggling with company formation and company financing. But the real problem is with exits. Fix that and you fix everything. If we deliver the money back, we will get more of it". Or to put it another way, building value does little good if that value cannot be realized. And when it becomes clear that the value cannot be realized, does not that awareness erode the very "value building" process itself? How do we bring these chain reactions under control? Where do we begin?

How do you measure the decline in the IPO market? What are its causes? What are the solutions, and what role will new public policies play in them? The Forum will confront these issues thanks to a panel of industry leaders and other experts and through a new Harvard Business Case on Chinext, the Shenzhen junior stock exchange on which there has been a boom of technology IPOs. How did this boom occur? Is it real? Can it last? And is the Chinese model applicable to other countries?

Moderator

Mr. Stephen A. Hurwitz
Co-Founder & Chair
The Quebec City Conference
Partner
Choate, Hall & Stewart LLP

Stephen A. Hurwitz is a member of Choate's Business & Technology Practice Group. He concentrates in business, corporate and securities law. He focuses on cross-border issues relating to venture capital and technology and life sciences companies, including representing non-US companies in all their US legal needs in addressing the US market and in raising capital and protecting their IP in the US. Choate also represents non-US venture capital funds when investing in the US and in their US fundraising.

Mr. Hurwitz has represented companies at all stages of growth from start-ups through mature public companies both in their US and international activities. His practice has included private and public financings, mergers and acquisitions, joint ventures, licensing, and distribution transactions.

Mr. Hurwitz is a frequent speaker and panelist at many of the major technology, life sciences and venture capital events in Canada. He was formerly a co-founder and chairman of Testa, Hurwitz & Thibeault, LLP.

Panelist

Mr. Jeffrey Bussgang
General Partner
Flybridge Capital Partners

Jeff is a General Partner at Flybridge Capital Partners whose investment interests and entrepreneurial experience are in consumer, Internet commerce, marketing services, software and mobile start-ups. Jeff currently represents the firm on the boards of Cartera Commerce, ClickSquared, Convoke Systems, DataXu, i4cp, oneforty, SavingStar, SimpleTuition, and is a board observer at ZestCash. Jeff was previously a director at Brontes Technologies (acquired by 3M), BzzAgent (acquired by Tesco), go2Media, PanGo Networks (merged with InnerWireless), Ready Financial (merged with AccountNow), Transpera (acquired by Tremor Video).

Jeff's book on venture capital and entrepreneurship, "Mastering the VC Game", is an insider's guide for entrepreneurs on financing and company-building. His popular blog on helping demystify the venture business for entrepreneurs, "Seeing Both Sides", can be found at www.seeingbothsides.com.

Jeff currently serves as an Entrepreneur in Residence at Harvard Business School's Arthur Rock Center for Entrepreneurship and has co-authored three HBS cases that are taught in "Founder's Dilemma" (Curt Schilling's Next Pitch) and "Launching Technology Ventures" (foursquare and Predictive BioSciences). Jeff is the co-author of "Ruling The Net", a 1996 Harvard Business Review article on the Internet's potential for commerce.

He is also on the board of MITX, the Massachusetts Innovation and Technology Exchange and is a Founding Executive Committee Member of FirstGrowth Venture Network, a network of venture and angel investors supporting first and second time entrepreneurs building exciting companies in the New York area.

Prior to joining Flybridge, Jeff co-founded Upromise (acquired by Sallie Mae), a loyalty marketing and financial services firm with 12 million members that currently manages over $35 billion in college savings assets, where he served as President, Chief Operating Officer and Board Director. Prior to Upromise, Jeff was an executive at Open Market, an Internet commerce software leader that went public in 1996 and grew to nearly $100 million in revenues. During his five-year tenure, he served as Vice President of Worldwide Marketing and Business Development, Vice President of Worldwide Professional Services and head of Product Management. Prior to Open Market, Jeff was with the strategy consulting firm, The Boston Consulting Group.

Jeff holds a BA in Computer Science from Harvard University where he graduated magna cum laude and an MBA from Harvard Business School where he was a Baker Scholar and a Ford Scholar.

Ms. Anne Glover
Co-Founder and Chief Executive
Amadeus Capital Partners Limited

Anne is Chief Executive and co-founder of Amadeus Capital Partners Limited, the European technology investor. Amadeus has over £400 million of funds under management and has backed over 60 companies covering computer hardware and software, mobile and fixed communications technologies and medical technologies. These include Cambridge Silicon Radio plc and Optos plc, both now listed on the London Stock Exchange.

Anne began her career with Cummins Engine Company, the global leader in diesel engine design and production. She then worked with Bain & Co. in Boston for five years before returning to the to join Apax Partners & Co, investing in early stage companies. Before founding Amadeus, Anne was a business angel and Chief Operating Officer of Apax-backed company, Virtuality Group plc, which listed on the London Stock Exchange in 1993.

Anne was Chairman of the British Venture Capital Association (BVCA) in 2004-2005, having been a member of the Council that runs the organisation since 1999. She is also a member of the government's Technology Strategy Board, the Private Equity Institute at the London Business School and serves on the Board of Optos plc.

Anne holds an MA in Metallurgy and Materials Science from Clare College, Cambridge and a Masters in Public and Private Management from Yale.

Dr. William H. Janeway
Managing Director Senior Advisor
Technology, Media and Telecommunications
Warburg Pincus LLC

Dr. William H. Janeway joined Warburg Pincus in 1988. Prior to joining the firm, Dr. Janeway was executive vice president and director at Eberstadt Fleming.

Dr. Janeway is a director of Magnet Systems, Nuance Communications, O'Reilly Media and Roubini Global Economics. He is also chairman of the Board of Trustees of Cambridge in America, University of Cambridge, co-chair of Cambridge's 800th Anniversary Capital Campaign and a founder member of the Board of Managers of the Cambridge Endowment for Research in Finance (CERF).

Dr. Janeway is a member of the Board of Directors of the Social Science Research Council and of the Board of Governors of the Institute for New Economic Thinking.

He received his doctorate in economics from Cambridge University where he was a Marshall Scholar and was valedictorian of the Class of 1965 at Princeton University.

Ms. Kate Mitchell
Managing Director
Scale Venture Partners

Kate is a co-founder of Scale Venture Partners, a venture capital fund with over $900 million under management located in Silicon Valley, California. She leads investments in software bringing more than 25 years' experience in technology, finance and management to her portfolio. Kate has actively worked with portfolio companies such as Hubspan, Jaspersoft, mBlox, Wayport, & Tonic Software as they grow to become successful enterprises. She is active on policy issues that impact the venture industry and was the 2010-2011 Chairman of the National Venture Capital Association (NVCA). She remains active in policy matters that impact start-ups and is currently chairing a Small Company IPO Task Force that came out of a conference on that topic sponsored by the Treasury Department. In addition, Kate is a member of the SVB Financial Group Board of Directors (NASDAQ: SIVB).

Prior to becoming a venture capitalist, Kate held various corporate development and technology management positions at Bank of America and was responsible, among other things, for the launch of the bank's initial online banking presence in the mid 1990's. Kate holds a BA from Stanford University and an MBA from the Executive Program at Golden Gate University in San Francisco.

She also attended the Harvard Executive Program. Kate is active as a Charter Member of Environmental Entrepreneurs (Silicon Valley).

Jeff Bussgang

A Call to Arms on the IPO Malaise and Inaction
(PEHUBwire, March 23, 2011)

Entrepreneur-Friendly Policies (Finally) Showing Promise - But Leadership Required
(Jeff's Blog www.seeingbothsides.com October 3, 2011)

A Call to Arms on the IPO Malaise and Inaction
(PEHUBwire, March 23, 2011)

I almost never agree with a single thing written on the Wall Street Journal editorial pages. Yet, I found myself muttering "amen" to myself a few times as I read yesterday's editorial on "Whatever Happened to IPOs?" It is just stunning to me how little interest there seems to be on the part of a supposedly pro-business Congress and (more recently) Executive Branch on this one simple thing that would unleash innovation and jobs - watering down Sarbanes Oxley.

The IPO market has improved somewhat in 2011 and so perhaps that has taken some pressure off, but the fact is that the regulations and costs associated with an IPO are so overwhelmingly daunting for our young venture-backed companies that they simply avoid them altogether. I used to hear from investment bankers that a company north of $100 million in revenue and consistently profitable can find a welcome public audience. But recent conversations that I have had with bankers carried a different, even more depressing message.

I am now being told by investment bankers that if a company's revenue is less than $200 million and the projected market capitalization less than $1 billion, they are at risk of being relegated into the "public company ghetto" - a sad corner of the public markets where you have no analyst coverage, no float and so no liquidity. Your stock simply drifts down and down without any institutional support. And so even $50-100 million companies in our portfolio and others - growing profitably and creating real value - look at the IPO as an unattainable goal. I profiled a number of companies in New York and Massachusetts that fit the criteria in response to Bill Gurley's excellent piece (IPO Anxiety) from a Silicon Valley perspective a few months ago. But when I talk to CEOs and board members at these companies, they roll their eyes at the IPO prospect - it feels simply too unattainable.

Some complain that the source of the problem is the lack of mid-tier investment banks. Others complain that the lack of analyst coverage is the issue. In both cases, it's a cause and effect problem. The cause is Sarbanes Oxley and the lack of volume. The effect is that bankers and analysts follow the money. If the rules were more relaxed, there would be more bankers and analysts, for sure. This is the Information Age - analysis and bankers will follow opportunities.

They may not be as well known, but banks like Jeffries & Co., Needham & Co., GCA Savvian and now BMO are aggressively courting companies to help them go public and would be all over a more robust market for companies in the $300-600 million market capitalization range.

In 2009, the National Venture Capital Association (NVCA) made this topic their policy focus. They released a series of spot-on recommendations to help bring back the IPO market. But then everyone got distracted with the financial crisis and (yet) more regulation related to SEC registration and battles over the tax treatment of carried interest. I don't know if there have been any hearings or serious consideration on policy options to provide more liquidity for the IPO market since the NVCA's recommendations. But clearly there's been no action.

It's time to beat the drum on this. Surely we can find a group of members of Congress who are willing to match their rhetoric on fostering innovation will doing the hard work of loosening up Sarbanes Oxley. The StartUp Visa movement has made terrific progress thanks to online, grassroots support. Let's use that as a model for the IPO market. John McCain's on Twitter (@SenJohnMcCain). Send him a tweet and see if he's listening.

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Entrepreneur-Friendly Policies (Finally) Showing Promise - But Leadership Required

(Jeff's Blog www.seeingbothsides.com October 3, 2011)

The policy conversation regarding jobs and economic development is starting to show some promising signs, particularly in helping young companies flourish. The fact that the entrepreneurial ecosystem is critical to job creation should be obvious, but there remains a misperception that small businesses create jobs. In truth, it's not small business that represents the country's job engine. It's new businesses. The Kauffman Foundation's research on this matter is clear: from 1997 to 2005, job growth in the US was driven entirely by start-ups. What this means is that any economic development effort must be framed in the context of the following central question: how can the government help more young companies be formed, grow faster and achieve long-term success?

Fortunately, there is a constructive policy conversation in this area on both sides of the political spectrum. Unfortunately, it's going to take leadership and bi-partisan cooperation to push them through, and it's not clear where that leadership is going to come from. Here are some recent policy developments worth tracking, as well as my own two cents on the policies I think should be getting more attention to support company formation, growth and ultimate success:

Policies: Company Formation

One of the most valuable resource for American start-ups are immigrants who come to the US to pursue entrepreneurial careers. Such household names as Google, Intel and eBay were started by at least one immigrant founder. Yet, we make it very difficult for immigrant entrepreneurs to pursue their dreams and build their companies in America. To address this, Senators Kerry and Lugar proposed a ***Start Up Visa*** in March 2011, providing "Entrepreneur's visas" for immigrant entrepreneurs. This bill needs to be passed immediately (it is in the midst of hearings and keeps getting caught up in partisan bickering over broader immigration reform) and should be expanded to provide green cards for those with degrees in science, technology, engineering and math. For more on this important bill, read here and here. The administration has proposed additional changes to process immigrants in a more streamlined fashion, including a recent set of policies that the US Citizens and Immigration Services department has advocated which can be found here.

The other major lever to improve company formation is facilitating the ***flow of ideas out of our university system***. Flybridge Capital recently created an organization called URES (University Research and Entrepreneurship Symposium) in partnership with the National Council of Entrepreneurial Tech Transfer (NCET2), to bring together researchers, investors and entrepreneurs to act as catalysts for company-building. Greater attention and support for these efforts will help accelerate the process for research to be commercialized. The recently passed ***Patent Reform Act*** is a good step forward in this area as well, simplifying red tape and reducing the backlog (despite last-minute, dysfunctional nods to special interests).

But to really jumpstart company formation, the government should consider ***meaningfully increasing NIH funding – perhaps 2-3x its current level***. Most medical research labs around the company are dependent on NIH funding and it is one of the highest leverage investment we can make – supporting 325,000 researchers at over 3,000 universities around the country. Yet, NIH funding is at a ridiculously low $31 billion per year, roughly the same in constant dollars as it was ten years ago. We spend $21 billion on tax breaks to the oil and gas industry and tens of billions of dollars on farm subsidies. This anemic NIH funding level remains despite the well-known fact that the impact on health care costs and job creation is enormous. In diabetes alone, the total government support for research is a mere $1 billion in contrast to the $200 billion per year that diabetes costs the economy. In addition to the clinical impact, each dollar of NIH funding generates more than twice as much in state economic output, not including the jobs generated by the companies who are spun out of NIH funding. I'm shocked that there isn't more discussion about channeling more dollars towards this inmportant institution.

Policies: Grow Faster

Once new companies are created, they need ***access to both financial and human capital*** to grow faster. Just to prove that good ideas can come from unusual sources, Republican majority whip Kevin McCarthy proposed in September the ***Access to Capital for Job Creations Act***, a piece of legislation that would widen the universe of potential investors for small businesses around the Securities Act of 1933. Packaged with other proposals around expanding the number of shareholders private companies can have, this act would be an accelerant for small companies seeking access to capital from a broad range of sources.

Access to human capital is another critical component to allowing young companies to grow faster. The ***dearth of trained computer science and engineering*** is crippling the growth of many Innovation Economy companies. Worker training efforts in combination with educational efforts, such as the emphasis on STEM (Science Technology, Engineering and Mathematics) is a start, but are woefully underfunded and under-supported. For example, Congress nearly cut the $181m Department of Education's Math and Science Partnership Program and the NSF's programs in this area also do not get enough attention. In thinking through our investment choices, we should keep asking ourselves, if they had a massive shortage of software engineers, What Would China Do? The President's Jobs Bill contains some good ideas in this area, such as a "Bridge to Work" program, which could have a big impact when the details are fully worked through.

Free trade is another critical component to support small business expansion. Coming out of the recent economic crisis, there has been protectionist pressure that threatens to choke off the opportunity for small businesses to expand via global exports. The free flow of capital across borders is one of the most critical ways to expand opportunities for US companies. In September, the Council on Foreign Relations issued a new report that concludes that America is at risk of being left a bystander in the global trade arena as our share of exports and direct investment has plummeted. Huge emerging economies in India and Brazil need to be opened up more aggressively with the help of the Congress and White House. A more aggressive free trade policy, coupled with stricter punishment for unfair trade practices, must be embarked on.

Policies: Achieve Long-Term Success

For young companies to truly have a shot at achieving long-term success, they need to be able to access the public markets through an IPO. Unfortunately, the IPO market was the victim of excessive regulation in the wake of the Enron scandal, leading to the passage of the very restrictive Sarbanes Oxley, among other things. Policy makers have finally been listening to the start-up and entrepreneurial community to adjust the policies to prevent the choking off of growth. In September, Congressman Ben Quayle introduced the ***Startup Expansion and Investment Act***, which seeks to make it easier for new companies with a market capitalization of less than $1 billion to go public by opting out of some of the more onerous regulations imposed by Sarbanes-Oxley. This is a good start. The National Venture Capital Association (NVCA) has put forward a comprehensive list of policies that need to be followed to make an event larger impact here. Hearings on this have started. Action needs to be taken.

Conclusion

Despite the partisan rhetoric and bickering, the last few months have seen substantial progress amongst policy makers in the areas of helping the startup economy thrive. The link between startups and jobs is becoming more broadly understand, as are the policies required to help business form, grow and ultimately succeed. It will require extraordinary leadership to step forward and advocate these policies in a comprehensive way that transcends the classic “left” vs. “right” debates. I sure hope that leadership is on its way.

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Accounting and Finance

Venture capital funds and the public equity market

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Abstract

This paper considers the relationship between the public equity market and the returns to venture investing using a dataset which is derived from the records of two large limited partners who have been investing in venture capital for almost 30 years. Evidence is found to suggest that market conditions over the investment cycle, and exit conditions at the time of exit in particular, are an important determinant. This paper also investigates whether any other aspects of the venture investment process respond to events in the broader market. While general trends are evident in the venture investment cycle, only the intensity of the investment process is found to respond to events in the public equity market.

Key words: Venture capital; Initial public offering; Hot issue market

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1. Introduction

The early empirical and theoretical work on venture capital frequently assumed that the performance of private equity is independent of the public

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equity sector (see *inter alia* Cochrane, 2005).[1] Many investment professionals also shared this belief. For example, Gompers and Lerner (2004, p. 354) state:

> … many institutions … have increased their allocation to venture capital … in the belief that the returns of these funds are largely uncorrelated with the public markets.

More recently, this assumption has been called into question, and a literature has evolved that considers venture capital investment performance in the context of broader capital market conditions.[2] This includes the theoretical work of Inderst and Müller (2004) and, most relevant in the current context, the empirical research of Gompers *et al.* (2008) and Kaplan and Schoar (2005). The former explore the relationship between shifting valuations and activity in public and private equity markets and find 'that an important component of volatility in venture capital investment activity is driven by volatility of fundamentals' (p. 3): further they observe that '…an increase in initial public offerings (IPO) activity from the bottom to the top quartile increases the number of [venture] investments by 22 per cent' (p. 10). Kaplan and Schoar (2005, p. 1792) found evidence of substantial persistence of investment returns in both the venture and the LBO sectors. They link this persistence to market conditions and conclude that '…funds raised when market returns are higher are less likely to raise a follow-on fund …. This suggests that funds raised in boom times are more likely to perform poorly and, therefore, are unable to raise a follow-on fund'.

A number of authors have gone a step further and specifically identified the state of the market for IPOs as a key driver of venture performance. For example, Metrick (2006, p. 100) argues:

> Without a doubt, the most important driver of VC investment is the existence of a lucrative market to exit these investments. … The most profitable exits are achieved through IPO.

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[1] This paper makes a contribution to a much wider literature that focuses on issues such as the performance of venture capital (see *inter alia* Chen *et al*., 2002; Das *et al*., 2003; Cochrane, 2005; Kaplan and Schoar, 2005; Gompers *et al*., 2006, 2008; Hochberg *et al*., 2007; Hall and Woodward, 2007; Phalippou and Gottschalg, 2009; Gompers *et al*., 2009; and Cumming and Walz, 2010) and the determinants of venture fund behaviour (see Cumming and MacIntosh, 2003; Das *et al*., 2003; Cumming, 2006, 2008; Bernile *et al*., 2007; and Hochberg *et al*., 2007). For a general overview of the venture capital literature, see Metrick (2006) and Gompers and Lerner (2004).

[2] A related literature has found links between the public and private equity sectors. For example, Lerner (1994) finds that biotechnology firms go public when equity market valu ations are high. Barry (1998) finds that venture capital (VC) returns follow cycles of performance. Black and Gilson (1998) highlight the importance of an active stock market for growth of a VC industry. Phalippou and Zollo (2006) find that the performance of private equity funds is related to the state of the business cycle and the stock market.

Jeng and Wells (2000), Das *et al.* (2003) and Gompers and Lerner (2004) link the state of the IPO market to the amount and profitability of venture capital investing. While these studies have broadly identified the state of the IPO market as a factor affecting venture capital returns, they stop short of actually undertaking a detailed characterisation of the evolving state of the IPO market through time.

The purpose of this paper is to move beyond the anecdotal and formally investigate the presence of any link that may exist between public and private equity markets.[3] To this end, we access a unique proprietary database of the venture capital fund investments made by two major limited partners (LPs) over the period 1980–2007. These LPs have invested in a combined total of 205 venture funds that are either terminated or effectively terminated, providing a rich database of information for analysis. Dated cash-flow information is provided on all takedowns and disbursements throughout the life of each fund.

Using this database, we attempt to link VC investing and harvesting activities to the state of the public equity market, which is characterised in a way that directly relates to VC activity. The results suggest that the public equity market substantially influences venture returns. In particular, the conditions of the market at the time of exit are found to be important: the median internal rate of return (IRR) in unfavourable conditions is 9 per cent, whereas a favourable IPO market is associated with a median IRR of 76 per cent. The observed correlation of venture returns with the public equity market may reduce the diversification benefits of venture capital investments as part of a portfolio for institutional investors.

In addition, this paper also considers what impact market conditions may have on the nature of the venture fund investment process. The results reveal that the speed with which the general partners (GPs) take down capital is found to have increased during the 1980s and fallen again during the 1990s. In terms of the average time taken for a fund to break even as well as the time taken to distribute funds, the sample is characterised by a general decline. None of these metrics, however, appear to be related in any meaningful way to events in the public equity market. Evidence can be found to suggest that GPs increase the intensity of the rate at which they invest in response to market conditions. One possible interpretation of these results is that not only is the listing activity of venture-backed companies high in a hot market (and by inference, the intensity of the distributions to LPs should also be high), GPs must also pay higher prices to invest in new opportunities, which necessitates a larger drawdown of capital, i.e. a higher intensity of the investment process.

As such, the primary contribution of this paper is to build on the more recent literature, which has broadly identified the state of the IPO market as a factor affecting venture capital returns, and produce empirical evidence of such a link. A

[3] This paper is related to the literature which considers the impact of the stock market on IPO activity (see Mckenzie, 2007 and references therein), mergers and acquisitions activity (see Shleifer and Vishny, 2003; Rhodes Kropf and Viswanathan, 2004; and Rhodes Kropf *et al.*, 2005) and economic growth (see Binswanger, 2000a,b, 2004a,b).

second contribution of this paper is to consider whether other aspects of the investment process respond to market conditions. The evidence presented suggests that the intensity of the investment process and also the timing of the distributions change over time. A final contribution of this paper is to identify the skewness of the returns as an important driver of the returns to venture investing. The LPs come from the most successful class of venture investors (see Lerner *et al.*, 2007), and the data clearly highlight the fact that it is the skewness of returns that drives this superior performance. Without these top-performing funds, the returns to venture investing are more closely akin to those of the public equity market.[4]

The remainder of this paper proceeds as follows. Section 2 provides an overview of the venture fund database that forms the focus of the analysis provided in this paper. Section 3 begins with a brief overview of the fund performance based on a number of industry metrics that are commonly used in the industry. It then proceeds to characterise the public equity market in a way that is relevant to the venture investing process. Finally, this section considers the link between the conditions in the market and fund performance. Section 4 investigates whether other aspects of the venture investment process are influenced by the public equity market conditions. Section 5 presents some concluding comments and suggests some directions for further research.

2. Venture capital fund database

The dataset is derived from the records of two large US LPs, who provided a record of all venture fund investments over the period 1980–30 June 2007.[5] This information does not include descriptions of the funds, which means that we do not know how representative our database is of the universe of venture capital funds in terms of the types of investments made (size, specific or general, industry focus), nor whether the fund is a first time or subsequent fund raised by the GP. These data were provided under the conditions of anonymity, which precludes us from revealing their names or details of the funds in which they invested.

The data provided by the LPs consist of information on 136 terminated funds and 69 effectively terminated funds (i.e. active funds where the reported residual value is less than 10 per cent of the total distributions of the fund[6]) giving a total

[4] Discussions with industry participants provide anecdotal support for this finding.

[5] As such, these data are not subject to survivorship bias as all investments made by the LPs are included (although it could be argued that since both of these LPs still exist, a sec ond order survivorship bias is present). Note that the second partner only became an active investor after 1983.

[6] Our discussions with industry participants suggest that any fund with a low residual value may be considered 'effectively' terminated. Even though further distributions are likely, they are relatively small and unlikely to alter the final fund characteristics in any meaningful way.

of 205 funds for analysis. The last funds in the database were for vintage year 2002. For each fund, information on takedowns is recorded on a cash-out (to the venture capital firm) basis. The distributions from a venture fund can be in the form of either cash or stock. By definition, stock distributions follow on a company going public, and they are typically subject to a 180-day holding period covenant. Cash distributions on the other hand can be generated by the sale of a company to an acquirer or by the sale of post-IPO stock on the market. Discussions with industry participants suggest that cash distributions are more likely to come from an acquisition, as GPs will typically distribute stock and leave it to the LP to decide whether to hold the stock or sell.

For any study that considers proprietary data, it is an open question as to how generalisable the results are. To provide the reader with some insights into this issue, we turn to the Venture Economics[7] (VE) database to provide some comparisons. This proprietary database contains aggregate information on voluntarily reported quarterly fund-level cash flows, self-estimated residual values and calculated rates of return, for a large number of venture funds.

Using the VE data, we begin by considering the activity of the LPs relative to the industry as a whole. Panel A of Figure 1 presents a plot of the total number of funds in the database by vintage year and the number of new venture funds by vintage year as reported by VE. The rate of investment by the LPs in new funds closely mirrors the overall trends in the number of new funds established in the industry (the correlation between these two series is 0.859). Further, the data clearly show a heightened level of investment activity in the lead up to the dot.com boom by both our LPs and the industry as a whole.

It is possible that the increase in investment activity during the lead up to the dot.com boom observed in Panel A of Figure 1 may reflect a trend toward a larger number of smaller investments designed to spread risk or take advantage of the myriad of opportunities that presented themselves during that period. To provide some insights into this issue, Panel B of Figure 1 presents a plot of the average commitment for the LPs relative to the average size of a fund in the VE database. The data are clearly linked, and the correlation between these two series is 0.729. It is interesting to note that during the bubble period, when the average industry fund commitment increased markedly, the average commitment of the LPs did not increase to the same extent (although as previously discussed, they were investing in more funds).[8]

Two final benchmarks for our data are, first, the speed with which the LPs invested in the funds available to them (a measure of the intensity of the

[7] Formerly known as the VentureXpert database. The authors would like to thank Thompson Reuters for providing access to this database.

[8] Note that Gygax and Griffith (2007) argue that the complexity of the optimal portfolio decision may lead to venture fund GPs imitating each other when deciding on how many entrepreneurial ventures they should invest in.

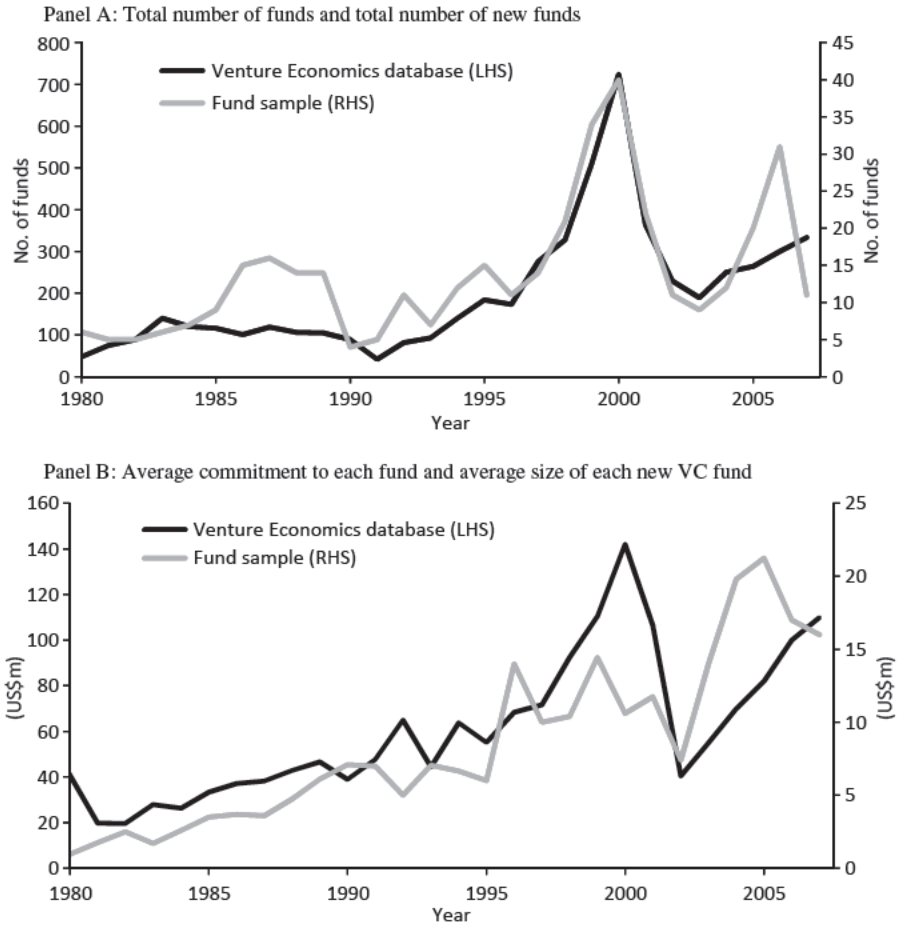

Figure 1 Limited partners' investment activity compared to the industry. Panel A (B) of this figure presents a plot of the total number of funds (average commitment to each fund) in the database by year compared to the total number of new VC funds (average size of each new VC fund) being raised by year as reported in the Venture Economics database.

investment process) and second, the average time to break even by vintage year (a basic measure of performance). A full discussion of these metrics and their derivation is provided in Section 4. For the moment, it suffices to say that these two metrics estimated across our sample of LP funds are closely correlated to the industry data and provide further support for the representativeness of our data.

Overall, this evidence suggests that the investment activity of our LPs in terms of the number of investments, the average commitment and the intensity of the drawdown process is similar to that of the industry as a whole.

Further, the trend in the average time to break even is also similar to that of the industry data. This will provide the reader with some reassurance as to the representativeness of our results, which are presented in the following sections.

3. Fund performance and the public equity market

The primary focus of this paper is on the link between the public equity market and the returns to venture investing. A commonly used venture fund performance metric is the fund multiple, which is a measure of the total distributions to a fund relative to the total takedown. Panel A of Table 1 presents a summary of the multiples across all of the funds in the database. A fund multiple of greater than one indicates that the distributions exceed the takedown, i.e. the fund is nominally profitable. The median fund multiple is 2.66, and the data are highly skewed (skewness = 8.78) and exhibit a wide range of observations (the standard deviation (SD) is 7.72 with a maximum (minimum) multiple of 96.10 (0.18)).

While relatively easy to calculate, the fund multiple performance metric does ignore the time value of money. An alternative measure of fund performance, which overcomes this limitation, is the IRR. Panel A of Table 1 also presents a summary of the IRR for each venture fund, and the median return is 24 per cent, with a SD of 92 per cent and a maximum (minimum) of 515 per cent (−94 per cent). Most funds generated a positive return of between 9 per cent and 61 per cent while 26 funds had a negative IRR. This median IRR is well above the typical rate of return on public equity and the average return to venture investing reported previously in the literature (Kaplan and Schoar (2005) report a median venture fund IRR of 11 per cent and Ljungqvist and Richardson (2003) report an average IRR of 19.8 per cent).[9]

Closer analysis reveals that it is the positive skewness of the performance data that is responsible for the high average returns observed in our data. To provide some insights into the size of these outliers, Panel A of Table 1 also contains a summary of the top decile of the sample, which has an average (median) IRR of 215 per cent (193 per cent). The impact of these top-performing funds on overall portfolio performance is considerable. To highlight the significance of this skewness of venture fund returns, the IRR performance measure is re-estimated excluding the top funds ranked by IRR. If the top decile is excluded, the median IRR falls to 20 per cent, and, if the top quintile is excluded, the median IRR is 16 per cent.

Overall, these results clearly suggest that there is a subset of extremely high return funds in the data, and the average performance of venture capital funds is

[9] Although the superior performance of our LPs is typical when we consider different clas ses of investors in the venture industry (see Lerner *et al*., 2007).

Table 1
Venture fund performance (IRR) relative to the initial public offerings market. The performance of the sample of venture funds, as measured by the IRR, is summarised by market and exit conditions indicators in Panel A. The same set of summary metrics is presented in Panel B, where the top decile of funds of funds are excluded.

	Average	Median	SD	Skewness	25th percentile	75th percentile	Max	Min
Panel A: Performance summary								
Fund multiple	4.38	2.66	7.72	8.78	1.62	4.99	96.10	0.18
IRR full sample	47%	24%	72%	2.74	9%	61%	515%	94%
IRR top decile only	215%	193%	92%	1.97	155%	254%	515%	133%
IRR excluding top decile	27%	20%	35%	0.69	7%	41%	125%	94%
IRR excluding top quintile	18%	16%	24%	0.46	6%	31%	76%	94%
Panel B: IRR summary by market and exit								
Conditions								
Market conditions < 1	22%	4%	52%	1.28	15%	39%	141%	30%
Market conditions 1 to 1	51%	27%	77%	2.75	9%	65%	515%	94%
Market conditions > 1	41%	20%	60%	2.52	10%	32%	256%	10%
Exit conditions < 2	19%	9%	42%	1.60	7%	29%	155%	34%
Exit conditions 2 3	33%	24%	42%	1.93	11%	40%	237%	94%
Exit conditions > 3	106%	76%	110%	1.56	22%	167%	515%	6%
Panel C: IRR summary by market and exit								
Conditions (excluding top decile)								
Market conditions < 1	9%	2%	37%	1.69	16%	29%	116%	30%
Market conditions 1 to 1	31%	24%	36%	0.60	8%	44%	133%	94%
Market conditions > 1	23%	18%	25%	1.62	9%	27%	94%	10%
Exit conditions < 2	6%	7%	23%	0.86	9%	15%	83%	34%
Exit conditions 2 3	22%	20%	23%	1.20	10%	33%	71%	94%
Exit conditions > 3	78%	69%	70%	0.64	18%	130%	254%	6%
Panel D: IRR summary by market and exit								
Conditions (terminated funds only)								
Market conditions < 1	7%	16%	21%	0.87	22%	4%	29%	30%
Market conditions 1 to 1	28%	18%	43%	2.04	7%	39%	237%	94%
Market conditions > 1	31%	19%	50%	3.37	10%	28%	256%	10%
Exit conditions < 2	17%	9%	42%	1.78	5%	24%	155%	34%
Exit conditions 2 3	24%	19%	34%	2.53	9%	32%	237%	94%
Exit conditions > 3	54%	27%	71%	1.76	4%	76%	256%	6%

IRR, internal rate of return.

more akin to that of public equity in their absence. Whether these high return funds are the result of favourable market conditions for investment is the question to which we now turn our attention.

3.1. Public equity market classification

To establish any link between the public equity market and the returns to venture investing, it is necessary to categorise the conditions in the public equity market. A number of different approaches to identifying a hot issue market have been used such as periods of high IPO returns (Ritter, 1984), NBER business cycle peaks (Choe *et al*., 1993) and scaled issue volume (Bayless and Chaplinsky, 1996). While useful, we argue that it is possible to specify a measure that is more appropriate in the current context. Recall that venture capitalists will typically prefer to exit via an IPO.[10] Thus, a favourable market from a venture capitalist's point of view is one in which conditions are conducive to listing. In this case, IPO activity, or more specifically venture-backed IPO activity, is relevant. Further, the sooner the venture capitalist is able to exit the investment by bringing the firm to market, all other things being equal, the greater will be the IRR. Thus, the ideal state of the IPO market from the perspective of a venture capitalist is when it is possible to list a firm before it has become profitable. In this situation, venture capitalists are able to exit the investment and realise a return earlier than if they have to wait for the company to become profitable. Thus, the market classification measure needs to be based on the listing activity of venture-backed companies, including information on the profitability of these companies.

The VE database[11] has information on all US IPOs and includes a flag that denotes a firm as having received venture funding. This flag is used to distinguish VC from non-VC-backed IPOs and uniquely identifies 3032 VC-backed IPOs. For each of these companies, company financial information is acquired from a variety of sources. In the first instance, companies are identified in Compustat using SEDOL, CUSIP and ISIN identifiers and company profit information for the last financial year prior to listing is extracted as well as the year of listing. Thus, if a company listed on 5 June 1996 and its reporting date is 31 December, the company financials to the year ended December 1995 are recorded as the year prior to the IPO. These financials represent the last complete set of corporate information for that company that investors would have had access to at the time the company was listing. The financials submitted for the year ended December 1996 are classified as belonging to the year of the IPO. Where a company could not be found in the Compustat database, the Osiris and Datastream databases are accessed. These alternative databases are used to verify the

[10] Das *et al*. (2003) report higher exit valuation for IPOs in comparison with exits by mer ger or acquisition. Ross and Isenstein (1988) report that a $1 investment in a firm that goes public provides an average cash return of $1.95 beyond the initial investment, while an acquisition yields a cash return of only 40 cents. Further, the option to exit via IPO improves bargaining power with any potential acquirer.

[11] VE provides a database of 12 066 US IPOs over the period 1980 2006, which compares reasonably with the Ritter IPO database of 11 209 companies over this period.

Compustat information as well as to fill in gaps where possible. Using this process, financial information for a total of 2375 companies is gathered, which represents 78 per cent of our sample. Most of the missing data relate to companies that listed in the early part of the sample when company coverage across these three databases is the least complete. Nonetheless, we argue that this list of companies is sufficient to provide a representative cross-section of the companies that were listing at the point in time and so allow us to characterise the market conditions with reasonable accuracy.

Figure 2 presents a summary of the total number of VC-backed IPOs and the total number of VC-backed IPOs that were unprofitable at the time of listing per quarter over the sample period. The number of VC-backed IPOs closely tracks the total IPO data: the correlation between the two series is 0.8436. On average, 24 per cent of all IPOs coming to market in the sample period were VC-backed, although this varies from a high of 53 per cent in 1999Q4 to a low of only 6 per cent in 2002Q3. These data highlight how vulnerable GPs are to changing market fortunes in terms of their ability to exit an investment.

Examining the total number of IPOs, there are five distinct hot IPO markets that are identifiable: the peak of each occurs during the 1983Q4, 1986Q3, 1993Q4, 1996Q2 and 2000Q1 periods. It is interesting to note that the maximum number of IPOs during the dot.com bubble was actually the lowest of any of these hot-issue periods. This raises the issue as to what does distinguish the 2000 bubble market from other hot IPO markets, as these volume figures clearly demonstrate that it was not the number of IPOs.

To aid in the interpretation of these data, the lower panel in Figure 2 presents the percentage of unprofitable VC-backed IPOs. The average across the sample is 41 per cent and range from only 3 per cent in 1984Q4 to 83 per cent in 2000Q4. The ability of VCs to bring firms that were unprofitable to market

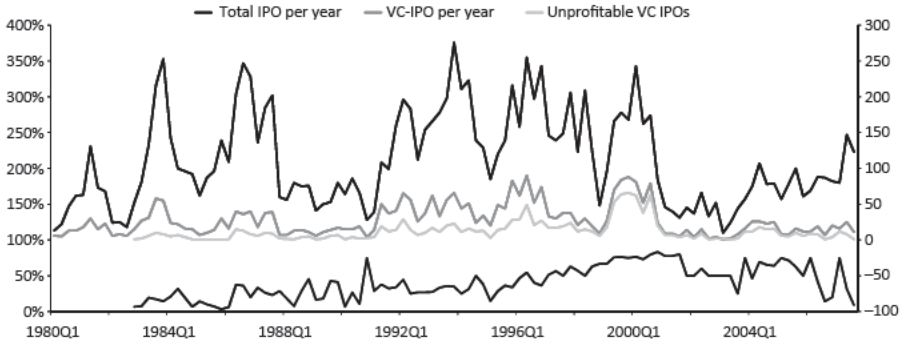

Figure 2 Quarterly initial public offerings (IPO) market data. The total number of IPOs, total number of venture backed IPOs and total number of venture backed IPOs that were unprofitable at the time of investment are plotted in the upper panel. The lower panel presents a plot of the percentage of venture backed IPOs that were unprofitable.

increased through the 1990s (the spike in 1990Q4 is a reflection of the small number of IPOs during this period) and peaked during the dot.com boom, when virtually all of the VC-backed listings were unprofitable. In the aftermath of the 2000 crash, the number of VC-backed IPOs fell to historically low levels (the 25 VC-backed IPOs in 2002 are the lowest for any year in the sample period), and the high percentage of unprofitable IPOs per quarter is a reflection of the small number of listings during this period. Thus, the 2000 bubble period is not distinguished by the number of companies that listed during this period, but the fact that an unprecedented number of unprofitable companies were coming to market during this time.[12]

To capture the state of the market, a classification system is used that distinguishes a poor issue market (=1, when less than 20 VC-backed IPOs occur[13]), a normal issue market (=2, when at least 20 but less than 40 VC-backed IPOs occur), a hot issue market (=3, when more than 40 VC-backed IPOs occur) and an ultra-hot issue market (=4, when more than 40 VC-backed IPOs occur, more than 50 per cent of which are unprofitable).[14] This last criterion identifies 1996Q2 and the period 1999Q2 to 2000Q3 as 'ultra-hot'. This VC IPO market indicator may be used to consider whether a link exists between the state of the public equity market and venture capital returns.

When venture capitalists invest in a firm, their return is a function of two factors. On the one hand, the return is a function of the amount of the company they are able to secure for their initial investment. This ownership percentage will reflect the competitive environment that prevails. If there is a lot of VC money chasing few deals, then the firm has the upper hand. Alternatively, where venture investing is out of favour and there are many deals chasing a limited supply of funds, the VCs have the upper hand and will be able to secure a better deal for their investment. The evidence suggests that the volume of funds made available to the venture industry is directly linked to its performance, i.e. when the industry is doing well, people are more inclined to invest and so a greater supply of funds is available. Where venture funds are performing poorly, investors typically seek alternative investments and funding is limited. Thus, there is a direct link between the performance of VC funds and the amount of capital available for investment (see Gompers and Lerner, 2004, pp. 134–145). VCs will rationally wish to

[12] Ritter and Welch (2002) have also identified the size of the first day returns as a distin guishing feature of this period.

[13] These categorisations are based on the SD of the number of VC backed IPOs for which we have financial data, which is arbitrarily rounded down from 21.9 to 20 for ease of exposition.

[14] This classification system identifies hot and cold IPO markets that are generally consis tent with those identified by Ritter (1984) and Bayless and Chaplinsky (1996).

invest in a firm when the market is performing poorly and they are able to negotiate the best deals.

Once a VC has taken a stake in a company in return for an initial investment, the actual return on their investment is a direct function of how much is received for that stake on exit. If the firm is able to list at a time when the public equity market has an appetite for VC-backed IPOs, this equity stake is likely to be worth more compared to when the firm lists in a normal market. Ideally, the GP would want to exit the investment and list the company in an ultra-hot issue market.

It is possible to generate an indicator of the market conditions at the time the investment is made and when distributions are received. As the investments and distributions are spaced irregularly through time, it is necessary to weight the market conditions at the time of each cash flow by the proportion of total investment or distribution that it represents. This gives a weighted market conditions indicator on entry and exit for each fund. The lowest possible market condition score is a 1, which indicates that all of the cash flows occurred in poor listing conditions. The highest possible score is a 4, which indicates that the cash flows occurred in a hot issue market when more than 50 per cent of all VC-backed IPOs were unprofitable.

To provide an overall market conditions score for each fund, the exit indicator less the entry indicator is used. The optimal scenario is one in which the VC invests in the firm when there is a limited supply of money chasing deals and exits when there is a high demand for venture IPOs. In terms of the market classification system, the optimal scenario occurs when the market conditions on entry are equal to one and on exit are equal to four. Thus, where the overall market conditions indicator is $+3$, there is little money chasing deals on entry and an ultra-hot issue market on exit. The worst possible scenario for a VC fund is when the general market conditions indicator is -3, i.e. the fund has invested in an ultra-hot market and exited in a poor market.

The average entry (exit) conditions indicator across all funds is 2.19 (2.52), and most funds generated an indicator of between 1.60 (2.14) and 2.70 (2.98). The average market conditions metric across all funds is 0.33. That is, the difference between the capital weighted entry and exit conditions is small. The range of observations, however, shows that for some funds, the entry and exit conditions were markedly different. The maximum value for the market conditions indicator is 2.36 and the minimum is -2.59.

3.2. Fund performance and market conditions

If public equity market conditions affect venture returns, the best-performing funds should be associated with a high positive market indicator, and the worst-performing funds should be associated with a high negative market indicator. Panel A of Figure 3 presents a plot of the IRR and market conditions indicator for each fund. Most funds in the sample exited in market con-

ditions more favourable than they entered, i.e. the average market conditions estimate is positive. For the funds that did get it wrong and exited in conditions that were less favourable compared to when they invested, most are from the more recent period that includes the bubble. Further, while a number of these funds did lose money, a few notable exceptions did well despite the market being against them. Finally, where a fund is associated with a positive market conditions parameter, while most generated a positive IRR, it is not true that more favourable market conditions guarantee a higher IRR. In fact, the funds that timed the market the best were very ordinary performing funds with positive, but relatively low IRRs.

Panel B of Table 1 presents a summary of the fund IRR and market conditions parameter. The median IRR when the fund market conditions are less than −1 is 4 per cent.[15] When the market conditions are neutral, however, the median

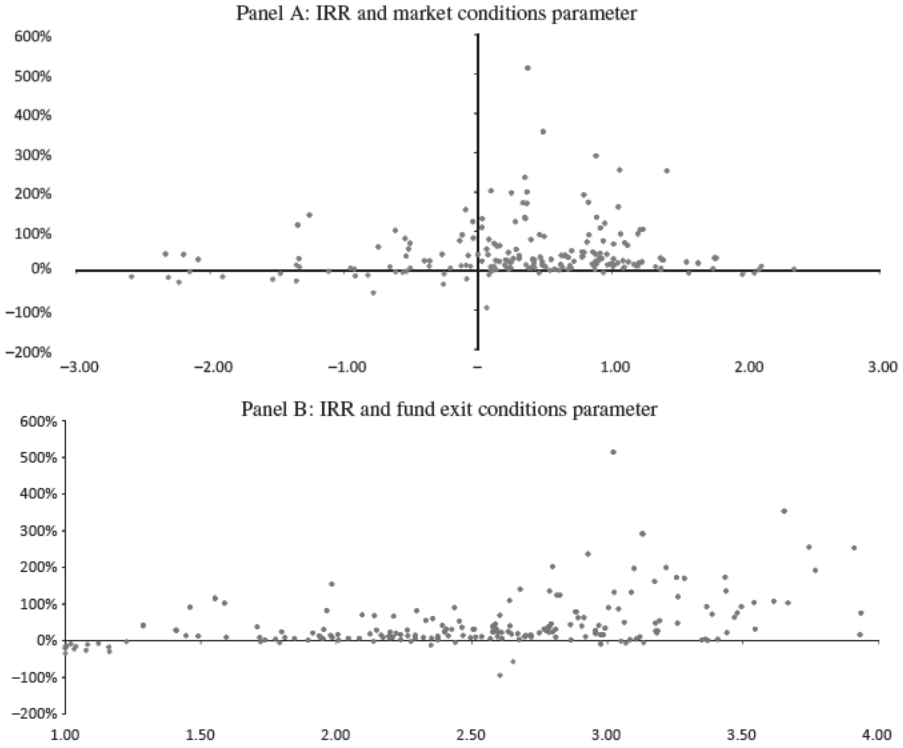

Figure 3 Venture fund internal rate of return (IRR), market and exit conditions. Panel A (B) plots each fund's IRR (*y* axis) relative to its market (exit) conditions parameter (*x* axis), where the market conditions are estimated as the difference between the fund's entry and exit conditions.

[15] The equivalent information based on the fund multiple is qualitatively consistent to that presented here and is not presented to conserve space.

IRR is 27 per cent. It is interesting to note that when the fund has entered and exited the market in favourable conditions (an indicator of greater than plus one), the median IRR is 20 per cent, which is less than the median for the neutral indicator. This apparent anomaly results from a bias introduced by including funds that were active during the bubble. The SD of the neutral conditions data is 77 per cent, which is higher than the SD for the favourable and unfavourable market conditions data (60 per cent and 52 per cent, respectively). Further, the range of observations for the neutral market data is large, and Panel A of Figure 3 clearly identifies these small number of high performing funds from the bubble period.

To test the robustness of these results to the presence of these outliers, the top decile of funds in each category is excluded, and a summary of this abbreviated dataset is presented in Panel C of Table 1. Focusing on the median IRR, the poor market conditions indicator has a median IRR of −2 per cent. For the neutral and favourable market conditions indicator, the same result is again evident in that both have a median IRR that is greater than where the market conditions are poor (24 per cent and 18 per cent, respectively), but the favourable conditions median IRR is less than the neutral value. Thus, some evidence of poor market conditions impacting on venture fund returns can be found, although the evidence does not support the contention that favourable market conditions lead to higher returns.

To highlight the impact of the bubble period on these results, we re-estimate these performance metrics using only the sample of terminated funds. This reduces the number of funds in the sample to 136, only eight of which have a vintage year of 1999 or later. Panel D of Table 1 presents these results and when the exit conditions are poor relative to hot entry conditions, the median IRR is −16 per cent. Neutral market conditions are associated with a median return of 18 per cent, and favourable market conditions produce a median IRR of 19 per cent. Where the average IRR figures are considered, the difference between the neutral and favourable market conditions indicator is magnified.

Metrick (2006) suggests that exit conditions are an important influence on venture investment returns. This suggests that it may be more appropriate to focus on exit conditions rather than on overall measure of market conditions. To this end, Panel B of Figure 3 presents a plot of the market exit conditions and IRR for each fund. The funds from the early 1980s and early 1990s are relatively clustered by exit conditions parameter. The late 1980s funds are very widely dispersed, and only a few high performing funds are present. The more recent period is characterised by funds that span the range of exit conditions and have some funds that have carried out exceptionally well, some that have performed poorly and still others that are more typical of the rest of the sample. The correlation between the exit conditions and the fund IRR across all of the data is 0.417. These results suggest that the exit conditions at the time of the distributions are quite relevant.

To clarify this result, Panel B of Table 1 presents a summary of the fund IRR grouped by fund exit conditions. When the exit conditions are poor, the median IRR is 9 per cent. Neutral exit conditions are associated with a median IRR of 24 per cent. On the other hand, when the exit conditions are favourable, the median IRR is 76 per cent. The SD of these IRR estimates is similar for the poor and neutral exit conditions indicator (42 per cent); however, it is much higher when the exit conditions are favourable (110 per cent). This suggests that a small number of extremely high performing funds may be driving these results.

To test the robustness of these results to the skewness of the data, Panel C of Table 1 presents a summary of the performance data, grouped by market conditions and exit conditions, with the top decile of funds excluded. The median IRR when the market conditions are unfavourable is −2 per cent. When neutral market conditions prevail, the median IRR is 24 per cent, which is greater than the median IRR when favourable market conditions prevail (18 per cent). Where the data are categorised based on exit conditions, the results show that poor exit conditions are associated with an average IRR of 7 per cent, neutral exit conditions produce a median IRR of 20 per cent and favourable exit conditions generated an IRR of 69 per cent (the skewness of the data is lowest of the three categories in this case). Panel D of Table 1 presents the summary performance data for the terminated sample of funds only, and these results serve to reinforce the earlier discussion. Thus, the exclusion of the top decile of funds, to account for any bias caused by the skewness of the data, only serves to reinforce the full sample results discussed earlier.

The results of the analysis of this section suggest that while poor market conditions lessen the probability of a venture fund performing well, it is the exit conditions of a fund that are more likely to result in high rates of return to investment. Thus, the data establish a link between the conditions of the public equity market and venture fund performance. This is not to suggest that market conditions are the only relevant factor, nor even that they are the most important factor in determining fund performance. For example, the earlier discussion of fund returns served to highlight the skewness of the fund as a key distinguishing feature of those funds that offer higher rates of return. Thus, the quality of firms selected by the general partner is also an important determinant of whether or not a fund provides a superior rate of return in comparison with the public equity market.

4. Changes in the venture investment cycle

The analysis of Section 3.2 suggests a link between the conditions in the public equity market and the returns to venture investing. It is interesting to consider whether any other aspects of the venture investment process respond to events in the broader market. For example, the public equity market may not only impact on the exit price generated for an investment, but also have a bearing on the time taken to reap that reward. To investigate this possibility, Panel A of Table 2 pre-

Table 2
Average time to break even and investment intensity by vintage year of fund. Panel A of the table presents information on the number of funds in the database by vintage year as well as the average number of years taken for a fund to break even. The equivalent metric for all the funds in the VE database is also presented. Panel B presents a measure of the investment intensity of the fund data base as well as the equivalent metric for all the funds in the VE database.

	Panel A			Panel B	
Year	Number of funds	Average time to break even	VE average years to break even	Fund investment intensity (%)	VE fund investment intensity (%)
1980	6	3.72	7.25	56	16
1981	5	10.89	9.75	40	21
1982	5	8.63	11.00	52	27
1983	6	10.59	10.50	58	28
1984	7	8.82	11.00	40	29
1985	9	7.28	10.00	36	28
1986	15	7.06	10.25	39	32
1987	16	7.41	8.50	42	34
1988	13	6.77	7.75	30	30
1989	14	7.10	8.00	26	24
1990	4	5.79	6.25	27	25
1991	5	5.27	6.00	36	26
1992	11	5.87	5.75	36	33
1993	7	4.09	5.75	45	31
1994	12	4.32	5.75	29	22
1995	15	5.11	4.75	35	27
1996	10	3.82	3.75	29	32
1997	12	2.60	3.50	30	30
1998	15	3.39	7.25	39	28
1999	9	3.83	n/a	64	38
2000	7	3.44	n/a	71	42
2001	0	n/a	n/a	58	26
2002	2	n/a	n/a	42	27

n/a, insufficient data; VE, Venture Economics.

sents the average time to break even by vintage year for all funds in the database as well as the same metric for all funds in the VE database,[16] which provides a more general benchmark of overall trends across the industry. While the very early vintage years exhibit a sharp rise in the average time to break even, a more general downward trend characterises the majority of the data. The average time to break even fell from an average of around 10 years in the early part of the sample, to 6 years by the mid-1990s. The data in the sample for the late 1990s onwards must be interpreted with caution as the longer term funds will not have had sufficient time to achieve maturity. This bias aside, the early part of the sam-

[16] Note this is based on aggregate data of cash flows across all funds.

ple period is certainly characterised by a general decline in the time taken to achieve break-even, and this trend is mirrored in the VE data.

The time to achieve break-even captures only one point in the venture investment cycle. The detailed cash-flow information used in this paper allows a more detailed characterisation of the takedown and distribution cycle. To this end, Panel A of Table 3 presents a summary of the investment life cycle of the funds in terms of the number of years taken to draw down capital and distribute profits. For example, the median number of years until 25 per cent of the committed capital is drawn down is 0.34, and the median fund is 50 per cent invested after 1.32 years, 75 per cent invested after 2.15 years and fully invested after 4.31 years. The highly heterogeneous nature of the venture fund investment experience is captured in these statistics, as each takedown and distribution percentage exhibits a relatively large SD. Further, the range of takedowns covers the spectrum from a sole initial investment with no further takedowns to 11.98 years to full investment. The distributions range from 2.48 years to fund termination to 24.58 years. More interesting in the current context, Panel B of Table 3 presents a summary of the investment life cycle of the funds in terms of the number of years taken to draw down and distribute back capital by vintage year. There has been a general increase in the amount of time taken to draw down the committed capital for the first decade of the sample. For example, the amount of time taken to draw down 100 per cent of capital for the 1980 vintage funds is 1.75 years, and this had increased to 7.49 years by 1991. The same trend is evident for each percentage of drawdown considered. From the early 1990s onwards, the average time to drawdown fell, but still remains well above the drawdown times of the early vintage funds. When the average time to distribute funds back to the LP is considered, there is a general decline in the data which mirrors the trend evident in the time-to-break-even data previously discussed. The average time to distribute 100 per cent of funds back to LPs in the early 1980s is over 14.5 and up to 18 years. By the mid-1990s, this had fallen to around 10 years. This trend is mirrored across the other percentages of distributions considered. As with the break-even data, the distribution data also exhibit a natural bias toward shorter fund life (the takedown data are not as susceptible to this bias since the last fund in the sample is 2002 – recall that the 75th percentile of funds for 100 per cent takedown is 6.28 years). Nonetheless, the evidence suggests that while funds were taking longer to invest during the late 1980s and early 1990s, there has been a general fall in the time to break even as well as the lifespan of venture funds. Thus, while a general trend is evident in these data, it does not appear to be related in any meaningful way to events in the public equity market based on the hot-issue periods previously identified, and the lead-up to the bubble period in particular.

The previous discussion focuses on the speed with which the GPs take down against committed capital and make distributions to the LP. It is possible to extend this analysis to consider the intensity of the investment process. That is, rather than just focussing on the time taken to invest, it is possible to capture the

Table 3
Summary of fund takedown and distributions by time. The following table summarises the average number of years a fund takes to take down the committed capital by percentile. Further, the amount of time taken to distribute a given percentile of the total distributions is also presented. Panel B summarises this information for the effectively terminated sample of funds.

	Takedown				Distribution			
	25%	50%	75%	100%	25%	50%	75%	100%
Panel A: Summary all data								
Average	0.45	1.37	2.26	4.75	4.59	5.81	7.11	12.21
Median	0.34	1.32	2.15	4.31	4.65	5.87	7.24	12.13
SD	0.52	1.08	1.35	2.58	2.05	2.40	2.84	4.04
25th Percentile	0.00	0.55	1.24	2.96	3.00	3.89	5.04	9.53
75th Percentile	0.73	1.92	3.06	6.28	6.10	7.84	9.15	14.84
Max	2.98	7.65	9.01	11.98	11.33	11.68	14.99	24.58
Min	0.00	0.00	0.00	0.00	0.00	0.22	1.00	2.48
Panel B: Average by year								
1980	0.04	0.41	0.85	1.75	3.25	4.00	5.77	16.32
1981	0.11	0.67	1.53	2.61	5.58	7.79	10.18	18.64
1982	0.07	0.57	1.19	2.14	5.12	7.96	9.29	14.67
1983	0.13	0.64	1.35	2.75	6.38	8.72	10.58	15.98
1984	0.06	1.37	3.15	4.38	7.20	8.60	10.81	18.97
1985	0.26	0.73	1.82	3.12	5.82	7.36	9.22	14.68
1986	0.22	1.04	1.96	5.03	5.73	7.52	8.91	14.22
1987	0.06	1.60	2.86	6.46	6.02	7.91	9.44	15.04
1988	0.75	2.14	3.27	6.19	5.63	7.16	8.79	14.05
1989	0.69	2.18	3.29	6.17	6.02	7.24	9.00	13.06
1990	0.90	1.99	3.08	7.05	5.73	6.40	8.34	14.30
1991	0.39	2.84	3.94	7.49	5.30	6.42	7.94	12.83
1992	0.68	1.71	2.63	5.41	4.95	6.25	7.56	12.06
1993	0.59	1.53	2.23	5.35	3.44	4.82	6.18	10.83
1994	0.90	1.94	2.97	4.88	4.79	5.57	5.86	11.07
1995	0.59	1.18	2.19	4.51	3.65	4.67	5.58	10.62
1996	0.92	1.97	2.45	4.63	3.60	3.87	4.53	10.02
1997	0.77	1.55	2.07	3.71	2.57	2.97	3.54	8.67
1998	0.44	1.08	1.54	4.21	2.58	3.42	4.78	7.96
1999	0.17	0.46	1.10	4.28	2.86	4.15	5.03	6.94
2000	0.01	0.21	0.76	4.58	1.47	1.55	1.97	6.27
2001	0.00	0.16	0.87	2.15	2.91	2.91	2.93	3.37

amount invested relative to the pool of available capital. To construct a measure of investment intensity, the following process is specified. For each year in the sample, the available pool of capital is estimated as the sum of the amount of committed capital from previous years that has not yet been taken down by the GP and the capital committed for that year. The total takedown for that year is estimated as a composite of the sum of takedowns for funds of the current vintage year as well as takedowns from funds of previous vintage years that are still actively investing. The intensity of the fund takedown in a given year is the total

takedown relative to the total amount of capital available for investment in that year. Panel B of Table 2 presents the data and to provide an industry benchmark, the same information is constructed using the VE database (note that the aggregate nature of the VE database means that it is not known which fund was drawing down in any given period, only the total value of the drawdowns).

The correlation between the investment intensity measure for the sample of funds and the VE data is 0.32. As the fund database only commences in 1980, whereas the VE database has data from 1969, the early part of the sample period may be biased for our sample of funds. The correlation between the two series from 1985 onwards is 0.660. A number of spikes in the intensity of the investment process may be observed in the data, which correspond to the data for 1983, 1994 and 1999–2000. It is interesting to note that each of these periods corresponds to the hot issue markets identified in Section 3.1. In particular, the bubble period is associated with an unprecedented level of investment activity which rose from 29 per cent in 1996 (the sample low is only slightly less at 26 per cent during the poor issue market of the late 1980s) to 64 per cent in 1999 and the sample high of 71 per cent in 2000. Thus, evidence can be found to suggest that GPs increase the intensity of the rate at which they invest in response to market conditions.

Changes in the intensity of the investment process may result from GPs investing more dollars per company and/or investing in more companies. To investigate, we turn to the VE database, which has detailed information on the companies the GPs invest in, the timing of these investments and their size. These data are summarised in Figure 4, and the top part of the figure shows the number of new companies receiving venture funding as well as the total number of rounds of investment for each year (this includes all investments made in firms that had previously received venture funding). The correlation between the two series is 0.85. The upward trend in the data in the early part of the sample reflects the general growth and increasing importance of the industry. Relatively high levels of investing and financing activity are observed from 1995 onwards, peaking in 1998, where 249 new firms received venture funding and 877 financing rounds took place across all venture funded firms. Recall that the investment intensity in both the fund sample and the VE data did not begin to increase until 1998. The lower part of Figure 4 presents the average size of the investment for each funding round over this period. A marked increase in the average amount invested may be observed from 1998 onwards, peaking in 2000 at US$27.6m, which coincides with the peak in investment intensity. It is also interesting to note that although the number of firms receiving venture funding and the number of funding rounds has dropped considerably since the bursting of the bubble, the average amount invested per funding round has actually increased beyond that observed during the peak of the bubble to a high of US$38.3m in 2005.

In general, this evidence tends to suggest that not only is the listing activity of venture-backed companies high in a hot market (and by inference, the intensity

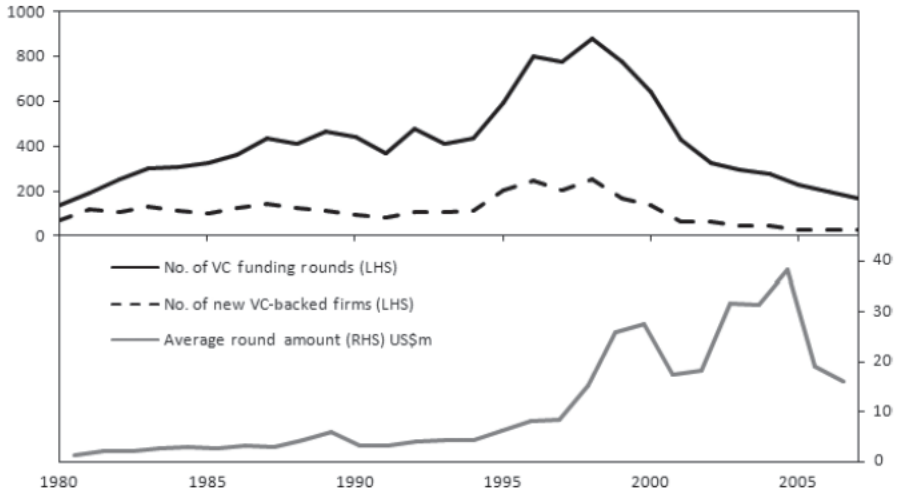

Figure 4 The Financing of Venture Funded Firms. The upper part of this figure presents a plot of the number of new companies receiving venture funding as well as the total number of rounds of investment across all venture backed companies for each year in the sample period. The lower part of the figure presents a plot of the average amount invested per funding round in venture backed companies.

of the distributions to LPs, should also be high), GPs must also pay higher prices to invest in new opportunities, which necessitates a larger drawdown of capital, i.e. a higher intensity of the investment process.

5. Conclusion

This paper considers the relationship between the public equity market and the returns to venture investing. Historically, public equity market conditions have been proxied by the total number of IPOs. Given the focus of this paper, however, the exit conditions are proxied by the total number of venture-backed IPOs with special attention given to the number of unprofitable venture IPOs to characterise the exit conditions for the industry. The number of venture-backed IPOs is found to correlate with the IPO market as a whole. The profitability of these IPOs varies substantially and the dot.com era in particular represented a unique environment, insofar as the number of unprofitable venture-backed IPOs was noticeably higher and, in some quarters, close to 100 per cent. Using a measure of exit conditions based on the number of venture-backed IPOs and their profitability, the evidence presented in this paper suggests that the public equity market substantially influences venture returns. Specifically, the median IRR realised when investments have been made in a competitive market and redeemed in an unfavourable market is 4 per cent. On the other hand, the median IRR is 20 per cent when the investments are made at a time when there is a shortage of

such funds, and the distributions are made at a time of favourable valuations. The most important element of the investment conditions are those prevailing at the time of exit, which cause the IRR to vary substantially: poor exit conditions are associated with an average IRR of 7 per cent, neutral exit conditions produce a median IRR of 20 per cent and favourable exit conditions generated an IRR of 69 per cent.

This paper also considers whether any other aspects of the venture investment process respond to events in the broader market. The speed with which the GPs take down capital is found to have increased during the 1980s and fallen again during the 1990s; however, they remain above the levels observed in the early part of the sample period. In terms of the average time for a fund to break even as well as the time taken to distribute funds back to the LP, the sample is characterised by a general decline, and this mirrors the overall trend in the industry. None of these metrics appear to be related in any meaningful way to events in the public equity market. The same cannot be said with respect to the intensity of the investment process, however, as evidence can be found to suggest that GPs increase the intensity of the rate at which they invest in response to public equity market listing conditions.

The results reported in this paper on the relationship between VC returns and the state of the IPO market suggest certain directions for future research. Specifically, the criteria for gaining access to the IPO market have varied greatly over time. Analysis of those criteria and their determinants may provide insight into the context in which the venture capital industry continues to evolve. An extended period of time in which the availability of the IPO market is strictly limited to more mature, profitable companies has negative implications both for prospective VC returns and eventually for the flow of funds to the VC industry.

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Rebuilding the IPO On-Ramp

Putting Emerging Companies and

the Job Market Back on the Road to Growth

Issued by the IPO Task Force
October 20, 2011

EXCERPT

Presented to The U.S. Department of the Treasury

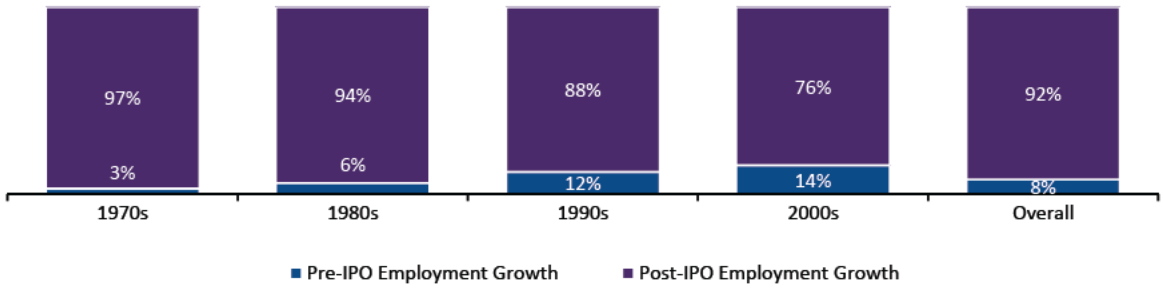
Table of Contents

I. Executive Summary

This report recommends specific measures that policymakers can use to increase U.S. job creation and drive overall economic growth by improving access to the public markets for emerging, high-growth companies.

For most of the last century, America's most promising young companies have pursued initial public offerings (IPOs) to access the additional capital they need to hire new employees, develop their products and expand their businesses globally. Often the most significant step in a company's development, IPOs have enabled these innovative, high-growth companies to generate new jobs and revenue for the U.S. economy, while investors of all types have harnessed that growth to build their portfolios and retirement accounts. We refer to these companies in this report as "emerging growth" companies (defined more specifically for purposes of this report on page 20).

Chart A: IPOs Finance Significant Job Creation



Source: Venture Impact 2007, 2008, 2009, & 2010 by IHS Global Insight; IPO Task Force August 2011 CEO Survey.

During the past 15 years, the number of emerging growth companies entering the capital markets through IPOs has plummeted relative to historical norms. This trend has transcended economic cycles during that period and has hobbled U.S. job creation. In fact, by one estimate, the decline of the U.S. IPO market had cost America as many as 22 million jobs through 2009.[(1)] During this same period, competition from foreign capital markets has intensified. This dearth of emerging growth IPOs and the diversion of global capital away from the U.S. markets – once the international destination of choice – have stagnated American job growth and threaten to undermine U.S. economic primacy for decades to come.

In response to growing concerns, the U.S. Treasury Department in March 2011 convened the Access to Capital Conference to gather insights from capital markets participants and solicit recommendations for how to restore access to capital for emerging companies – especially public capital through the IPO market. Arising from one of the conference's working group conversations, a small group of professionals representing the entire ecosystem of emerging growth companies – venture capitalists, experienced CEOs, public investors, securities lawyers, academicians and investment bankers – decided to form the IPO Task Force to examine the conditions leading to the IPO crisis and to provide recommendations for restoring effective access to the public markets for emerging, high-growth companies.

In summary, the IPO Task Force has concluded that the cumulative effect of a sequence of regulatory actions, rather than one single event, lies at the heart of the crisis. While mostly aimed at protecting investors from behaviors and risks presented by the largest companies, these regulations and related market practices have:

1. driven up costs for emerging growth companies looking to go public, thus reducing the supply of such companies,

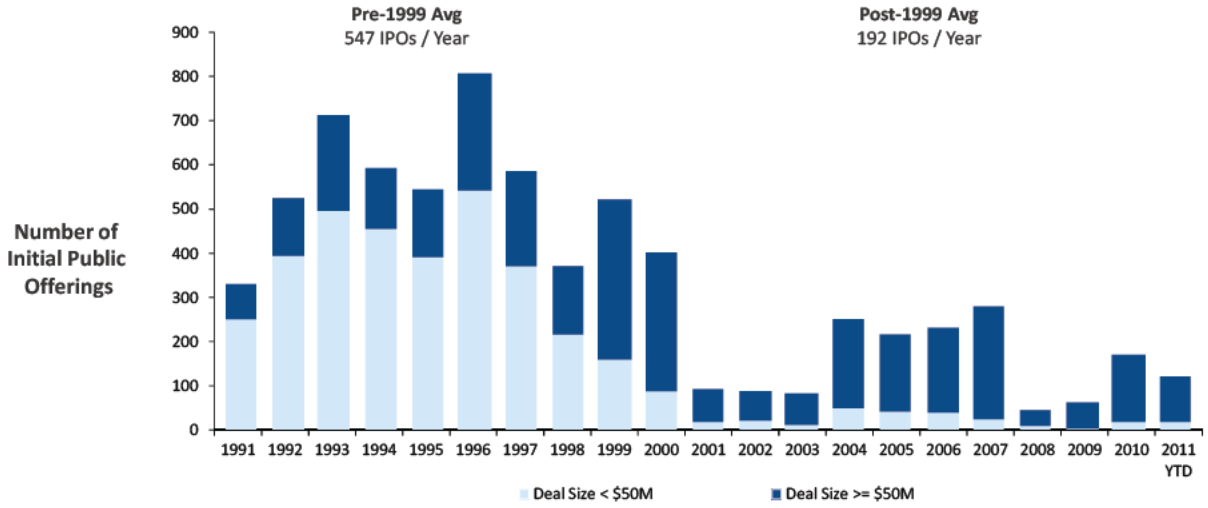
(1) D. Weild and E. Kim, Grant Thornton, A Wake-up Call for America at page 2 (November 2009).

2. constrained the amount of information available to investors about such companies, thus making emerging growth stocks more difficult to understand and invest in, and

3. shifted the economics of the trading of public shares of stock away from long-term investing in emerging growth companies and toward high-frequency trading of large-cap stocks, thus making the IPO process less attractive to, and more difficult for, emerging growth companies.

These outcomes contradict the spirit and intent of more than 75 years of U.S. securities regulation, which originally sought to provide investor protection through increased information and market transparency, and to encourage broad investor participation through fair and equal access to the public markets.

Chart B: IPOs are Down…Particularly Smaller IPOs



IPO data per JMP Securities, Dealogic.

To help clear these obstacles for emerging growth companies, the IPO Task Force has developed four specific and actionable recommendations for policymakers and members of the emerging growth company ecosystem to foster U.S. job creation by restoring effective access to capital for emerging growth companies. Developed to be targeted, scalable and in some cases temporary, these recommendations aim to bring the existing regulatory structure in line with current market realities while remaining consistent with investor protection. The task force's recommendations for policymakers are:

1. **Provide an "On-Ramp" for emerging growth companies using existing principles of scaled regulation.** We recommend that companies with total annual gross revenue of less than $1 billion at IPO registration and that are not recognized by the SEC as "well-known seasoned issuers" be given up to five years from the date of their IPOs to scale up to compliance. Doing so would reduce costs for companies while still adhering to the first principle of investor protection. (Page 19)

2. **Improve the availability and flow of information for investors before and after an IPO.** We recommend improving the flow of information to investors about emerging growth companies before and after an IPO by increasing the availability of company information and research in a manner that accounts for technological and communications advances that have occurred in recent decades. Doing so would increase visibility for emerging growth companies while maintaining existing regulatory restrictions appropriately designed to curb past abuses. (Page 26)

3. **Lower the capital gains tax rate for investors who purchase shares in an IPO and hold these shares for a minimum of two years.** A lower rate would encourage long-term investors to step up and commit to an

allocation of shares at the IPO versus waiting to see if the company goes public and how it trades after its IPO. (Page 30)

In addition to its recommendations for policymakers, the task force has also developed a recommendation for members of the emerging growth company ecosystem:

4. **Educate issuers about how to succeed in the new capital markets environment.** The task force recommends improved education and involvement for management and board members in the choice of investment banking syndicate and the allocation of its shares to appropriate long-term investors in its stock. Doing so will help emerging growth companies become better consumers of investment banking services, as well as reconnect buyers and sellers of emerging company stocks more efficiently in an ecosystem that is now dominated by the high-frequency trading of large cap stocks. (Page 31)

The recommendations above aim to adjust the scale of current regulations without changing their spirit. Furthermore, the task force believes that taking these reasonable and measured steps would reconnect emerging companies with public capital and re-energize U.S. job creation and economic growth – all while enabling the broadest range of investors to participate in that growth. The time to take these steps is now, as the opportunity to do so before ceding ground to our global competitors is slipping away.

For this reason, the members of the IPO Task Force pledge their continued participation and support of this effort to put emerging growth companies, investors and the U.S. job market back on the path to growth.

II. Brief Background and Purpose

In March 2011, the U.S. Department of the Treasury convened the Access to Capital Conference to gather insights from capital markets participants and solicit recommendations for how to restore effective access to capital for emerging companies, including public capital through the IPO market. Arising from of one of the conference's working group conversations, a small group of professionals representing the entire ecosystem of emerging growth companies – venture capitalists, experienced CEOs, public investors, securities lawyers, academicians and investment bankers – decided to form the IPO Task Force (Appendix A, page 33) in order to 1) examine the challenges that emerging growth companies face in pursuing an IPO and 2) develop recommendations for helping such companies access the additional capital they need to generate jobs and growth for the U.S. economy and to expand their businesses globally.

This report recommends specific measures that policymakers can use to increase U.S. job creation and drive overall economic growth by improving access to the public markets for emerging, high-growth companies.

III. Emerging Growth Companies Drive U.S. Job Creation

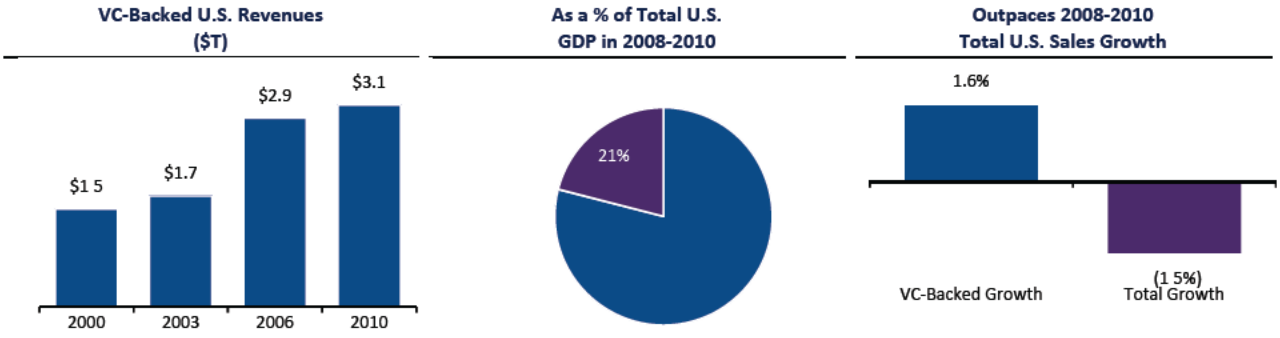
For most of the last century, America's most promising young companies have pursued IPOs to access the additional capital they need to hire new employees, develop their products and expand their businesses globally. Often the most significant step in a company's development, IPOs enabled these innovative, high-growth companies to generate new jobs and revenue for the U.S. economy, while investors of all types harnessed that growth to build their portfolios and retirement accounts. We refer to these companies in this report as "emerging growth" companies (defined more specifically for purposes of this report on page 20).

92% of job growth occurs after a company's IPO. Most of that growth occurs within the first five years of the IPO.[2]

The role of these emerging growth companies in creating American jobs cannot be understated. From 1980 to 2005, firms less than five years old accounted for all net job growth in the U.S.[1] In fact, 92 percent of job growth occurs after a company's initial public offering, according to data from IHS Global Insight. Furthermore, in a survey of emerging growth companies that have entered the public markets since 2006, respondents reported an average of 86 percent job growth since their IPOs (See Appendix C, page 36).

Indeed, some of America's most iconic and innovative companies – Apple, Cisco, FedEx, Genentech and Starbucks – entered the public markets through small-cap offerings at a time when the markets were more hospitable to small- and mid-cap stocks. These companies also received venture capital funding as startups. While none of the challenges or recommendations outlined in this report are exclusive to venture capital-backed companies, such companies serve as useful proxies when discussing the disproportionately positive impact of emerging growth companies on U.S. job creation and revenue growth. For example, while investment in venture-backed companies equates only to between 0.1 percent and 0.2 percent of U.S. gross domestic product each year, companies with venture roots employed 11 percent of the total U.S. private sector workforce and generated revenues equal to 21 percent of U.S. GDP in 2010.[3]

Chart C: Innovative Companies Create Jobs and Grow Quickly



Source: Venture Impact 2007, 2008, 2009 & 2010 by IHS Global Insight.

(1) *Source: Venture Impact Study 2010 by IHS Global Insight*

(2) *Source: Ibid.*

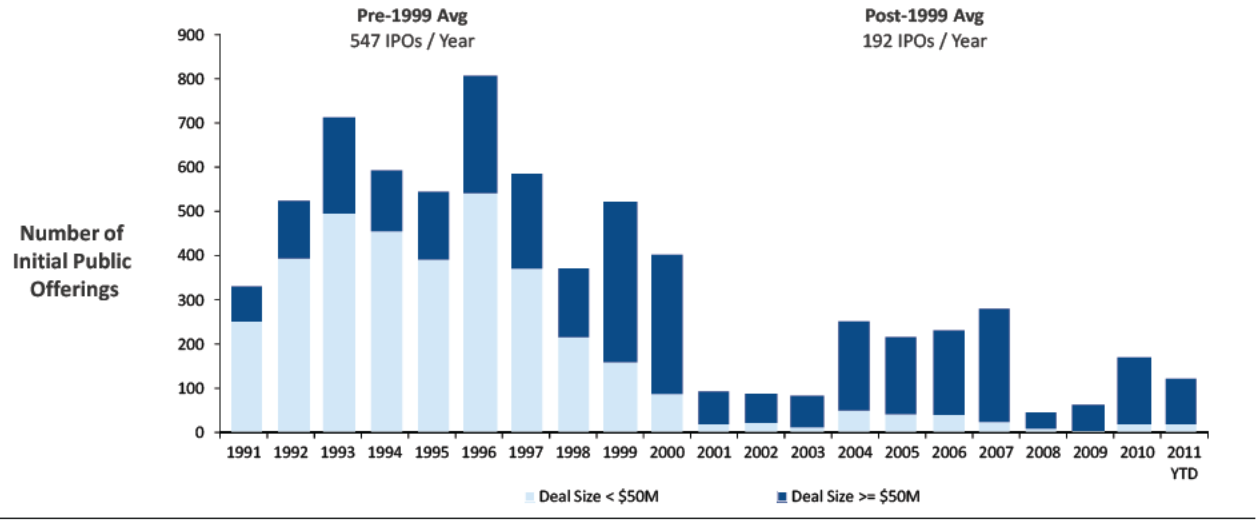
(3) *Source: Ibid.*

IV. The IPO Market Decline

Over the last decade, the number of emerging growth companies entering the capital markets through IPOs has plummeted. This trend has persisted independent of the economic cycles during this same time. After achieving a one-year high of 791 IPOs in 1996, the U.S. averaged fewer than 157 per year from 2001 to 2008. In fact, only 45 companies went public in 2008.[(1)] The numbers for the last two years have rebounded slightly, but remain well below historical norms and well below the amount required to replace the number of listed companies lost to mergers, acquisitions, de-listings and bankruptcy.

Venture-backed emerging growth companies illustrate the trend. From 1991 to 2000, nearly 2,000 such companies (which, as noted above, typically grow larger and faster than their peers) went public as compared to only 477 from 2001 to 2010.[(2)] That represents a drop of more than 75 percent. In addition, the companies that make it to the public markets are taking twice as long to do so: The median age of a venture-backed company at the time of its IPO has nearly doubled in recent years. The average age at IPO of companies going public between 1997 and 2001 was approximately five and a half years, compared with more than nine years for companies going public between 2006 and 2011.[(3)] As a result, many smaller companies have life spans as private companies longer than venture fund life cycles and employee stock option terms.

Chart D: IPOs are Down…Particularly Smaller IPOs



IPO data per JMP Securities, Dealogic.

Over this same period, the prevalence of IPOs versus acquisitions of emerging growth companies has undergone a stunning reversal. Acquisitions by a shrinking number of larger companies (due to the lack of IPOs) have become the primary liquidity vehicle for venture capital-backed companies as compared to IPOs.[(4)] This is significant because M&A events don't produce the same job growth as IPOs – nor do they allow investors to participate as directly in the economic growth of a stand-alone company. In fact, M&A events result in job losses in the short term as the acquiring company looks to eliminate redundant positions between the two enterprises. Subsequent job growth may occur at the acquiring company, but only over time, and only after those initial job losses are recovered.

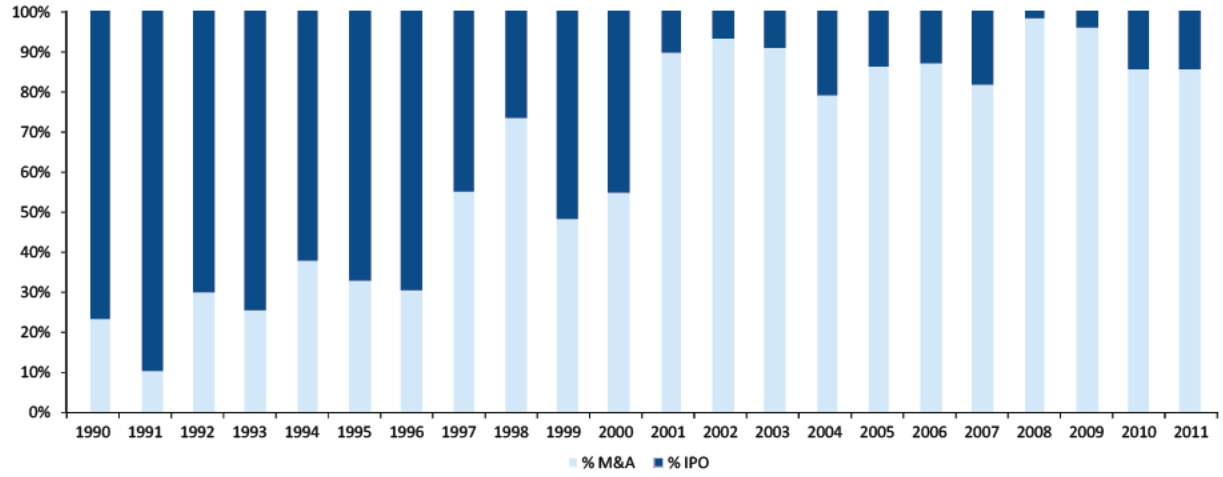
(1) Source: JMP Securities, Dealogic.

(2) Source: Thomson Reuters, National Venture Capital Association.

(3) Source: Ibid.

(4) Source: VentureOne data.

Chart E: Shift from IPOs to M&A



Source: Thomson Reuters/National Venture Capital Association (Based on number of exits per year; M&A exits are for private company sales only).

V. Fewer IPOs: Less Job Growth

Imagine how different Seattle, Cupertino or Austin would look today if — instead of going public — Microsoft, Apple or Dell had undergone an acquisition by an old-line conglomerate.

Given the propensity of emerging growth companies for generating new jobs, it is little wonder that the primary casualty in the decline of America's IPO market has been job creation. By one count, "up to 22 million jobs may have been lost because of our broken IPO market."[(1)] Meanwhile, U.S. Labor Department statistics suggest that the number of unemployed and under-employed Americans reached approximately 25 million in 2011.[(2)]

The adverse effects brought on by the IPO market decline across the entire American capital markets system have begun to undermine U.S. global economic primacy. The United States raised just 15 percent of global IPO proceeds in 2010, down from its average of 28 percent over the preceding 10 years.[(3)]

The losers in the IPO crisis are the U.S. workers who would have been hired by emerging growth companies had they been able to go public and generate new jobs through their subsequent growth.

(1) D. Weild and E. Kim, Grant Thornton, A Wake-up Call for America at page 2 (November 2009).

(2) U.S. Department of Labor, "The Employment Situation – May 2011" News Release.

(3) Dent, Mary J. "A Rose by Any Other Name: How Labels Get In the Way of U.S. Innovation Policy" March 2011; U.S. Global IPO Trends, supra note 42.

VI. Regulatory and Market Roadblocks

While the costs of the IPO market's decline to the U.S. economy are clear, its causes cannot be traced to one single event. Rather, a complex series of changes in the regulatory environment and related market practices, most of which were intended to solve problems unrelated to emerging growth company IPOs, has:

1. driven up costs for emerging growth companies looking to go public, thus reducing the supply of such companies,

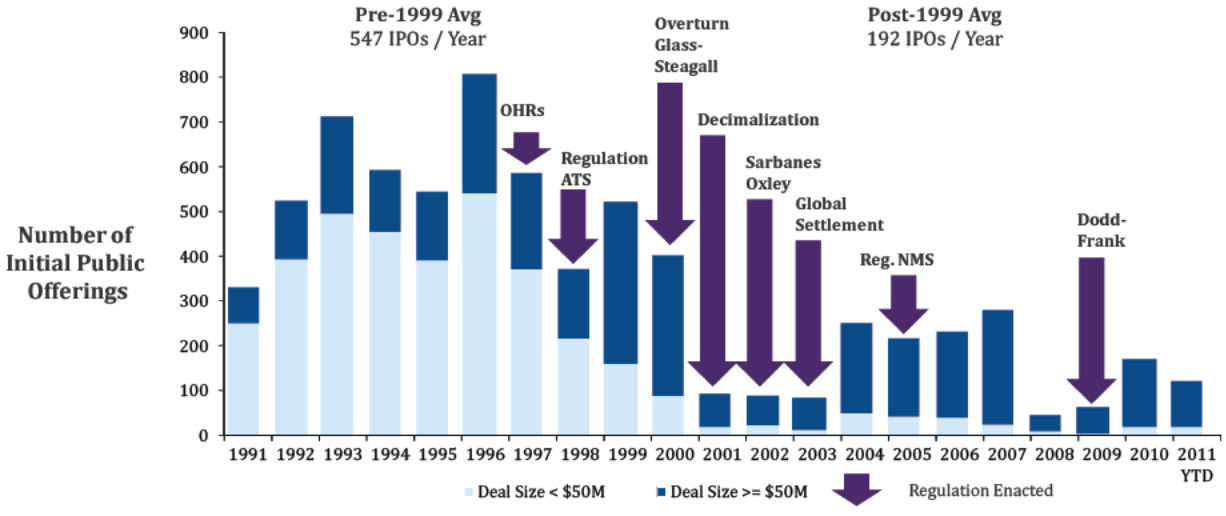
2. constrained the amount of information available to investors about such companies, thus making emerging growth company stocks more difficult to understand and invest in, and

3. shifted the economics of investment banking away from long-term investing in such companies and toward high-frequency trading of large-cap stocks, thus making the IPO process less attractive to, and more difficult for, emerging growth companies.

These outcomes contradict the spirit and intent of more than 75 years of U.S. securities regulation, which originally sought to provide investor protection through increased information and market transparency, and to encourage broad investor participation through fair and equal access to the public markets. In most cases, the regulations were intended to address market issues created exclusively by the behavior of, and risks presented by, the largest companies. While some regulations succeeded in this aim, almost all of them have created unintended adverse effects on emerging growth companies looking to access public capital.

The collective result of these well-intentioned but "one-size-fits-all" regulations and the market changes they have engendered amounts to nothing less than a fundamental change in the structure of the U.S. capital markets. The losers in this restructuring are the U.S. workers who would have been hired by emerging growth companies had those companies been able to go public and generate new jobs through their subsequent growth.

Chart F: IPOs and Regulatory/Market Changes



IPO data per JMP Securities, Dealogic.

A. Impact on Supply of Emerging IPOs

While 96% of emerging growth companies surveyed agreed that a strong and accessible small cap IPO market was important, only 13% agreed that the current market is easily accessible for small companies.[(1)]

An IPO represents one of the most significant steps in a young company's growth cycle. Unfortunately, a series of rules, regulations and other compliance issues aimed at large-cap, already-public companies has increased the time and costs required for emerging companies to take this critical first step.

Many of the rules and regulations adopted over the last 15 years aimed to respond to scandals or crises at major public companies and to restore confidence in the public markets by requiring public companies to adopt more stringent financial and accounting controls. These requirements are included in the dozens of rulemakings (some of which are still pending) following the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, and various accounting and compliance requirements. Financial Accounting Standards Board (FASB) and Public Company Accounting Oversight Board (PCAOB) rules can further increase the compliance challenge, as discussed further below.

Chart G: The Regulatory Cascade

1996-Today	Accounting & Compliance from Policymakers & Industry
1996	Advent of Electronic Trading
1999	Gramm-Leach-Bliley Overturns Separation Of Commercial & Investment Banking
2001	Decimalization Introduced for All Exchange Traded Shares
2002	Sarbanes-Oxley Act
2002-Today	Additional Accounting & Compliance from Policymakers & Industry
2003	Global Analyst Settlement Separates Research & Banking
2009-Today	Dodd-Frank Act

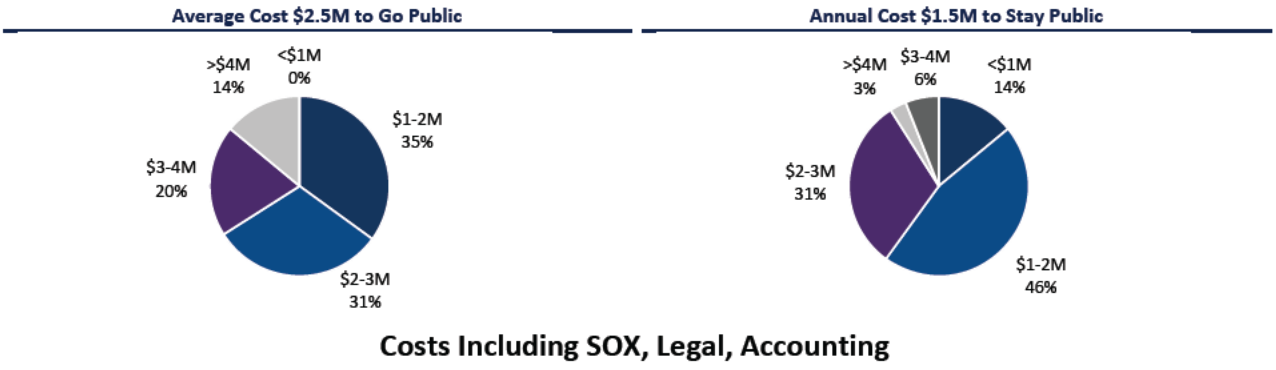
Two recent surveys of pre- and post-IPO companies – one initiated by the IPO Task Force (see Appendix C for summary results) and one conducted by a company currently in registration by reviewing public filings of its peers[(2)] – place the average cost of achieving initial regulatory compliance for an IPO at $2.5 million, followed by an ongoing compliance cost, once public, of $1.5 million[(3)] per year. These figures can represent a significant amount of an emerging company's earnings before interest, taxes, depreciation and amortization (EBITDA) and can lower the company's market cap based on EBITDA multiples by tens of millions of dollars. Respondents to the task force survey listed the regulatory burdens of going public as their primary concerns.

(1) IPO Task Force August 2011 CEO Survey (see Appendix C).

(2) Survey conducted by a private company via an independent review of public filings for 47 IPOs raising less than $200M in 2011.

(3) Results compiled from two different surveys. The first was initiated by the Task Force; methodology and summary results can be found in Appendix C. Survey conducted by a private company via an independent review of public filings for 47 IPOs raising less than $200M in 2011.

Chart H: The Costs of Going and Staying Public are High



Source: IPO Task Force August 2011 CEO Survey of incremental IPO costs. Sample set of 35 CEOs of companies that went public since 2006. Consistent With Independent Review of Public Filings for 47 2011 IPO's Raising Less Than $200M (Avg. Cost of $3M for IPO).

These high costs can force a grim tradeoff for management: 1) commit these resources to achieving and maintaining compliance in an uncertain IPO market, or 2) postpone (or forgo altogether) an IPO to continue developing the company's product offering and building the enterprise at a lower growth trajectory. Given that completing an IPO involves a great deal of risk and uncertainty for an emerging growth company, especially in a down cycle, many companies are choosing the second option with the target exit being acquisition by a larger company. As described earlier, this outcome not only generates less short-term job growth, but can actually reduce the number of jobs in the short run when the acquiring company eliminates redundant positions.

While these rules apply to public companies, emerging growth companies must be ready to comply with them at, or very soon after, the time of their IPOs and typically must begin to build up a significant compliance infrastructure a year or two ahead of time. Currently, companies with market capitalizations of under $75 million (known as "Smaller Reporting Companies" or "SRCs") are exempted from a broad range of rules that apply to all larger companies. While the idea behind this exemption is sound, the execution falls short of market realities. First, it creates a false dichotomy within the equities space wherein a company is either a micro-cap or a large cap. This is akin to classifying all motor vehicles as either sub-compact cars or semi-trucks – with nothing in between. Second, the current system holds even the smallest cap companies to the large-cap standards before they can go public. As a result, emerging growth companies and U.S. workers pay the price – literally.

The continued implementation of various rules under the Dodd-Frank Act, along with proposed FASB and PCOAB initiatives under discussion, will likely further increase the compliance challenge for emerging growth companies. For example, matters under consideration in the PCOAB's recent concept release on new auditor firm rotation threaten to increase costs even further for emerging growth companies. This requirement is in addition to the existing requirement that all individual auditors assigned to an account be rotated regularly with other auditors within the same firm. For an emerging company, hiring a new audit firm a year or two after an IPO is very expensive. This is because it often takes a company a year or two to fully educate its auditor about the company's business model and for the auditor to use that knowledge to deliver services efficiently. For these reasons, the first year or two of the engagement are the most costly for a company. The rotation rule would force a company to drop its audit firm just as the relationship is becoming cost-efficient, and start the education process anew with a different audit firm. Relief under current and proposed rules for small companies does not compromise investor protection as the incidence of accounting fraud by small companies is no greater than for their large peers.[(1)]

(1) 10-Year Study by Audit Analytics Released May 2011.

Cumulatively, the unintended effects of these current and pending regulations – the increasing length of time between initial start-up and liquidity event, the increasing compliance costs associated with becoming and maintaining a public company in the U.S., the significantly larger market capitalization and revenue size required to go public, the financial, accounting and compliance infrastructure required to go public in today's environment – have likely delayed, diverted or discouraged hundreds of companies from entering the public markets since the mid-1990s. The long-term economic impact for U.S. workers and consumers resulting from the lost jobs and revenues from these companies cannot be underestimated.

Recommendation #1:

Provide an "On-Ramp" for emerging growth companies using existing principles of scaled regulation.

1.1 Create a new category of issuer, "emerging growth company," that lasts up to five years and is transitional.

1.2 Define such companies by the following criteria:

1.2.1 Annual revenue of less than $1 billion

1.2.2 Not recognized by the SEC as a "well-known seasoned issuer"

1.2.3 Registered for an IPO, or less than five years post-IPO

1.3 Build on existing scaled disclosure rules to ease compliance burdens during the transition period while maintaining investor protection.

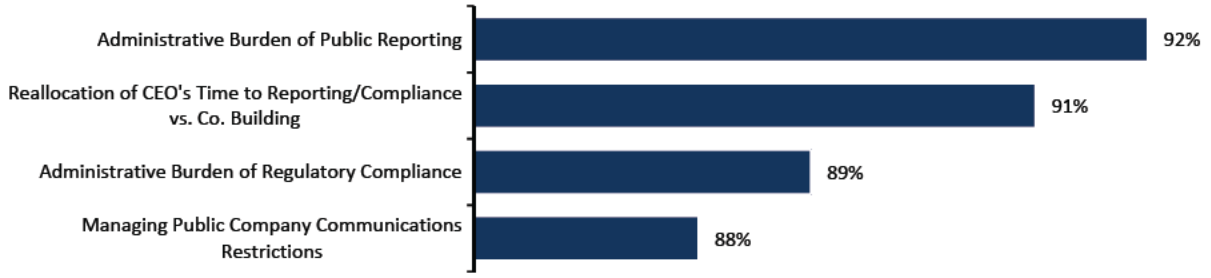
1.4 Apply scaled On-Ramp regulations only as long as a company qualifies as an emerging growth company.

Detailed recommendation on page 19.

The task force made its recommendations with the objective of maintaining the principles of investor protection and sought investor input into the limited measures that are recommended in this report. When analyzing the cohorts of emerging growth companies that went public over the last five years, emerging growth companies never exceed 15 percent of all companies listed on the exchange (see Appendix D, page 42). Market cap was rejected as a basis for determining status as an emerging growth company because, in a volatile market, companies often have limited visibility of or control over their market cap. A revenue-based test satisfied the objective of increased certainty regarding the applicability of key regulations.

The primary reasons emerging growth companies seek capital are to grow their businesses, pursue promising new products and innovations, and create jobs. Enabling them to use an On-Ramp (for some or all of the scaled regulation and disclosure) for a period of time after their IPOs will reduce their costs in trying to achieve these goals. Based on interviews with pre- and post-IPO companies, we would expect the On-Ramp scaling to reduce internal and external compliance costs for such companies by 30 percent to 50 percent. It will also allow them to build the resources to satisfy the additional regulatory burdens to which large, mature companies are accustomed. We expect that this will result in a larger supply of emerging growth companies going public and increased job creation over the long term.

Chart I: Public Company CEOs: Most Significant IPO Challenges



Source: IPO Task Force August 2011 CEO Survey.

Per a 10-year study by Audit Analytics released in May 2011, the incidence of restatement by small companies is no different from their larger peers and is proportional to their percentage of the public company population.

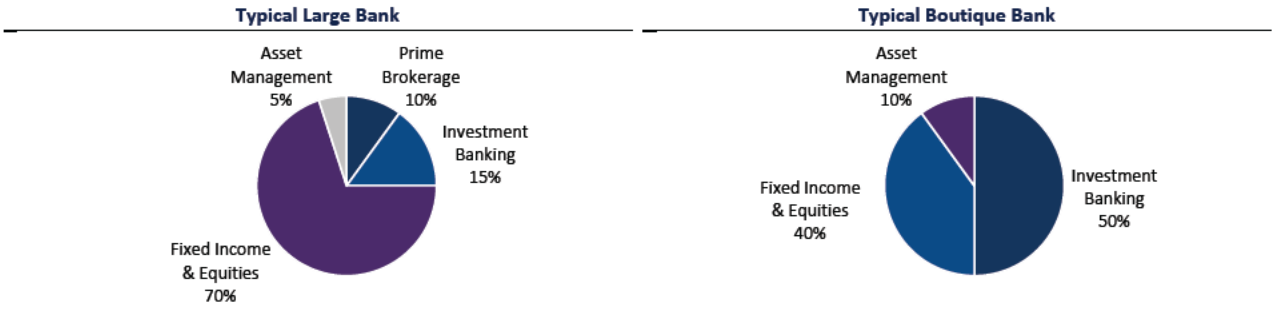
B. Changes to the IPO Channel

As described earlier, the extraordinary sequence of regulatory interventions and the market changes it has engendered have fundamentally changed the structure of the U.S. capital markets. This new market structure has shifted the economic incentives for financial institutions away from long-term investing in a company's fundamental growth – upon which emerging growth companies and their IPOs rely – and toward short-term trading driven by volatility and changes in market price. In the process, it has broken the traditional relationship between buyers and sellers of emerging growth company stocks.

This shift began in the late 1990s with the rise of electronic trading, which led to lower commissions and reduced the role of traditional brokers, who helped to expose investors to a wide array of stocks – including small caps. The adoption of decimal pricing (wherein stocks are priced in pennies instead of by fractions of dollars) by 2001 further reduced the economic opportunity per trade for investment banks.

In the new, low-cost, frictionless environment promulgated by electronic trading and decimalization, investment banks now generate revenue primarily by executing a high volume of low-priced trades meant to capitalize on short-term changes in the price of highly liquid, very large-cap stocks.

Chart J: Channel Focus: Trading Drives Revenue for Largest Investment Banks



Source: JMP Securities.

The rise of algorithmic trading strategies and high-frequency execution (known collectively as high-frequency trading, or HFT) illustrates this shift in stark terms. High-frequency trading now accounts for nearly 75 percent of all equities trading volume at U.S. exchanges,[(1)] compared with slightly more than 20 percent in 2004.[(2)]

The problem for emerging growth company stocks is that high-frequency trading is driven by non-fundamental factors such as price discrepancies among various market makers, relationships between various stocks and commodities, and price movements, as opposed to by a particular company's prospects for growth and profitability. In addition, HFT positions are closed out at the end of every day – the exact opposite of the type of long-term, fundamentals-based strategy that favors emerging growth IPOs. In this environment, large stocks can sometimes function more like commodities whose value is driven more by their volatility, liquidity and the amount of the company's shares available for trading in the public market (its "float") than by the long-term growth they may offer to their holders. With their large floats and high visibility with investors, large-cap stocks can support this model. Most investment banking research, especially for the investment banking firms with significant trading and prime brokerage operations, is now focused on supporting these large cap companies, which represent most of the business of those firms.

(1) Source: The Tabb Group, Aite Group.

(2) Source: The Tabb Group.

By contrast, emerging growth stocks do not fit this model. They begin their "public" lives with modest liquidity levels and small floats – both of which they must grow over time through strong fundamental growth and increased visibility. Due to this relative lack of liquidity and float, emerging growth company stocks simply don't produce enough trading volume to make money for the investment bank's trading desk and therefore the investment bank as a whole. This undermines the incentive for investment banks to underwrite and make markets for newly public companies.

As the revenue drivers for investment banks have shifted to trading, the focus of their research departments has understandably followed suit. Already, decimalization had put the economic sustainability of sell-side research departments under stress by reducing the spreads and trading commissions that formerly helped to fund research analyst coverage. The Global Analyst Settlement of 2003 increased that stress by prohibiting the direct compensation of research analysts through investment banking revenue. This limited the compensation sources for analysts to trading revenues. As a result, most sell-side research analysts have shifted their attention to the high-volume, high-liquidity large-cap stocks that now drive revenues for their institutions and provide the basis for their compensation. This shift has resulted in less research coverage of emerging growth companies and thus less transparency and visibility into emerging growth companies for investors – an outcome that contradicts the original intent of the regulations in question. Instead, these regulations and market changes have produced less efficient markets in which long-term growth investors have less information about and access to the emerging growth companies that need capital the most.

Recommendation #2:

Improve the availability and flow of information for investors before and after an IPO.

2.1 Improve the availability and flow of research coverage.

2.2 Expand and clarify existing safe harbors.

2.3 Eliminate unnecessary research quiet periods.

2.4 Eliminate unnecessary restrictions on analyst communication.

2.5 Facilitate capital formation by expanding permissible communications between issuers and prospective investors and by providing for confidential IPO filings.

Detailed recommendation on page 26.

The task force developed the above recommendations under the premise that more information for investors is always better than less. It also allows emerging growth companies to "be heard" in the midst of the high-volume, large-cap-dominated trading landscape. Again, this remains consistent with historical first principles regarding the intent of U.S. securities regulation. Improving the flow of information about emerging growth companies to investors before and after an IPO can increase visibility for emerging growth companies while maintaining transparency for investors. In some cases, this will simply require an update of regulations that have been in place for 80 years to reflect today's marketplace and communications realities.

Despite the shift in economics and the paucity of information about emerging growth companies, there remains a vibrant community of boutique investment banks and growth-company investors willing to execute and invest in emerging growth IPOs. In the current environment, however, gaining access to emerging growth IPOs has become a challenge. In the wave of investment bank consolidation triggered by the passage of the Gramm-Leach-Bliley Act of 1999, large institutions acquired many of the most prominent and successful "growth stock investment banks," which increased the market strength of the largest investment banks. The combination of brand power and adverse market cycles has enabled the larger investment banks to garner a dominant market share of the dwindling IPO market. As a result, companies have shifted away from diversified investment banking syndicates that include

growth-oriented investment banking firms who, in the past, were allocated shares to place with investors looking for long-term growth. Instead, current practices favor syndicates that are dominated purely by the largest investment banks. In this model, the large investment banks have incentives to place IPO shares with their biggest trading counterparts, rather than long-term growth investors, who are the strongest holders of emerging growth company IPOs.

Once again, these changes have undermined their original intents by making it more difficult for public investors wishing to invest in the long-term growth of innovative, emerging companies to gain access to such stocks.

Recommendation #4

Members of the emerging growth ecosystem must educate issuers about how to succeed in the new capital markets environment.

4.1 Choice of balanced investment banking syndicate.

4.2 Increase issuer's role in IPO allocation process with the goal to create an optimal mix of investors for the company.

4.3 Improve practice of investor communication.

Detailed recommendations on page 31.

The IPO Task Force developed the above recommendations with the goal of restoring the broken link between emerging growth companies and the public investors who wish to invest in them. By educating issuers about the new capital markets environment described above, we can help them become better consumers of investment banking services and find long-term institutional small-cap investors that best fit their evolving investor bases. This will help reconnect buyers and sellers of emerging growth stocks more efficiently. The Task Force believes responsibility for this education effort lies not with policymakers but rather with all members of the emerging growth company ecosystem.

C. Impact on Demand

As described in the prior section, demand for emerging growth company IPOs persists among a number of investor communities. This persistent demand in the face of shifting market economics underscores the value that smaller IPOs can still deliver to investors and the urgency of addressing the supply and channel issues outlined earlier in this report. Unfortunately, changes in the U.S. market structure have lowered the supply of such IPOs and have limited both the amount of available information and access to the shares of emerging growth companies for long-term growth investors.

In addition to addressing these measures, policymakers can reinforce demand for emerging growth company IPOs and maximize their effectiveness by using the tax code to create an additional incentive for investors. Such an incentive can draw long-term investors to buy at an emerging growth company's IPO, when that purchase will deliver the greatest benefit for the issuer, which is to bring them into the realm of being a publicly traded company and raise capital for growth. Without these first purchasers, an IPO cannot happen.

Recommendation #3:

Lower the capital gains tax rate for investors who purchase shares in IPO and hold these shares for a minimum of two years.

Detailed recommendation on Page 30.

Using tax policy to encourage long-term investing is a time-tested tool in U.S. regulatory practice. By lowering the capital gains rate for buyers of newly issued stock if they hold it for two years from the IPO date, policymakers can assist emerging growth companies in attracting long-term investors to their IPOs at the initial allocation – thereby helping to ensure that the companies successfully access the public markets and bring the benefits of job growth and appreciation in value to employees and investors alike.

Chart K: Demand Exists: Emerging Company IPOs Deliver Returns to Investors

Post IPO Market Cap		1 Day	1 Month	3 Months	6 Months	1 Year
$200M-$500M	Average	27.5%	34.8%	45.1%	43.9%	33.5%
$1B or more	Average	35.9%	39.7%	37.7%	32.8%	28.5%

Source: JMP Securities, Dealogic.
Note: Includes all IPOs from 1/1/2011-9/30/2011.

VII. Detailed Recommendations

The precipitous decline of the U.S. IPO market – driven by a paucity of emerging growth companies going public – has stifled job creation, undermined U.S. economic strength and imperiled America's global technology leadership. Historically one of the most reliable routes to growth for young companies, the small cap IPO market has been damaged and needs immediate repair.

This decline stems from a fundamental shift in the structure of the U.S. capital markets brought on primarily by regulations and related market forces. For some aspects of the new market reality, such as decimalization, there's no turning back – nor should there be, as investors have benefited from greater market access and reduced trading costs. For a number of other factors, however, opportunities exist to make limited and reasonable adjustments that can help restore the access to the public capital that emerging growth companies need to hire new employees, develop their products and grow their businesses globally.

To this end, the IPO Task Force has developed four recommendations that can serve as a roadmap for policymakers and members of the emerging growth company ecosystem to revive America's IPO market and the jobs growth it can generate. Developed to be targeted, scalable and in some cases temporary, these recommendations aim to bring the existing regulatory structure in line with current market realities while remaining consistent with its overarching goals of increased investor protection and participation. The task force's recommendations for policymakers are:

1. **Provide an "On-Ramp" for emerging growth companies using existing principles of scaled regulation.** We recommend that companies with total annual gross revenue of less than $1 billion at IPO registration, and that are not recognized by the SEC as "well-known seasoned issuers" be given up to five years from the date of their IPOs to scale up to compliance. Doing so would reduce costs for companies while still adhering to the first principle of investor protection. (Page 19)

2. **Improve the availability and flow of information for investors before and after an IPO.** We recommend improving the flow of information to investors about emerging growth companies before and after an IPO by increasing the availability of company information and research in a manner that accounts for technological and communications advances that have occurred in recent decades. Doing so would increase visibility for emerging growth companies while maintaining existing regulatory restrictions appropriately designed to curb past abuses. (Page 26)

3. **Lower the capital gains tax rate for investors who purchase shares in an IPO and hold these shares for a minimum of two years.** A lower rate would encourage long-term investors to step up and commit to an allocation of shares at the IPO versus waiting to see if the company goes public and how it trades after its IPO. (Page 30)

In addition to its recommendations for policymakers, the task force has also developed a recommendation for members of the emerging growth company ecosystem:

4. **Educate issuers about how to succeed in the new capital markets environment.** The task force recommends improved education and involvement for management and board members in the choice of investment banking syndicate and the allocation of its shares to appropriate long-term investors in its stock. Doing so will help emerging growth companies become better consumers of investment banking services, as well as reconnect buyers and sellers of emerging company stocks more efficiently in an ecosystem that is now dominated by the high-frequency trading of large cap stocks. (Page 31)

Over the long term, the IPO Task Force believes that enacting these recommended changes will benefit all entrepreneurs who have developed successful, high-growth companies and who qualify for access to public, late-stage growth capital. Each of these action steps is outlined in greater depth in the sections that follow.

> ***"This proposal adds to the ancient rule of caveat emptor, the further doctrine, 'Let the seller also beware.' It puts the burden of telling the whole truth on the seller. It should give impetus to honest dealing in securities and thereby bring back public confidence." President Franklin D. Roosevelt, referring to The Securities Act of 1933.***

Venture Capital Backed IPOs in Europe

An Empirical Analysis of the Return and Performance Characteristics

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Giessen, Germany

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Venture Capital Backed IPOs in Europe

An Empirical Analysis of the Return and Performance Characteristics

Wolfgang Bessler and Martin Seim

Executive Summary

The objective of this study was to analyze the performance of venture capital-backed initial public offerings (IPOs) in Europe for the period from 1996 to 2010 covering two complete stock market cycles and IPO waves. For this we analyzed first the underpricing and then the long-run return and performance behavior for the entire period. To gain additional insights into the impact of certain market and firm characteristics, we grouped the IPO firms according to certain attributes such as the market segment of the stock exchanges and firm size. A more detailed analysis is then provided for the main market segments and larger IPOs. In addition, we separated the sample into the two sub-periods from 1996 to 2003 and from 2003 to 2010 in order to explore whether there are significant differences between these two periods.

The empirical findings suggest that venture capital-backed IPOs generate positive returns for some time period subsequent to the IPO. In fact, early investors such as venture capitalists that were already invested in the company prior to the IPO could profit initially from a high first day return (underpricing) and then from high positive returns during the first year of trading. The same holds for an investor that got shares allocated at the time of the IPO. Interestingly, investments in IPOs generate positive returns for investors for nearly three years after going public. An investor that bought shares in the secondary market just following the IPO could also profit from the stock price increases during the first year subsequent to the IPO. Such an investment seems to generate positive returns for the investor for up to two years but then returns become negative. A more detailed analysis of the IPOs listed on main markets reveals positive returns and positive abnormal returns (performance) for up to two years after going public. The returns for larger IPOs with market values above 100 million at the time of the IPO or above 100 million in book values at the end of the first year are also positive for the three year period. Finally we find differences between the two stock market cycles or IPO waves in that the underpricing and the first year returns during the first period are higher than for the second period. In the long run there are no substantial performance differences suggesting that the higher underpricing and the higher first year returns were driven by an extremely positive market environment and overly optimistic growth expectations. Overall this study provides empirical evidence on the positive returns and positive performance of venture capital-backed initial public offerings in Europe for the period from 1996 to 2010.

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1. INTRODUCTION

It is a well known economic fact that venture capital contributes significantly to the success of start-up firms and to long-term economic growth. A recent study by Haltiwanger, Jarmin and Miranda (2010) provides empirical evidence that the increase in employment and the creation of new jobs is strongly related to the growth rate of start-up firms and not to small firms per se. Thus, providing sufficient capital resources as well as advising and monitoring services is of fundamental importance for the success of start-up firms. Although the current financial crisis had severe negative effects on financial markets and real activity throughout all economic sectors during the last 3 years, it appears that in the aftermath of this financial crisis both, financial markets and real activity are returning to more sustainable conditions. In fact, based on the number of firms interested in going public, the issuance markets might exhibit a significant recovery in the near future (Börsen-Zeitung 19.11.2010). A high percentage of these potential initial public offerings (IPOs) are backed by venture capital firms, i.e., firms in which venture capitalists have invested earlier on, demonstrating the positive impact of venture capital on firm value also in economic downturns. At the same time, taking companies public offers venture capital firms an attractive opportunity to exit from their portfolio companies, and to invest the proceeds in new and promising start-up companies. Therefore, it is an interesting and timely research question to investigate the performance and the performance characteristics of venture-backed initial public offerings in Europe for the period from 1996 to 2010. This period includes the last two stock market cycles and IPO waves including the "New Economy" bubble.

In our empirical analysis we concentrate on the return and performance characteristics of venture-backed IPOs. The interesting comparison of venture-backed and non-venture-backed initial public offerings will be addressed in a separate study. The remainder of this paper proceeds as follows. In the next section the literature on venture capital and initial public offerings is briefly reviewed while in section 3 we describe the data and statistical methodology employed in the empirical analysis. In section 4, the results of the empirical study are presented. This includes an analysis of underpricing and long-run performance. In the performance analysis we further differentiate between certain characteristics such as size of the IPO firm and the stock exchange segments on which the IPO is listed. Another important issue is to analyze the difference between the two stock market cycles and IPO waves. The paper concludes with a summary of the empirical findings and a direction for future research.

2. VENTURE CAPITAL

The purpose of this chapter is to provide a brief literature review on the role and importance of venture capital as well as an overview of the literature on the return and performance characteristics of venture-backed initial public offerings.

2.1 Development of Venture Capital

Extensive empirical evidence during the last three decades suggests that venture capital firms contribute significantly to the success of start-up companies and to economic growth in general. This is usually attributed to the VCs' superior abilities of screening, monitoring, and consulting of their portfolio companies. However, when venture capital firms exit from their ventures, it was believed that the most promising and profitable exit route was to take the portfolio company public, i.e. selling the firm's shares in the public equity markets through an initial public offering. However, the opportunity to sell the equity stake at a relatively high valuation does not only depend on the intrinsic value of the portfolio firm. It is also closely related to the size, liquidity, and quality of the equity market in the respective country and to the recent stock market performance (Bessler, Holler and Seim 2010). In addition, there are significant return and performance differences between different market environments such as hot and cold market periods (Bessler and Kurth 2007).

At least in the past decades, the high quality and efficiency of stock markets in the U.S. appear to have been an important factor supporting the success and growth of the venture capital industry (Black and Gilson 1998). This historically strong economic interaction between venture capital and IPO markets may have been negatively affected in recent years as we are currently observing that trade sales have become the preferred exit route for venture capital firms in the U.S. and in Europe. Some refer to this situation as the "IPO Crisis". This crisis may be the result of excessive new regulation as well as changes in investment banking and analyst behavior following some severe conflict of interest and problems in these markets during the last decade (Weild and Kim 2009, 2010). In addition, recent developments in security markets' trading systems and trading approaches such as "algorhythmic trading" may have played a pivotal role as well. Interestingly, Asian markets such as China and Australia are currently observing an increasingly active IPO market. Overall, there is no doubt on the important role of venture capital in contributing to the economic growth and success.

2.2 Venture Capital and IPOs

The opening of new stock market segments for entrepreneurial and technology driven start-up firms in most European countries between 1996 and 2000 was supposed to offer attractive exit opportunities for venture capitalists and other early-stage investors, thereby, supporting the growth of European venture capital markets (Da Rin, Nicodano and Sembenelli 2006). Liquid capital markets are another important factor for creating successful opportunities for venture capital firms to exit from their portfolio companies. Other factors such as the quality of a country's legal system can also be important because a strong legal environment ensures profitable exit opportunities (Cumming, Fleming and Schwienbacher 2006). Moreover, being public offers young R&D intensive firms new financial opportunities such as issuing additional equity (SEO), acquiring other companies (M&A), or positioning themselves to become takeover targets. In addition, market prices continuously provide potential investors and acquirers with information on the current price of the venture. It also seems possible that venture capitalists stay invested for some time period after the IPO or agree to a lock-up period if the share prices in the primary (underpricing) and secondary markets offer attractive returns. Moreover, there is substantial evidence that venture capitalists significantly contribute to the development of entrepreneurial firms over their life cycle by offering strategic and operational support even after the going public (Barry, Muscarella, Peavy and Verstuypens 1990). Therefore, venture capital firms may mitigate adverse selection problems between IPO firms and prospective investors. This should be reflected in a superior operating and financial performance of venture-backed compared to non-venture backed IPOs.

2.3 Performance of VC-backed IPOs

When analyzing the return and performance characteristics of initial public offerings, researchers usually concentrate on the magnitude of the underpricing and the long-run performance. In general, "underpricing" is measured as the difference between the offer price and the stock price in the secondary market on the first day of trading. Performance is usually measured by calculating "Buy-and-Hold-Returns" (BHR) and "Buy-and-Hold Abnormal Returns" (BHAR). The empirical findings are discussed in the next section.

2.3.1 Underpricing

When venture capital backed firms go public, a VC involvement in early stage financing should be a better signal or provide a superior certification of the quality of an IPO which may then result in a smaller underpricing and a superior long-run performance of venture-backed IPOs compared to non-venture backed IPOs. This hypothesis is supported in earlier studies for the U.S. by Megginson and Weiss (1991) and Brav and Gompers (1997). For venture-backed IPOs in the U.S., Megginson and Weiss (1991) find a lower underpricing for non-venture-backed IPOs on average. However, Barry, Muscarella, Peavy and Verstuypens (1990) observe a lower underpricing only for experienced VCs. In contrast, Francis and Hasan (2001) do not find a lower underpricing and Lee and Wahal (2004) even document higher initial returns for venture-backed IPOs due to the "grandstanding" argument provided by Gompers (1996). This "grandstanding" hypothesis predicts that venture capitalists may exit their portfolio firms in favorable market conditions. This allows them to build up reputation, accelerate fund raising and generate high returns for their investors. The empirical findings of Hsu (2009) corroborate the grandstanding hypothesis in that venture capitalists generally shorten incubation periods, i.e. the time periods for which venture capitalists stay invested in the entrepreneurial venture prior to an IPO. More interestingly, this research emphasizes that within the group of venture-backed start-ups, a longer incubation period leads to more patents, a higher probability of survival, and above average operating and financial performance subsequent to the IPO. For Europe there exists little empirical evidence on these issues so far.

2.3.2 Long-Run Performance

A superior long-run performance of venture-backed IPOs is reported by Brav and Gompers (1997). In addition, Lerner (1994) finds a special ability of VCs to time their exit. This latter result is confirmed by Gompers and Lerner (1998) who observe that venture-backed IPOs significantly outperform before the exit and significantly underperform after the exit of the venture capitalist. These empirical results may suggest some exceptional insights or abilities by venture capitalists with respect to firm valuation and exit behavior. It could also reflect the special abilities of venture capitalists to monitor and support the companies with their special experience and expertise while invested. This advantage may be lost when the VC exits and is replaced with other investor types. In contrast, some critics suggest that such a

performance may be the result of private information or specific measures influencing the price, indicating that certain conflicts of interest may arise when venture capital firms are involved. However, there also exist other conflicts of interest, for example, that the earnings forecasts and stock recommendations of the analyst of the underwriter are positively biased (Bessler and Stanzel, 2009). For Germany, Bessler and Kurth (2007) report an outperformance only for the period up to the end of the lock-up period. In addition, there are other factors besides venture capital that may contribute to the success of a venture such as technology or patents (Bessler and Bittelmeyer, 2008). Nevertheless, these differences between Europe and the U.S. might be due to superior information of U.S. venture capitalists regarding the quality of the IPO and their higher reputation which results from greater experience of venture capital firms in the U.S. Therefore, it seems quite interesting to explore the contribution of venture capital firms to the success of their portfolio companies by analyzing the performance of venture capital-backed IPOs for Europe over an extended time period.

3. DATA AND METHODOLOGY

3.1 Data

This study concentrates on an initial sample of over 500 European firms that were venture-backed and went public on European stock exchanges during the period from January 1996 to June 2010. This period includes two complete stock market and IPO cycles and ends with the aftermath of the current financial crisis. IPO data is from the Thomson One database and matched with information from the VentureXpert database. We only included those firms from VentureXpert that were backed by a reputable venture capitalist, i.e., a venture capital firm that is member of the European Venture Capital Association (EVCA) or one of the major national venture capital organizations in Europe. We excluded those IPOs with conflicting IPO information in either Thomson One or VentureXpert. Stock returns as well as balance sheet data are from Thomson Datastream and all converted into Euro. We follow the usual approach in academic studies and excluded all firms from the banking and insurance sector (i.e., 4-digit SIC code 6000). We also exclude penny stocks (i.e., all IPOs with an offer price of less than 1 EUR), and countries with only a few number of IPOs during our sample period. This leaves us with a final sample of 384 venture backed IPOs. For these IPOs we are able to calculate the first day returns or initial underpricing. When we calculate long-run returns

(BHR) and long-run performance measures (BHAR), stock return data for at least 750 trading days, i.e., 3 years after the IPO, is required. In these cases, the sample size reduces to 365 venture-backed IPOs. The distribution of the number of IPOs on an annual basis as well as the number of IPOs according to the country in which the firm is listed, are presented in Figures 1 and 2, respectively. In Figure 1 it becomes immediately evident that our analysis includes two stock market cycles and two IPO waves and that the number of IPOs closely follows the stock market performance. Especially at the end of the 1990s and in the years 2006 and 2007, venture capitalists took their portfolio firms public. This was an environment of general positive market sentiment that facilitated listing success in a situation of liquid stock markets.

[Insert Figure 1 about here]

Our analysis begins with the first IPO cycle that spans the time period from 1996 to early 2003, including the extreme stock market volatility during the "New Economy" period. In this time period, we first observe an increase in the annual number of IPOs up to nearly 60 in 2000. This number drops to less than 20 venture-backed IPOs in 2001 and even falls below 10 IPOs in 2003. The second cycle shows similar growth dynamics with the number of IPOs strongly increasing since 2004. In 2006, nearly 80 European companies that were backed by a reputable venture capitalist went public on European exchanges. Interestingly, the decrease in IPO activity in relative terms is even more dramatic than during the "New Economy" period. As a result of the current financial crisis, only a small number of firms went public in 2008 due to investor concerns and low confidence in financial markets. The figure for 2008 is on a relative basis only about 10% of the number of IPOs in 2006. Figure 2 shows that only a few capital markets in Europe attracted most IPOs and therefore play the dominant role. Taken together, the number of venture-backed IPOs in the UK, Germany and France is about 250 firms or roughly 70% of all venture-backed firms that went public. Apart from Switzerland, the remaining markets attracted less than 20 venture-backed IPOs over the last two IPO cycles. Thus, we observe some concentration of venture capital-backed IPO activity.

[Insert Figure 2 about here]

3.2. Methodology

In our empirical analysis of venture-backed IPOs in Europe we employ the standard event study methodology and calculate IPO underpricing (UP) as well as long-run returns (buy-and hold-returns or BHR) and long-run performance (buy-and-hold abnormal returns or BHAR).

3.2.1 Underpricing

Underpricing is calculated as the return to an investor who gets shares allocated in the primary market and sells them at the end of the first day of trading in the secondary market. Hence, underpricing calculated for firm i is the percentage change from the offer price $P_{i,OP}$ to the closing price $P_{i,CP}$ on the first trading day (Ritter 1984; Loughran and Ritter 2004):[1]

(1) $$UP_i = \frac{P_{i,CP} - P_{i,OP}}{P_{i,OP}}.$$

3.2.2 Buy-and-Hold Abnormal Returns

To analyze the long-run performance of IPO firms, the standard buy-and-hold abnormal returns (BHAR) procedure is applied and we calculate abnormal returns on a daily basis:

(2) $$\text{BHAR} = \frac{1}{n}\sum_{i=1}^{n}\left[\left(\prod_{t=1}^{T}(1 + R_{i,t})\right) - \left(\prod_{t=1}^{T}(1 + R_{M,t})\right)\right].$$

We begin our analysis on the second day of trading and measure abnormal returns until 750 trading days or 3 years after the IPO. The BHAR performance measure compares the average performance of a buy-and-hold investment in a portfolio consisting of all IPOs (BHR) to the buy-and-hold investment in an appropriate benchmark portfolio. However, as our analysis consists of IPOs that are listed on different European exchanges we have to be aware of country-specific risk and return characteristics that have to be taken into account by country-specific benchmarks. Therefore, for calculating the BHAR we use the MSCI indices

[1] We have opening prices on the first day of trading in the primary market available for only about half of our sample firms. Therefore, to retain a comprehensive sample size we calculated underpricing using closing prices at the end of the first trading day.

for each country. As MSCI indices are available only on a monthly basis prior to January 2001, we use data from Datastream to calculate the daily country indices for the period from 1996 to 2000.[2] Because some IPOs delist within 3 years after going public, we do not have the required return data for 750 trading days. The returns of these IPOs are then set equal to the respective market index so that they do not influence the BHAR measure. Consequently, the weight of each of the remaining IPOs does not change and the sample size remains the same for the whole period of 750 trading days.[3] Furthermore, as some IPO firms, especially those that went public on the "New Markets" in Europe, are characterized by some extreme returns, we winsorized the raw returns as well as the abnormal returns at the upper and lower 1% percentiles of the return distribution.

To test for statistical significance, we employ the standard t-test as well as a bootstrapped version of the skewness adjusted t-test in order to correct for the pronounced positive skewness in UP and in BHAR. Following Lyon, Barber and Tsai (1999), we draw 1,000 samples of size $m = n/4$ to calculate the critical values of the transformed t-statistic:

$$t_{sa} = \sqrt{m}\left(S + \frac{1}{3}\hat{\gamma}S^2 + \frac{1}{6m}\hat{\gamma}\right), \tag{3}$$

with

$$S = \frac{\overline{AR_\tau}}{\sigma(AR_\tau)} \quad \text{and} \quad \hat{\gamma} = \frac{\sum_{i=1}^{m}(AR_{i,\tau} - \overline{AR_\tau})^3}{m\sigma(AR_\tau)^3}. \tag{4}$$

In all of the tables we report the test statistics of the standard t-test (indicated by t) and the skewness adjusted t-test (indicated by t_{sa}) and the respective significance levels. Hence, ***, **, and * refer to the 1%, 5%, and 10% significance level, respectively.

4. EMPIRICAL RESULTS

In our empirical analysis we first investigate the magnitude of the underpricing and then focus on long-run returns and long-run performance. We further analyze various aspects of the return and the long-run performance characteristics of venture capital-backed IPOs. Here we analyze the impact of size and market segments as well as the effects of stock market cycles

[2] We repeated our calculations using the MSCI Europe as the benchmark index and the results remained the same.

[3] We repeated our calculations dropping dead stocks out of the portfolio and calculating BHAR with the remaining IPOs and the results did not change.

and IPOs waves. In this section, however, we first concentrate on the full sample for the entire period.

4.1 Underpricing

It is well known that the magnitude of the underpricing depends on various firm specific characteristics, on the reputation of the venture capital firm and the underwriter (Doukas and Gonenc 2005), but also on the recent stock market performance and on the equity issuing activity. Therefore, researchers usually distinguish between hot and cold market environments and control for other firm and market characteristics. Similar to the co-movement of the stock market index and the number of IPOs as already presented in Figure 1, the magnitude of the underpricing also strongly fluctuates over time. This becomes evident in Figure 3. During the hot issue period of the first IPO cycle (1998 to 2000) in which stock prices increased substantially, the magnitude of the underpricing of venture-backed IPOs also reached the highest levels of about 20% within the entire sample period. However, it appears that a shift in this relationship has occurred more recently in that we find contradicting results for the second stock market cycle and IPO wave (2003-2007). During the second hot issue period or pre-crisis period, the number of venture-backed IPOs and the stock market index increased from about 2003 until 2006/2007, but the magnitude of the underpricing decreased during that time period. The reasons for this observation are not that clear yet. However, there are some plausible explanations. It is possible that the venture capitalists fulfilled their certification role and reduced uncertainty about the value of their portfolio firms or that the market sentiment was not optimistic enough to provoke stronger investor demand and higher levels of underpricing in spite of favorable stock market conditions.

Another explanation is that the so-called “IPO Crisis” resulted in more trade-sales instead of IPOs of the most promising companies because of changes in the market environment. In addition, it seems possible that the growth expectations for these firms were not sufficiently high to warrant - from the VC’s perspective - the more risky IPO exit compared to an immediate trade sale. Thus, the exit behavior of venture capital firms may have shifted from going public and selling their equity stake in the secondary market to trade-sales, i.e., selling the company to another company. It is also possible that these start-up firms have become targets of established firms. Possible reasons - from the perspective of the established firm - for acquiring these firms (M&A) are to get access to technology and patents

or even to acquire early developments and ideas from these start-up ventures (Bessler, Holler, Seim and Zimmermann, 2011).

[Insert Figure 3 about here]

[Insert Table 1 about here]

In Table 1 we provide additional summary statistics on the magnitude of the underpricing. We also differentiate between specific characteristics in that we distinguish between the market segment in which the company is listed (see part 5.1) and the market value at the offer date or the book value of total assets at the end of the first year after going public (see part 5.2). Underpricing for the full sample is 8.39%. IPOs on main markets and larger IPOs as measured in terms of total assets exhibit an underpricing between 6% and 7%. Somewhat surprising, if IPO size is measured in terms of market values of equity at the offer date, underpricing amounts to 9.32% which is higher than the sample average. All measures are significantly different from zero as indicated by both the standard as well as the skewness adjusted bootstrapped t-test.

The practical implication of this finding is that investors - if they were already invested in that company before the IPO or were allocated shares in the primary market at the time of the IPO - are able to earn reasonable rates of returns on the first day of trading. It has to be kept in mind, however, that underpricing is an important source of investor returns and can provide some extraordinary returns to investors. In the subsequent analysis we mostly concentrate on the return an investor could earn from the first day of trading in the secondary market on.

4.2 Long-Run Performance

The average long-run buy-and-hold returns (solid line) and the aggregated corresponding market indices (dashed line) are presented in Figure 4a. In general, the BHR increases continuously from the time of the IPO up to one year (250 trading days) after the IPO. After the first year of trading most investors are allowed to exit from their investment. This is either due to the end of various lock-up periods or the venture capital firms are contractually obliged to exit their investment after this one year period. Subsequently, the returns decline

monotonically until the end of the three year holding period, but still generate positive returns for the first two years of being publicly traded. Benchmark returns also increase on average until 300 trading days after the IPO and decline thereafter, which could suggest a shift from a hot to a cold market period. Thus, overall we find strong evidence that venture capital-backed IPOs generated positive returns for the investor during the first day of trading and positive returns, although marginally declining, for the first two years of being public.

[Insert Figures 4a and 4b about here]

[Insert Table 2 about here]

Although investors are usually interested in their realized returns (BHR), there are always alternative investment opportunities available so that it is important to analyze the excess returns relative to a stock market index or the long-run performance. We therefore explore the performance of venture capital-backed IPOs for a period of up to three years after going public. The empirical results suggest that venture capital backed IPOs outperform an appropriate benchmark by nearly 10% for the first year of trading (see Figure 4b). Moreover, for the first year of trading the abnormal returns are significantly different from zero which is indicated in Panel A of Table 2. Thereafter, the outperformance decreases, but VC backed IPOs still provide higher returns than the benchmark for the first 18 months following the going public.

One explanation often given in the literature is that venture capitalists are able to time the market and exit from their portfolio companies around the highest valuation. Another explanation is that the venture capital exit provides a negative signal that is either due to overvaluation or due to a reduction in advising and monitoring activities. The argument for the latter case is that the venture capitalist is replaced by another investor that may be less engaged in the monitoring or governance activities. Consequently the operating and financial performance of the IPOs declines subsequent to the VC exit. To provide evidence for either argument requires a more detailed analysis that is left for future research.

5. IMPACT OF FIRM SIZE, STOCK MARKET SEGMENT, AND STOCK MARKET CYCLE

For the entire sample period (1996-2010), the venture backed initial public offerings generate a positive return and a positive performance at least for some time period after the IPO. Nevertheless, it seems interesting to analyze whether certain firm characteristic have an additional positive or negative effect on raw returns and on abnormal returns (performance). For this, we first investigate whether the market segment on which the IPO is listed may be of importance and has an impact on returns and performance. For this we analyze the IPOs that are listed on main markets in more detail (5.1). In addition, we investigate the impact of firm size in that we analyze the returns and performance of venture-backed IPOs that have a market value of assets of more than 100 million at the time of the IPO or 100 million in book value of assets one year after the IPO (5.2). As already mentioned, our empirical analysis covers two complete stock market cycles and IPO waves. It is therefore of interest whether there exist substantial return and performance differences between these two market periods. Because these periods may also differ with respect to growth expectations and optimism we include underpricing in our analysis. The initial return or underpricing aspect is important for venture capital firms that were invested in the company before the IPO and do not sell their stake in the primary market.

5.1 Impact of Market Segment on Performance

To assess the relationship between the listing segment and the long-run performance of IPOs, we kindly got data from the NYSE/Euronext, London Stock Exchange (LSE), Nasdaq/OMX, Swiss Stock Exchange (SWX) and Deutsche Börse (DBAG) to classify an IPO according to whether it went public in the main market segment with potentially stricter listing rules and more severe disclosure requirements or in junior market segments with less regulation and monitoring. As we do not have information for all IPOs whether the respective listing segment is classified as “Main” or “Junior”, our sample size reduces to 340 venture-backed IPOs. In the rest of this section we only present the results for the main market segment.

[Insert Figures 5a and 5b about here]

For the return analysis (BHR) we find that IPOs that are listed in the main market segment generate a rate of return of about 20% during the first year after going public and then continue to generate positive returns for investors that got shares allocated at the time of the IPO (see Figure 5a). Towards the end of the two year period, the return is about 10% and decreases to around zero percent during the last 6 months of the 3 year period. When alternative investment opportunities - as measured by the stock market index - are included in the analysis the performance of main market venture-backed IPOs reaches about 10% at the end of the first year and then remains positive until the middle of the second year after the IPO as indicated by Figure 5b. Panel B of Table 2 shows that the abnormal returns are significantly different from zero until 250 trading days or one year after the IPO. Then, closer to the end of the three year investment period the abnormal returns are marginally negative with about -2%. Thus, venture-backed IPOs that went public on a main market segment in Europe generate attractive returns for nearly all of the first three years after going public. On a relative basis, these IPOs also outperform a stock market index for more than the first two year period. Consequently, investing in venture-backed IPOs should result in positive returns and an outperformance for the investor even for an extended time period.

In the next section we analyze the impact of the firm size on performance and again expect significant differences. However, we need to be aware of the fact that going public on main markets and higher market and higher book values may be proxies for similar characteristics.

5.2 Impact of Size on Performance

Given the usual valuation and asset pricing models used in finance and investments, there is sufficient empirical evidence that smaller firms perform differently than larger firms (Fama and French, 1993, 2008; Bessler, Holler and Seim 2010). In the case of IPOs we may expect that larger IPOs are more successful and therefore outperform smaller IPOs. Therefore, we divide our sample in small and large IPOs by using different size proxies. We use either 100 million Euros in Market Value at the time of the IPO or 100 million Euros in Assets at the end of the first year after the IPO. In our more detailed analysis we concentrate only on the larger IPOs. The empirical evidence suggests that size has a positive impact on performance in that larger IPOs – independent of how size is measured – have higher returns and a superior outperformance compared to the full sample for some period after the IPO.

[Insert Figures 6a and 6b about here]

For the return analysis (BHR) we find that larger IPOs generate a rate of return of up to 20% during the first year after going public. The return at the end of the first year is about 15% and these IPOs continue to generate positive returns for investors that invested early on. After two years the returns declines to about 5% and is negative for the last 6 months of the 3 year period. However, when the stock market index is included in the analysis, the performance of larger venture-backed IPOs reaches a maximum of 15% and is nearly 10% at the end of the first year which is significantly different from zero (Panel C of Table 2). Throughout the second year performance stays positive and fluctuates around 5% until the middle of the second year after the IPO. Closer to the end of the three year investment period the abnormal returns are getting closer to zero which means that the investor would have earned the same rate of return by investing in the portfolio of IPOs or in the stock market index. Thus, the investor cannot generate an outperformance, but also does not suffer losses if he stays invested until three years after the IPO.

When size is measured in terms of the book value of assets at the end of the first year after going public, the returns for the investor are even better. At the end of the first year the returns reach more than 20% and decline marginally, but reach 20% again at the end of the second year. They decline during the last year, but the investor still generates a rate of return of about 10% at the end of the three year period. When the abnormal returns or performance is investigated the results suggest that the performance increases during the first year up to significant 15% (Panel D of Table 2) and then fluctuates between 10% and 15% for the remainder of the three year period, and finally ending up at 10% at the end of the three year period. Overall, we find an impressive performance for this subgroup of IPOs.

[Insert Figures 6c and 6d about here]

5.3. Analysis of the Performance of IPOs in different market periods

So far we have analyzed the performance of venture-backed IPOs for the entire period from 1996 to 2010 altogether, although there is empirical evidence indicating that there are some

differences between the "New Economy" period and the period thereafter. Thus, it seems important to investigate the two sub-periods from 1996 to 2003 and from 2003 to 2007 separately in order to understand the differences between these two periods and whether some observations of the so called "IPO crisis" in the US are also observable in Europe. Hence, a more detailed analysis of these two periods may offer additional insights into the performance characteristics of venture backed IPOs.

The first period covers the time interval from 1996 to 2003 and is best characterized as the "New Economy" period or the "High Technology Bubble" period. During this time frame, the number of IPOs as well as the stock price indices increased dramatically (Figure 1), indicating a new economic environment or an overly optimistic outlook on future growth opportunities. This hot issue period came to an abrupt halt in 2001, turning into a cold issue period, which resulted in a substantial decline in stock prices and IPO activity during the following two years. During the second period, that began in 2003 and ended in 2007, and which can also be classified as a hot issue period, stock prices as well as IPO issuing activity increased to an even higher level than during the first period, but then collapsed again with the beginning of the current financial crisis in 2007. During the next 3 years, which is the second cold issue period, stock prices strongly declined and new issues became a very rare event. Thus, the entire period is best characterized as two hot and two cold issue periods which together form two complete stock market cycles or IPO waves.

[Insert Figures 7a and 7b about here]

The returns for these two periods are presented in Figures 7a and 7b. In Figure 7a the situation of an investor is graphed that bought shares on the first day of trading after the IPO in the secondary market, whereas Figure 7b represents the return of an investor that got shares allocated in the primary market or was already invested in the firm prior to the IPO. These are, for example, early investors such as venture capital firms. Given the positive and substantial underpricing in both periods, the returns are higher for this investor type at least during the first year after the IPO.

An analysis of the returns for the first "New Economy" period reveals immediately the highly positive returns of about 20% during the first year and the decline thereafter (Figure 7a). In

fact, the returns are positive for nearly all of the first 2 years, but then turn negative later on. If the underpricing is included into the return calculation, returns for an early stage investor increase and reach a relatively high level of 35% after 3 months and then fluctuated between 30% and 35% for the rest of the first year. The intermediate declines and rebounds may be caused by the expiration of various lock-up periods. Thereafter, returns decline steadily but stay positive for up to the end of the three year period analyzed in this study. Thus, investors such as venture capital firms that got involved with the IPO firm earlier on generated on average a positive return for up to three years after the IPO.

Returns for the second period are lower especially during the first year, reaching a maximum of 15% at the end of the first year. Subsequently they are higher than the returns during the first period and stay positive for up to two years and then turn negative. The returns including the underpricing are obviously higher and reach about 20% at the end of the first year, but they are much smaller than the returns for the first period due to the much lower initial returns. It appears that investors were less optimistic during the second period or had learned their lessons from the first period. In the long run, however, there is no difference between the return to investors in both periods, although the returns for the second period turn negative at the very end. Thus, the major differences between the two periods is that investors were less optimistic during the second period, causing initial and first year returns to be lower than during the first IPO wave. However, in the long-run, the return series for both cases, with and without underpricing, are quite similar suggesting that in the long-run returns for venture-backed IPOs are similar during both periods. Thus, investing in venture capital-backed IPOs could evolve into a profitable investment strategy for investors.

6. CONCLUSION AND OUTLOOK

The objective of this study was to analyze the performance of venture capital-backed initial public offerings (IPOs) in Europe for the period from 1996 to 2010 covering two complete stock market cycles and IPO waves. For this we analyzed first the underpricing and then the long-run return and performance behavior for the entire period. To gain additional insights into the impact of certain market and firm characteristics, we grouped the IPO firms according to certain attributes such as the market segment of the stock exchanges and firm size. A more detailed analysis is then provided for the main market segments and larger IPOs. In addition,

we separated the sample into the two sub-periods from 1996 to 2003 and from 2003 to 2010 in order to explore whether there are significant differences between these two periods.

The empirical findings suggest that venture capital-backed IPOs generate positive returns for some time period subsequent to the IPO. In fact, early investors such as venture capitalists that were already invested in the company prior to the IPO could profit initially from a high first day return (underpricing) and then from high positive returns during the first year of trading. The same holds for an investor that got shares allocated at the time of the IPO. Interestingly, investments in IPOs generate positive returns for investors for nearly three years after going public. An investor that bought shares in the secondary market just following the IPO could also profit from the stock price increases during the first year subsequent to the IPO. Such an investment seems to generate positive returns for the investor for up to two years but then returns become negative. A more detailed analysis of the IPOs listed on main markets reveals positive returns and positive abnormal returns (performance) for up to two years after going public. The returns for larger IPOs with market values above 100 million at the time of the IPO or above 100 million in book values at the end of the first year are also positive for the three year period. Finally we find differences between the two stock market cycles or IPO waves in that the underpricing and the first year returns during the first period are higher than for the second period. In the long run there are no substantial performance differences suggesting that the higher underpricing and the higher first year returns were driven by an extremely positive market environment and overly optimistic growth expectations. Overall this study provides empirical evidence on the positive returns and positive performance of venture capital-backed initial public offerings in Europe for the period from 1996 to 2010.

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Tables and Figures

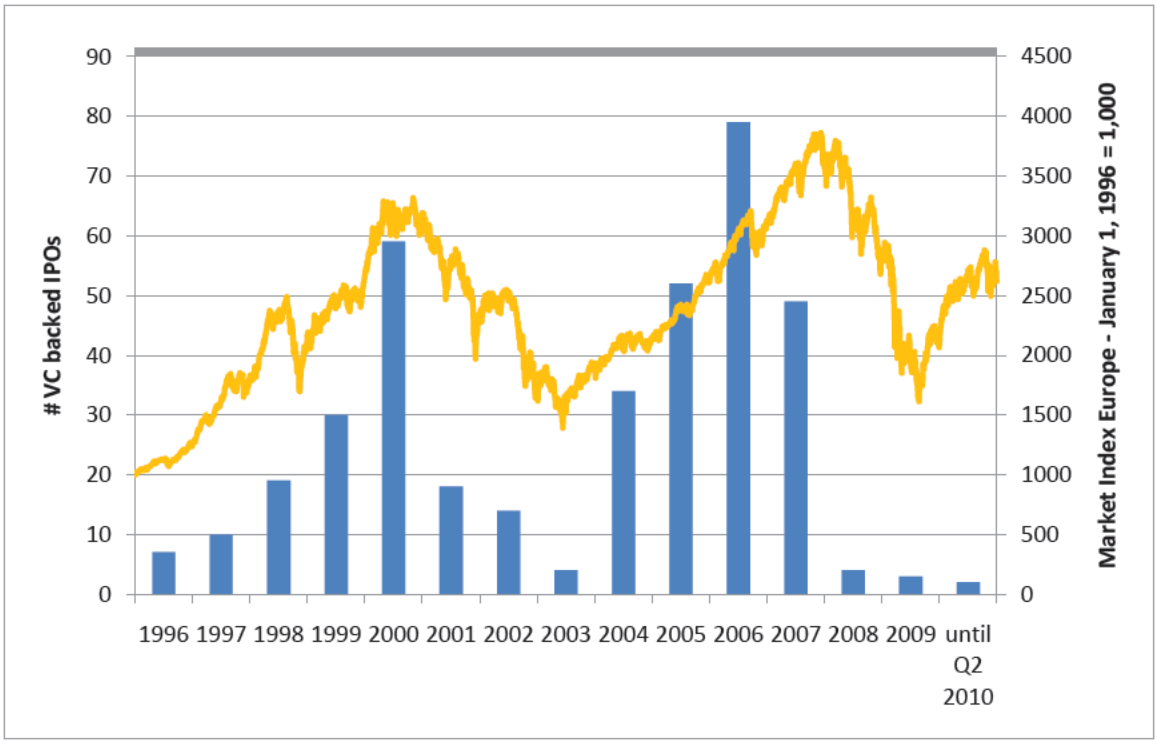

Figure 1: Number of VC backed IPOs over Time and European Stock Market Index

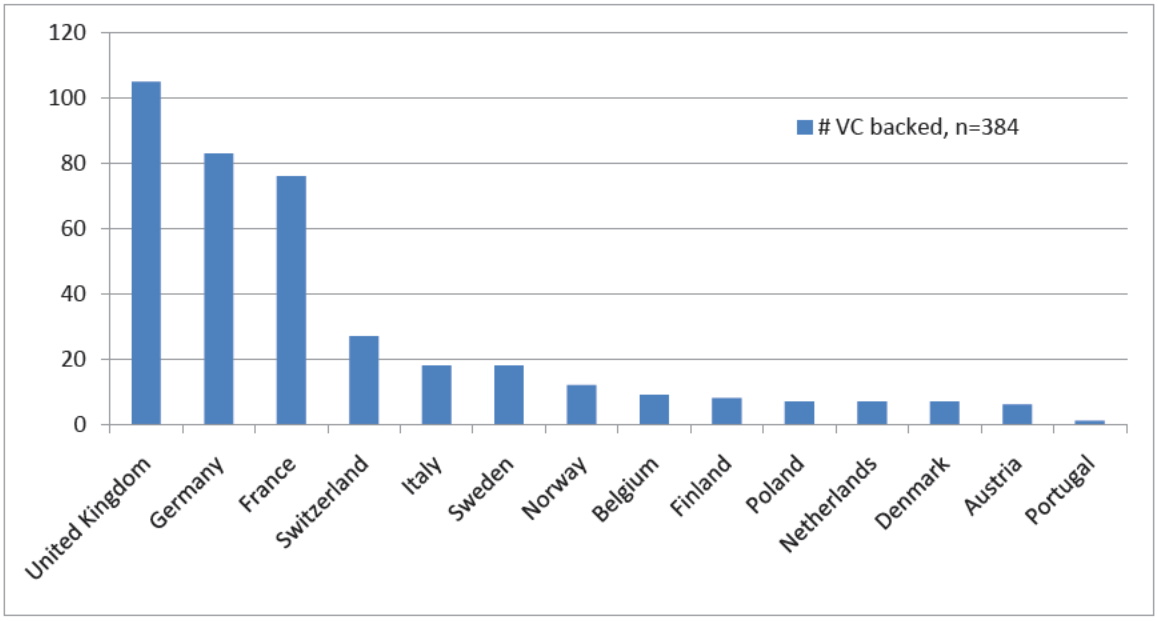

Figure 2: Number of VC backed IPOs by Country where IPO is listed

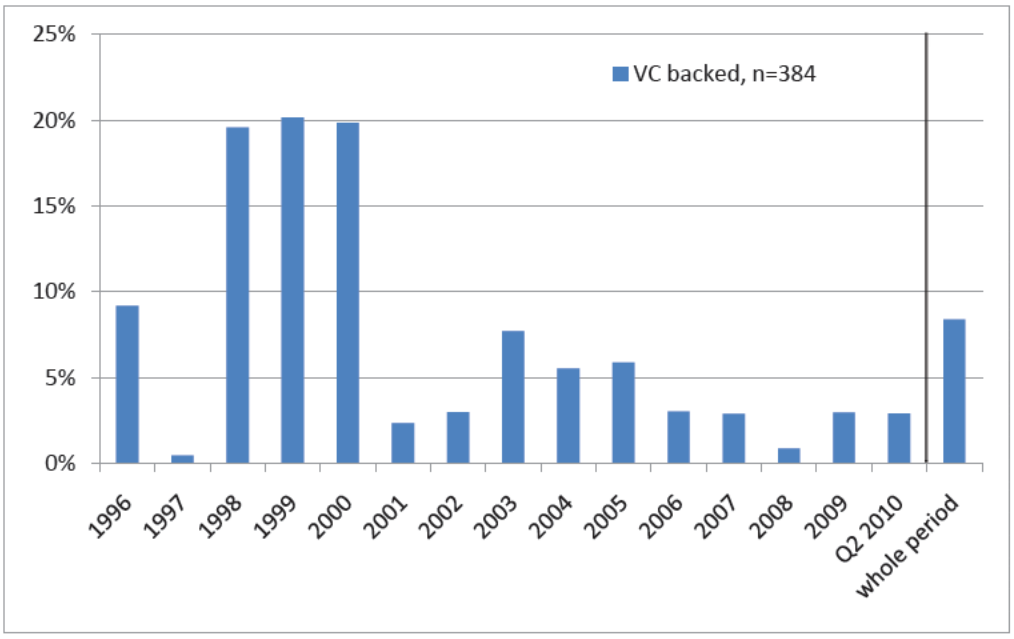

Figure 3: Underpricing according to Year when IPO is listed

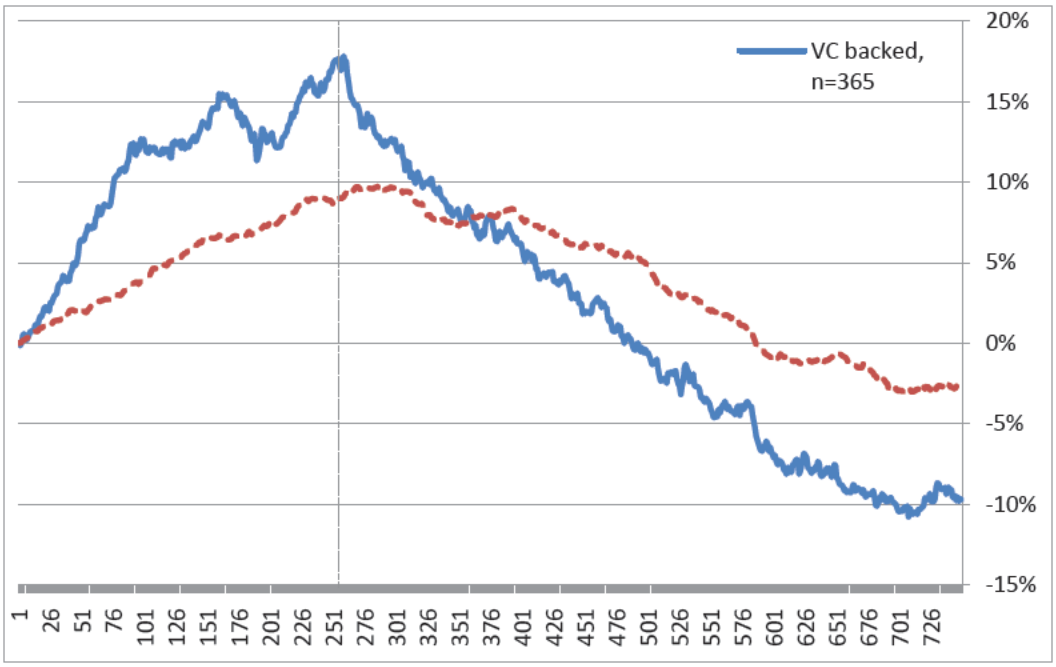

Figure 4a: Long-Run Performance (BHR) and Market Index – Whole Sample

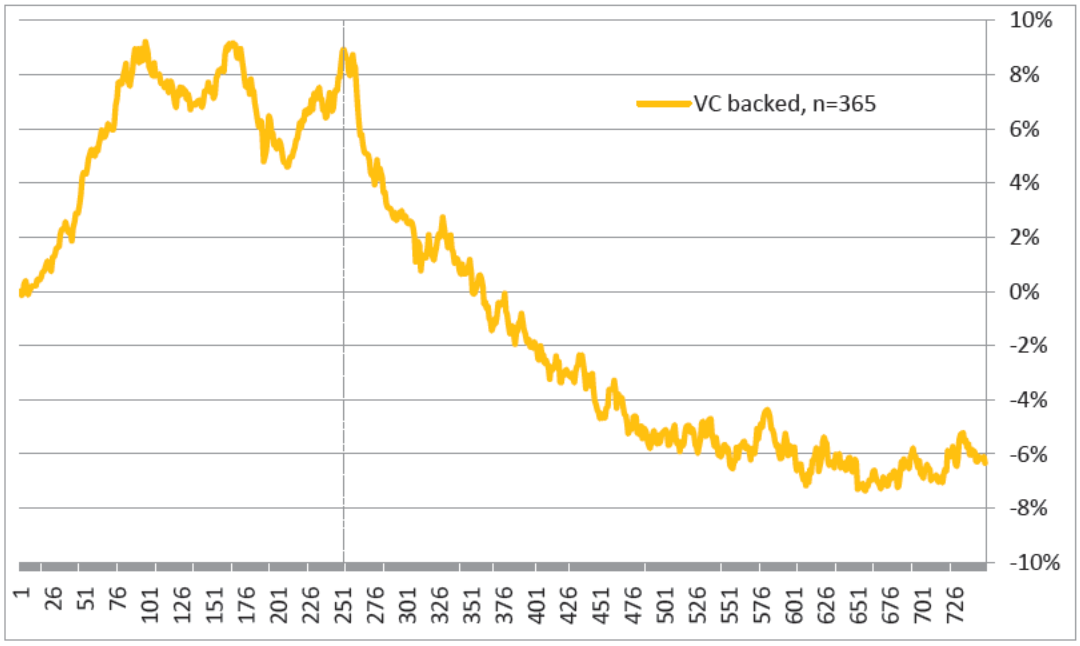

Figure 4b: Long-Run Performance (BHAR) – Whole Sample

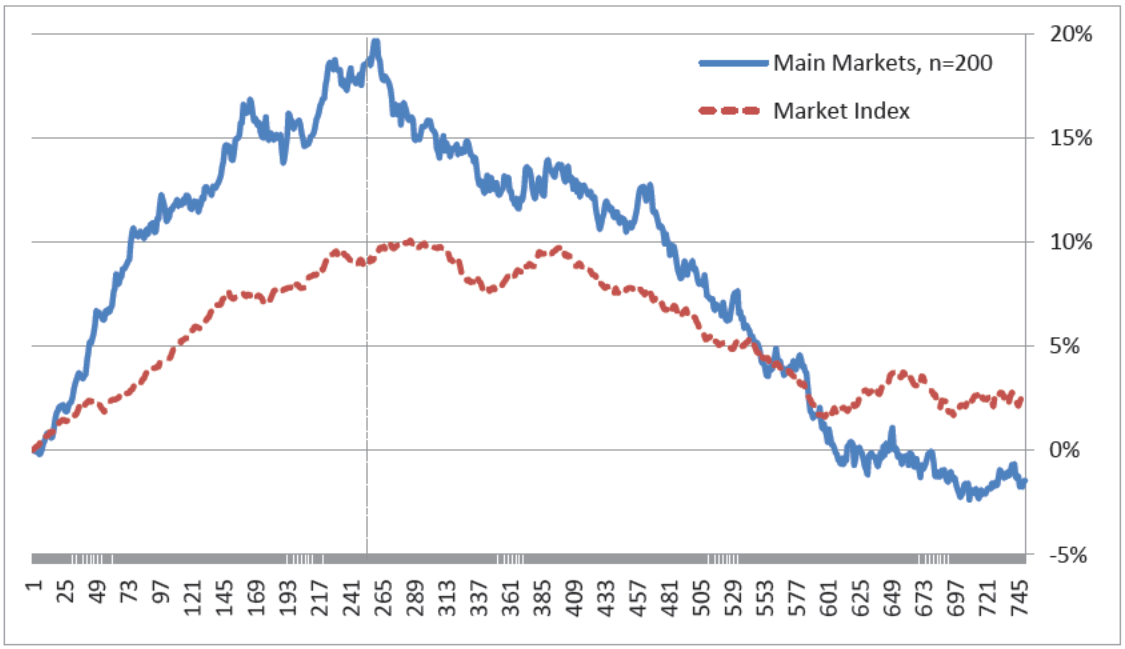

Figure 5a: Long-Run Performance (BHR) and Market Index – Main Market

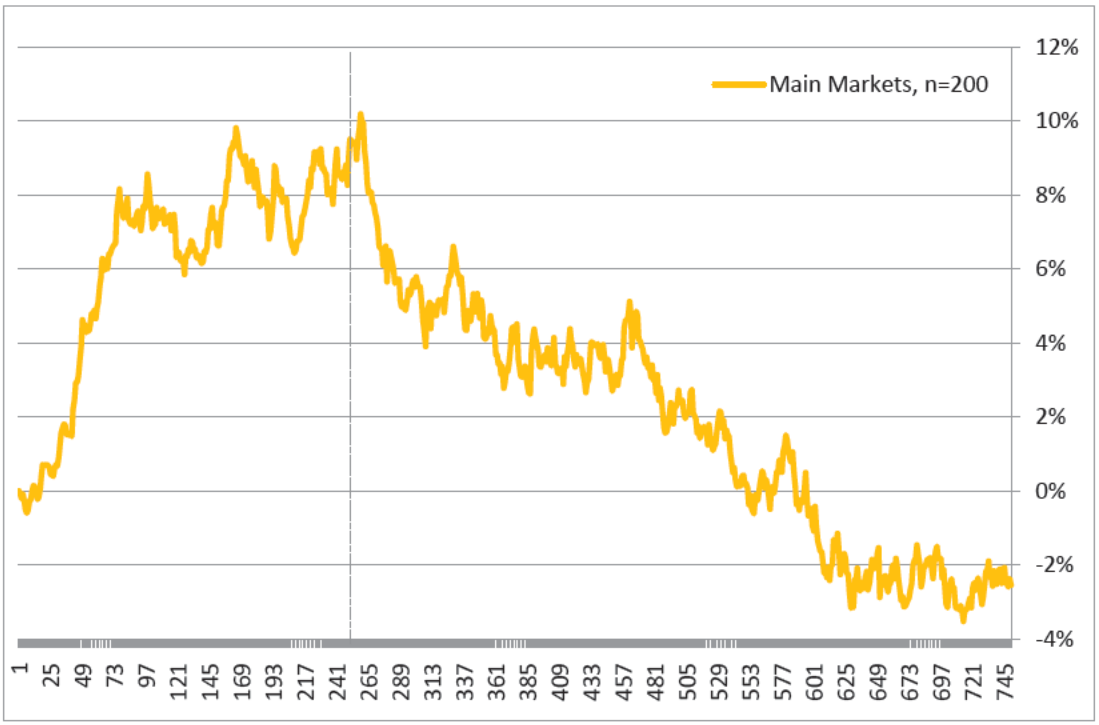

Figure 5b: Long-Run Performance (BHAR) and Market Segment – Main Market

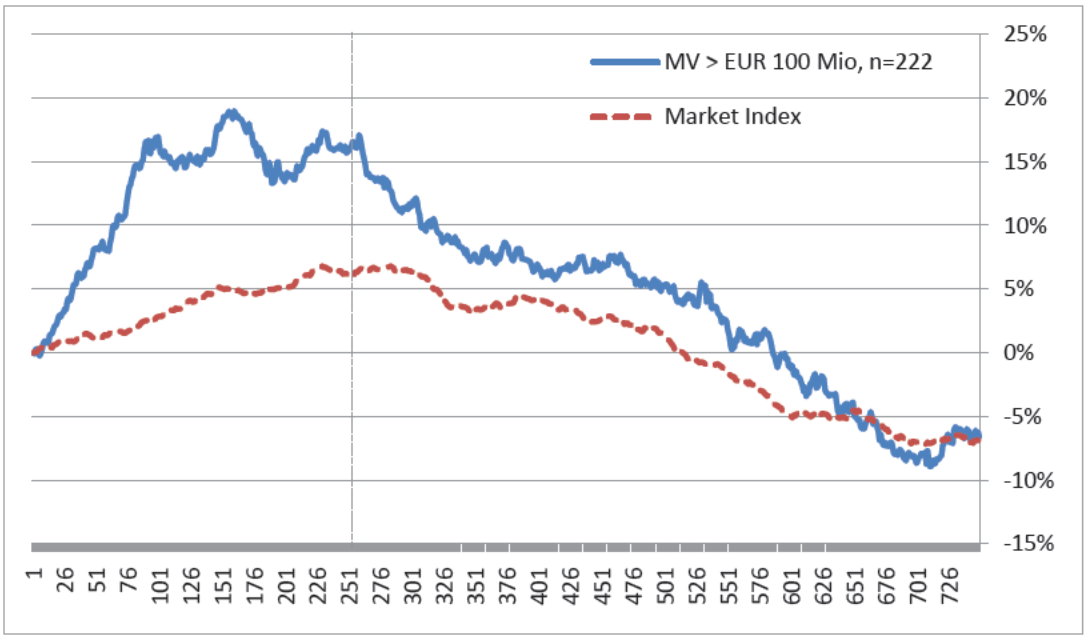

Figure 6a: Long-Run Performance (BHR) according to IPO Market Value at Offer Date (MV) and Market Index – Large IPOs

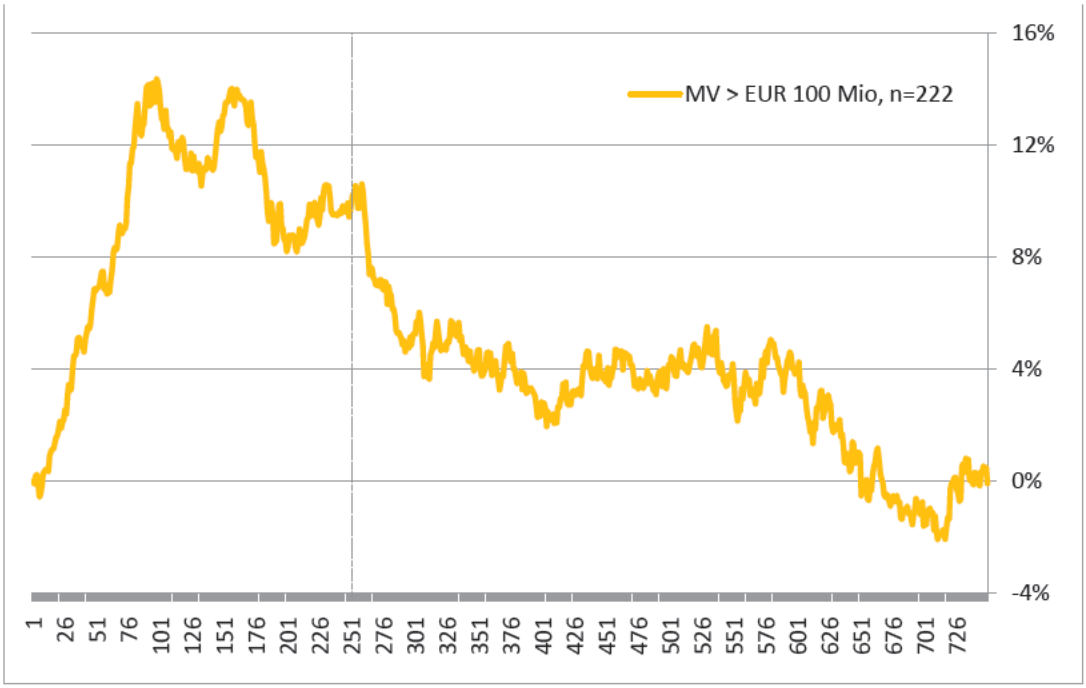

Figure 6b: Long-Run Performance (BHAR) according to IPO Market Value at Offer Date (MV) – Large IPOs

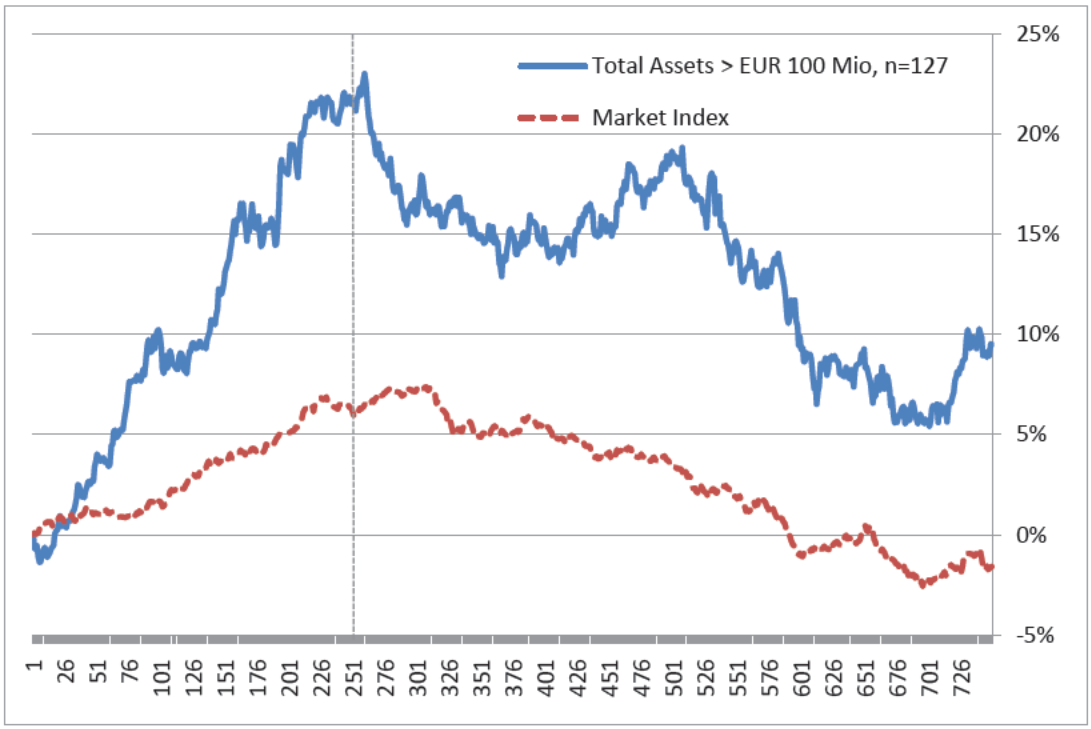

Figure 6c: Long-Run Performance (BHR) according to Book Value in Total Assets after one year and Market Index – Large IPOs

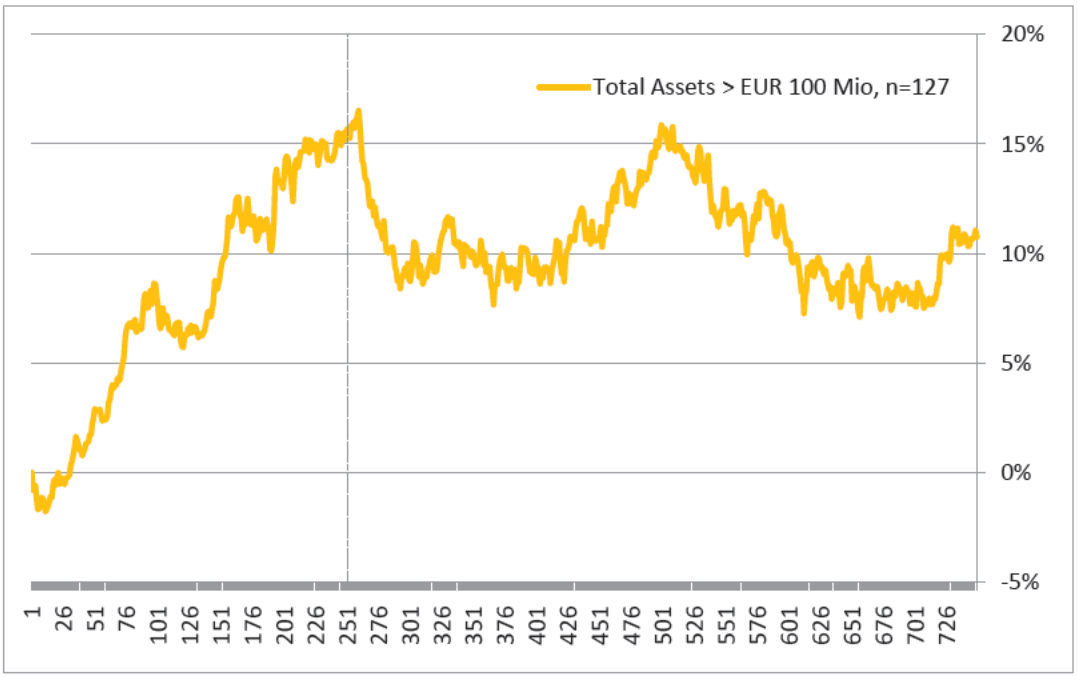

Figure 6d: Long-Run Performance (BHAR) according to Book Value in Total Assets after one year – Large IPOs

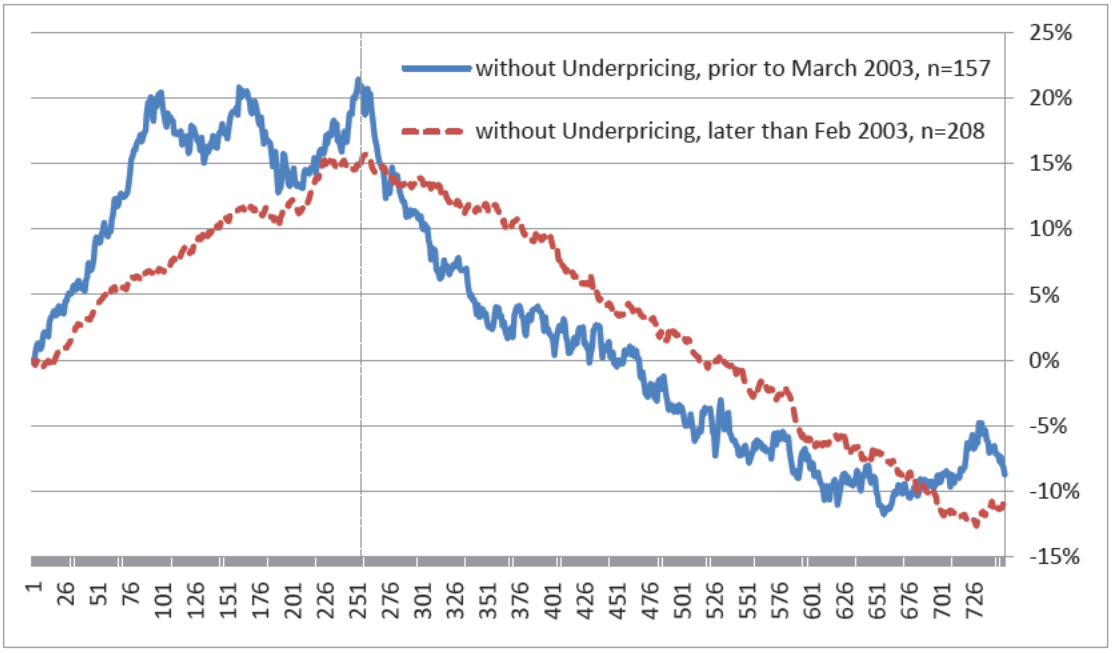

Figure 7a: Long-Run Performance (BHR) according to Two IPO Cycles – Without Underpricing

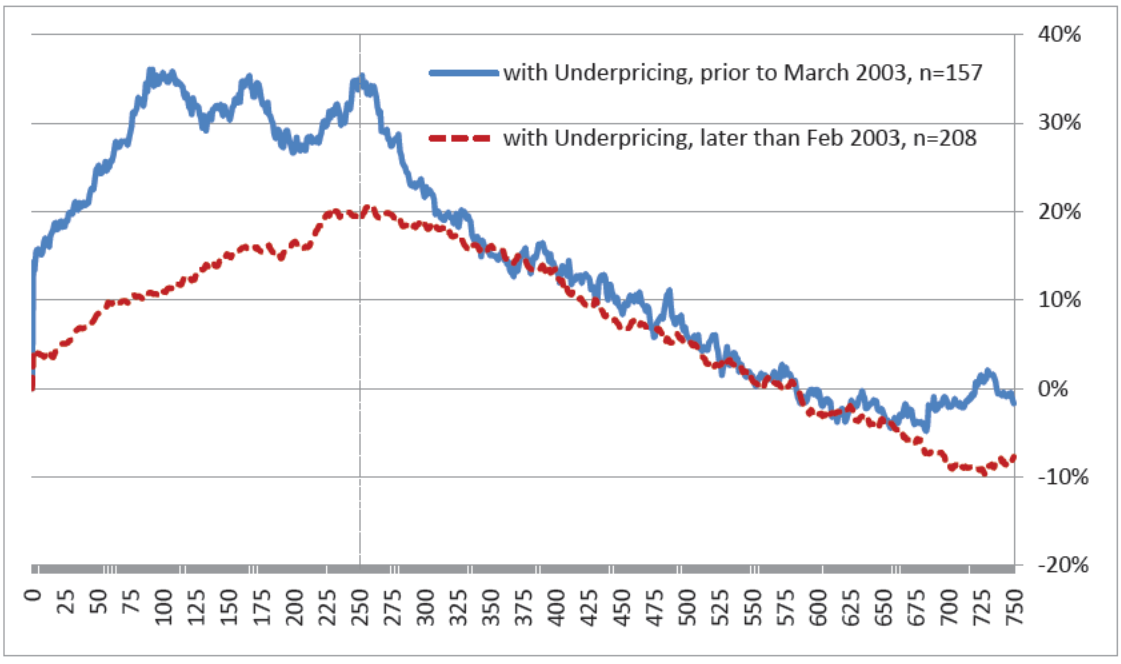

Figure 7b: Long-Run Performance (BHR) according to Two IPO Cycles – Including Underpricing

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Table 1: Summary Statistics and Tests of Undepricing

	n	Mean	Median	Std. Dev.	Skew.	t_{sa}	t
Underpricing							
Whole Sample	384	8.39%	0.74%	23.91%	5.02	12.28***	6.88***
Main Market	214	6.32%	0.71%	16.77%	3.91	8.03***	5.51***
Large – Market Value	235	9.32%	13.40%	26.66%	4.71	9.77***	5.36***
Large – Total Assets	131	6.54%	0.95%	19.53%	5.41	6.69***	3.83***

Table 2: Summary Statistics and Tests of Long-Run Performance

Trading Days	Mean	Median	Std. Dev.	Skew.	t_{sa}	t
Buy-and-Hold Abnormal Returns (BHAR)						
Panel A: Whole Sample (n=365)						
125	7.53%	-4.45%	63.45%	3.18	2.42**	2.27**
250	8.44%	-10.44%	91.32%	3.46	1.87*	1.77*
500	-5.20%	-25.03%	102.13%	3.45	-0.78	-0.97
750	-6.34%	-28.56%	100.50%	2.87	-1.01	-1.20
Panel B: Main Market (n=200)						
125	6.25%	-0.02%	51.82%	3.59	1.91*	1.71*
250	9.08%	-3.15%	77.57%	3.64	1.82*	1.66*
500	2.40%	-17.41%	97.43%	3.14	0.35	0.35
750	-2.55%	-21.46%	100.69%	2.74	-0.27	-0.36
Panel C: Large - Market Value (n=222)						
125	11.69%	-2.20%	69.66%	3.01	2.73***	2.50**
250	9.62%	-5.59%	76.83%	2.48	1.97**	1.87*
500	4.17%	-21.54%	109.27%	3.42	0.59	0.57
750	-0.09%	-27.89%	107.69%	3.02	0.02	-0.01
Panel D: Large - Total Assets (n=127)						
125	6.60%	-0.13%	56.49%	3.89	1.36	1.31
250	15.22%	1.80%	71.54%	1.92	2.50**	2.40**
500	15.86%	-7.36%	113.76%	3.55	1.66*	1.57
750	10.76%	-8.78%	100.42%	2.83	1.20	1.21

Panel 2

Corporations as Alternative Sources of Capital: New Models of Corporate Involvement in Venture Capital – Lessons from the Life Science Sector

Moderator: **Dr. Frank Landsberger**
Senior Managing Director
INKEF Netherlands Manager B.V.

Panelists:

Mr. Laurent Arthaud
CDC Entreprises

Dr. Hubert Birner
General Partner
TVM Capital

Mr. Darren Carroll
Vice President - Corporate Business Development
Eli Lilly and Company

Mr. Philippe Tcheng
Vice President – Public and Government Affairs France
Sanofi Aventis

Panel's background information:

Introduction

As traditional financial LPs turn their backs on venture capital, technology start-ups and VC funds must now look to alternative sources of capital. Corporations and their venture arms are one of them which is of particular importance as we witness a recrudescence of interest from corporations for this domain.

Corporate venturing has a particularly rich history in the Life Science sector and large pharmaceutical companies have been particularly active recently to renew their approach and develop new models. This panel will focus on two recent examples in this sector as interesting case studies which may shed some light on the current wave of corporate venturing more generally:

- Eli Lilly who developed both a corporate venture arm and a program of special partnership with independent VC funds. Darren Carroll oversees these two dimensions. One of these partnerships was developed with TVM Capital and consequently we also have on the panel Hubert Birner who is General Partner at TVM.

- The Innobio fund in France where 6 big pharmas partnered with CDC-Entreprises, a government fund of funds to set up an independently managed VC fund dedicated to Life Science. The pharma companies act both as LPs and strategic advisors to the fund and we shall discover what this means with Philippe Tcheng from Sanofi-Aventis who is the chair of the strategic committee which brings together the six corporate investors and Laurent Arthaud, General Partner of the fund.

Though these two cases are in Life Science, questions to the panel will go beyond bio-pharma specificities and address some of the more generic issues facing collaboration between corporations and independent venture capital in technology sectors.

Moderator

Dr. Frank Landsberger
Senior Managing Director
INKEF Netherlands Manager B.V.

Frank Landsberger is the Senior Managing Director of INKEF Netherlands Manager B.V. In his varied career in the US as well as in Europe, Dr. Frank Landsberger has acquired significant experience as a venture capitalist, start-up entrepreneur, academic and senior corporate manager.

Panelist

Mr. Laurent Arthaud
Deputy CEO
CDC Entreprises

Before joining the CDC Enterprises in 2006, Laurent Arthaud was President de Pharmavent Partners and before he was Vice President of Aventis Capital, capital investment group Pharmaceutical Aventis.

Ecole polytechnique, Ecole Nationale de Statistique and d' Administration Economique.

Dr. Hubert Birner
General Partner
TVM Capital

Before joining TVM Capital, he was Head of Business Development Europe and Director of Marketing for Germany at Zeneca. Hubert joined Zeneca from McKinsey & Company's European Health Care and Pharmaceutical practice. As a management consultant, he gained extensive experience in R&D management; marketing and sales; and joint venture structuring and business development. Dr. Birner was also an Assistant Professor for biochemistry at the Ludwig-Maximilians-University in Munich. In this capacity, he directed various research projects for large pharmaceutical companies.

Dr. Birner holds an MBA from Harvard Business School and a doctoral degree in biochemistry from Ludwig-Maximilians-University Munich, where he graduated summa cum laude. His doctoral thesis was honored with the Hoffmann-La Roche prize for outstanding basic research in metabolic diseases.

Mr. Darren Carroll
Vice President – Corporate Business Development
Eli Lilly and Company

Darren Carroll is vice president of corporate business development for Eli Lilly and Company, where he is responsible for all business development, venture capital and alliance management activities of the company. Prior to assuming his current role, he was vice president of new ventures for Lilly, which includes the fund groups Lilly Ventures and Lilly Asian Ventures, the first venture capital group of its kind in the pharmaceutical industry. Previously, he was the founding chief executive officer of InnoCentive, Inc., the first open-innovation business in the physical sciences, which he spun out of Lilly. Among other positions Darren has held at Lilly, he was the U.S. attorney for Prozac.

Darren has also served as senior vice president of RealMed, a venture-backed company based in Indianapolis, which created the first real-time health claims adjudication system. Earlier in his career, he practiced law with a large private law firm in New York and negotiated complex technology transactions for General Electric Company.

His education includes a juris doctor degree from Syracuse University College of Law. He also holds a bachelor's degree from Syracuse University and a master of public administration degree from the Maxwell School of Syracuse, where he is a member of the Board of Advisors. He has also served as a member of the board of directors for Lilly Ventures and Lilly Asian Ventures portfolio companies including Citic Pharmaceuticals, Novast Holdings, Hydra Biosciences, InnoCentive and GlobeImmune. Darren is chairman of the advisory board for the Indiana Future Fund and the INext Fund. He is a member of the BioCrossroads board of directors and its executive committee. Darren also serves on the investment committee of the Indiana Seed Fund.

Mr. Philippe Tcheng
Vice President – Public and Government Affairs
France
Sanofi Aventis

Philippe Tcheng is Vice president, Public and Governmental Affairs France within Sanofi since 2010. His responsibilities involve managing relations with the Government, the members of parliament and the Health Agencies in France. He supervises relations with international institutions and organizations based in Geneva (WHO, WIPO) and also insures the coordination of Sanofi's Public Affairs Offices in Brussels, Washington and Singapore.

He is member of the Board of directors and Vice%u2010president of the LEEM (equivalent in France to Phrma in the US, or the EFPIA in Europe), member of the Board of directors of "Paris Développement" (international promotion of Paris for foreign investments) and member of the Steering committee of the Economic Intelligence Chair at the Paris Dauphine University sponsored by the interministerial delegation for Economic Intelligence.

Philippe Tcheng chairs the Strategic Committee of the InnoBio Fund for 2011. This fund, dedicated to investments in biotechnology, was created in 2009 during the 4th Strategic Council of Health Industries, a shared initiative between the French Government and the industry.

Philippe Tcheng joined the pharmaceutical industry in 1989 and held various positions in different entities of Sanofi: product manager, Business Unit Director for France and Global, Global alliance Management.

Philippe Tcheng is a doctor in Medicine specialised in heart and blood vessels diseases and Member of the French Society of Cardiology. He holds a degree from « L%u02B9Ecole Supérieure de Commerce de Paris » (ESCP), a French Business School.

cdc entreprises

InnoBio FCPR

An investment fund devoted to mid-late-stage life sciences companies

GROUPE Caisse des Dépôts

fsi FRANCE INVESTISSEMENT

InnoBio : a unique partnership with the major pharmaceutical industries operating in France

Shareholders

- A €139 M funds, managed by CDC Entreprises
- 37% invested by the FSI (Fonds Stratégique d'Investissements)
- 63% invested by 9 pharmaceutical companies (French or with French activities):

SANOFI, GlaxoSmithKline, Roche, IPSEN, Lilly, Boehringer Ingelheim, Takeda Pharmaceutical Company Limited, Pfizer, NOVARTIS

Mission

- Launched during the CSIS (Conseil Stratégique des Industries de Santé) in october 2009.
- Aiming at supporting the development of the most promising life sciences start-ups towards an IPO or a strategic partnership with a pharmaceutical company.

Location

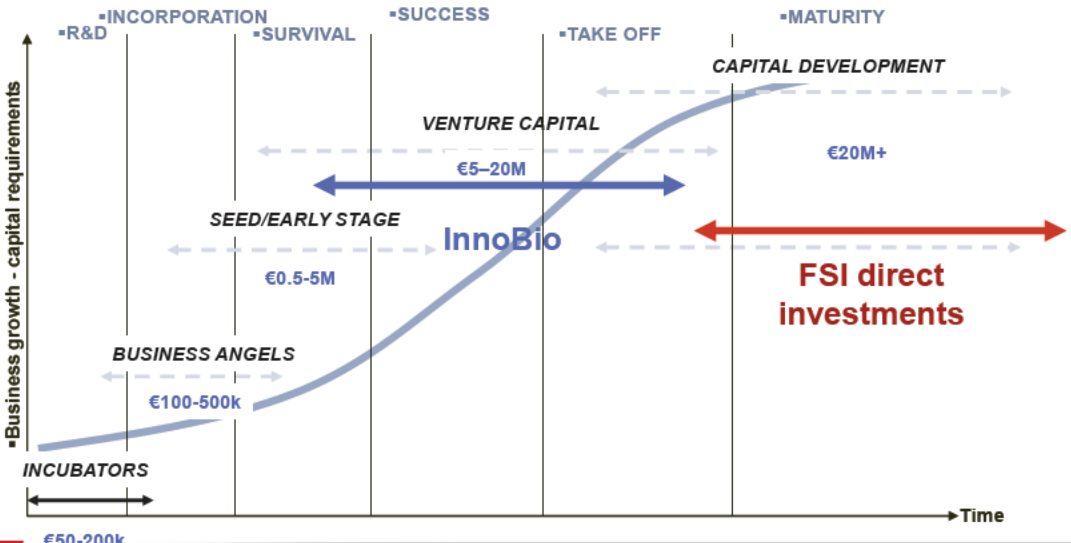
- France

Life Sciences Team
October 2011

GROUPE Caisse des Dépôts

Market opportunity

CDC Entreprises, FSI and their affiliates : investing all along the lifecycle of start-ups



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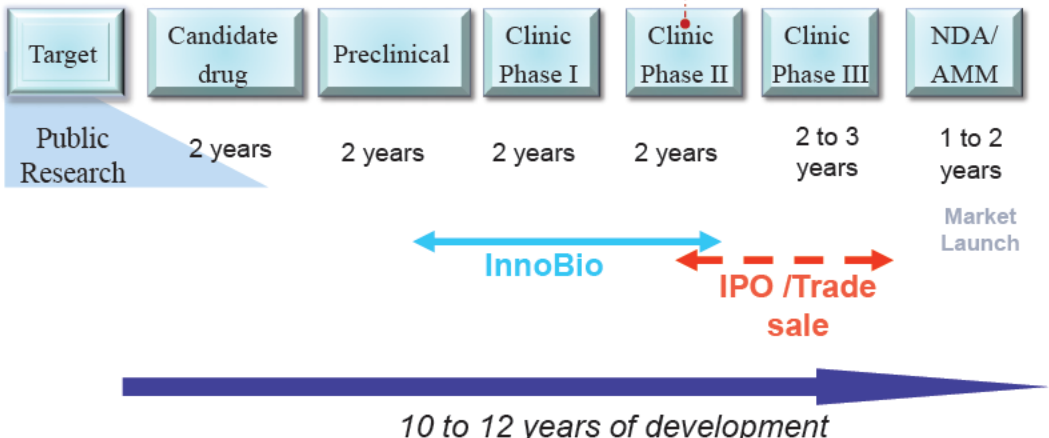
GROUPE Caisse des Dépôts

Market opportunity

FROM SCIENTIFIC RESEARCH TO DRUG, A LONG AND WINDING ROAD ...



cdc entreprises

GROUPE Caisse des Dépôts

InnoBio : Investment strategy

Build a balanced portfolio of +/- 12 (max 15) companies in the Life Science industry :

- Investment in equity or quasi-equity
- French companies, with a business of interest for French or foreign partners
- Minority shareholder, either as lead or co-lead investor
- Possibility of partnerships with the pharmaceutical industry
- Support the growth of the most promising companies until they are fully mature for an IPO or a major partnership
- CDC Entreprises/InnoBio to be represented on the Board of Directors
- Prudential ratio : maximum 10% of the fund commitments invested in a single company
- Average investment duration : 4 to 6 years
- Investment size : 3 to 10 M€

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GROUPE Caisse des Dépôts

noBio : Investment strategy

Targets

- SMEs developing biopharmaceutical products and able to develop and strike a strategic partnership with one or two drug companies.
- SME technology platforms, service science and technology (imaging, diagnostics, bio), which notably and demonstrably improve the productivity and effectiveness of R & D conducted by the pharmaceutical industry

Prefered field for investment : significant unmet medical needs

- **Oncology** : lack of efficient treatment for most cancers
- **Cardiovascular diseases** : high mortality related to different risk factors
- **Metabolic disease** : diabetes, epidemic obesity
- **Central nervous system** : disability and low quality of life for patients with Alzheimer or Parkinson disease.
- **Respiratory and allergic diseases**
- **Infectious diseases** : increasing virulence of bacteria and viruses
- **Vaccines**
- **Auto-immune and inflammatory diseases**

cdc entreprises

GROUPE Caisse des Dépôts

InnoBio : Deal flow and investments after 24 months

- **>200** companies screened.
- **7** investments performed by InnoBio within 24 months + 2 in process.
- **€31M invested**.
- **Half of the fund has now been committed**, taking into account the expected refinancing events for the companies already in portfolio.

INNOBIO Investments	Date	Amount
ADOCIA	nov-09	€6M
GENTICEL	feb-10	€3M
POXEL	juil-10	€5M
ART STENT	sept-10	€3,3M
SUPERSONIC IMAGINE	nov-10	€4,7M
DBV	dec-10	€6M
ADVICENNE PHARMA	apr-11	€3M
TOTAL		**€31M**

- **Almost every company that raised more than €5M** (29 in 24 months) in the field of life sciences has been met by InnoBio or the FSI.
- **Among the 19 rounds of financing above €10M** in the past 24 months, 12 involved either InnoBio, CDC Entreprises or the FSI.

Case study : InnoBio investment in Adocia

A €14M fundraising

- Adocia is a privately held French biotechnology company based in Lyon and incorporated in 2005. It is specialized in **protein delivery.** Adocia has created and developed a unique technology, BioChaperone™, to provide a spatio-temporal control of protein activity.
- **InnoBio invested €6M in Adocia** in a capital increase totaling €14M, with SHAM as a new co-investor.
- AGF PE, Bioam, SGAM and Viveris - its historic shareholders - also participated.
- This fundraising aims at **continuing the clinical development** of its products in the field of wound healing and vertebral fusion.

Case study : InnoBio investment in Genticel

A €13M fundraising

- Genticel is a privately held French biotechnology company based in Toulouse and incorporated in 2002. It develops a **vaccine for the prevention and treatment of cervical cancers linked to the papillomavirus (HPV).**
- **InnoBio invested €3M in Genticel€** in a capital increase totaling €13M, with AGF PE and SGAM as new investors.
- EDRIP and IRDI - its historic shareholders - also participated (both of them are funds affiliated to CDC Entreprises).
- This fundraising aims at **continuing the clinical development of its lead product into phase I/II a.**

Team

	**Laurent Arthaud** ▶ 6 years VC (Genavent, InnoBio) ▶ Raised €170 M (Genavent, InnoBio) ▶ Board seats : Scynexis, Adocia ▶ X, ENSAE		**Chahra Louafi** ▶ 11 years Private Equity (Fund of funds, VC) ▶ Board seats : DBV, ART, Inserm Transfert Initiative, Capintech ▶ DEA INA-PG, Dauphine
	**Philippe Boucheron** ▶ 15 years VC (BioCapital , Bioam, InnoBio) ▶ Raised ~€65 M (BioCapital II, Bioam I& b) ▶ Board seats : Aureus, IntegraGen, Ademtech, SuperSonic Imagine, ART Stent ▶ MBA Insead		**Olivier Martinez** ▶ 10 years VC (Bioam, InnoBio) ▶ Board seats : Cytheris, Fab Pharma, Poxel, Genticel, Innate Pharma, Cerenis ▶ ENS, Ph.D.
	**Marie-Laure Garrigues** ▶ 8 years VC (FCJE & Others) ▶ Board seats : EOS Imaging, Cytheris ▶ Pharm D.		**Thibaut Roulon** ▶ 6 years VC (Bioam, InnoBio) ▶ Board seats : TxCell, Poxel ▶ Ecole Centrale, Ph.D.

TVM | Capital

TVM Life Science

Panel Discussion Quebec City Conference 2011

Dr. Hubert Birner

TVM Capital Life Science – a 25 Year Track Record

TVM Capital History

- Leading European investment firm. Founded by Siemens AG, Germany, in 1983.
  - >260 deals in 25 years
  - €1.3bn ($1.7bn) raised in six fund generations
  - Long-standing pan-European and transatlantic experience

TVM Capital Life Science Track Record and Team

- Assets under Management Life Science Practice €820m ($1.2bn)
- 115 Life Sciences Venture and Growth Investments
- 80 total exits, 35 active portfolio companies
- 37 IPOs on Nasdaq, London, Frankfurt, Zurich, Vienna
- Network of more than 100 international pharma experts
- Continuously rated as top tier life Science Venture Capital Group in Europe and the USA
- Steady state rate of about 800 deal opportunities p.a.
- Team of 10 professionals in Munich & Montreal

Source: TVM Capital

The "Formulations" of Corporate Venture Capital

Direct Investment in Life Science Companies

1 Corporate Venture Funds (equity only)

2 Corporate Venture Funds (equity for licenses)

3 Corporate Venture Funds (equity for services)

Investment in Independent General Partners

4 Active Investment in Venture Capital Funds (active LP)

5 Passive Investment in Venture Capital Funds (passive LP)

6 Option Funds – with one or more Corporate Investors as LPs

Source: TVM Capital

Where "corporate" money can help "independent" money

COLLABORATION IMPROVES CHALLENGES OF VENTURE MODEL

Capital Efficiency	- Overinvestment in companies - Drug development "just in case" - Wrong management incentives
Capital Velocity	- "Company exits" take long 6-8 years - "Assets exits" tend to be faster - Other alternative assets (non Life Science) offer holding periods 2-4 years
Asset Quality	- Asset selection / efficient asset development pivotal - Major learning curves of new teams - Smart development partnerships as a tool

Source: TVM Capital

Key Summary Messages

Innovative collaborative models are required to bridge the financing in Life Science

Integrated approaches allow better decision making with the potential buyer in sight (not at the table)

Collaborative approaches can provide downside protection for companies and investors

Other than common belief, collaborative approaches can increase upside potential for companies and investors

Source: Eli Lilly and Company

TVM|Capital

Thank You for Your Attention

www.tvm-capital.com

Panel discussion

QCC Public Policy Forum

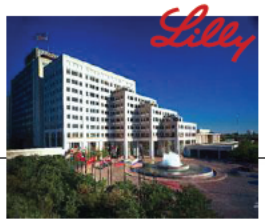
Darren J. Carroll

October 24, 2011

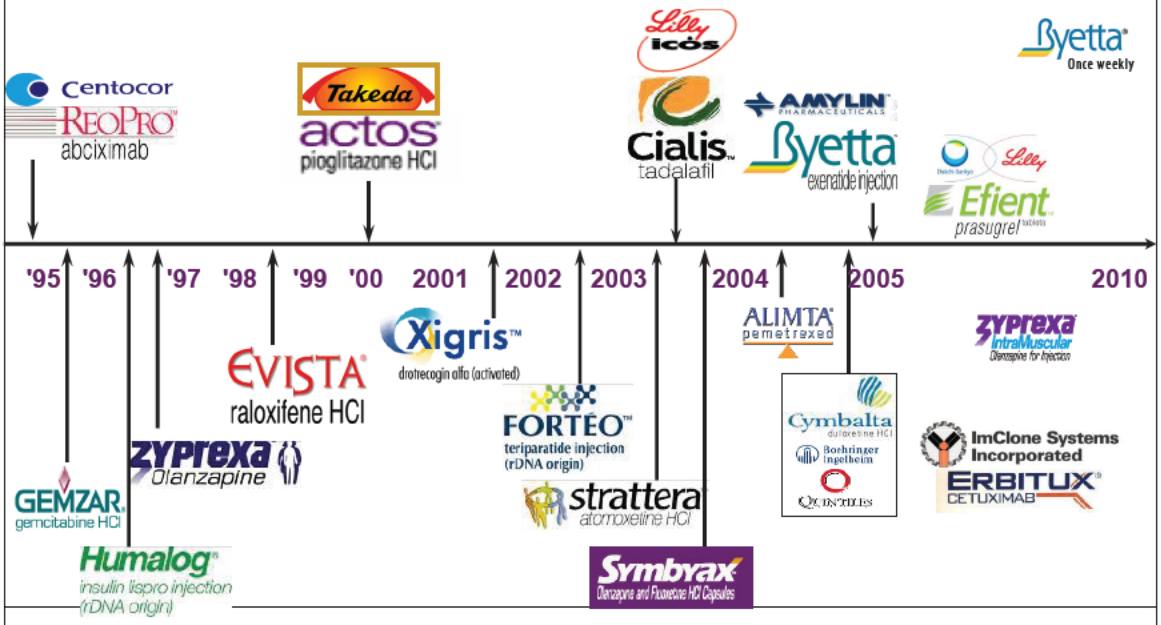
Lilly
Answers That Matter.

About Lilly…

- 10th largest pharmaceutical company in the world
  - Founded 1876
  - Approximately 38,000 employees worldwide (about 50% OUS)
    - Approximately 7000 employees engaged in research and development
  - R&D as a percentage of sales approx 19 %
- Headquartered in Indianapolis, Global in Reach
  - Clinical research conducted in 50+ countries
  - Research and development facilities located in 8 countries
  - Manufacturing plants located in 13 countries
  - Products marketed in 125 countries
- Our focus is innovation
- Our partnering philosophy dates back 80+ years with University of Toronto insulin collaboration



Lilly's Innovation Track-Record



Evolving Role of Venture Capital

- Nearly every major pharma company has a CVC
- Life science VC industry faces existential threats and must evolve, as pharma is evolving
- Symbiosis: pharma depends on predictable stream of high quality external innovation, VCs depend on returns for liquidity events
  - VCs must have better insight into what customers want
  - Pharma must have objective views on emerging technology
- Challenge for marketplace: recognize that VC must evolve and that pharma has a legitimate and important role in that evolution (co-evolution?)

STRATEGIC HEALTH INDUSTRY COMMITTEE
(CONSEIL STRATEGIQUE DES INDUSTRIES DE SANTE - CSIS)

THEMES AND MEASURES

1. Investment funds in the field of health related biotechnologies
2. Jobs and training policy
3. Combating counterfeit medicinal products
4. Increasing research partnerships in the biomedical field
5. The « Alliance Nationale pour les Science de la Vie et de la Santé » as point of contact for the manufacturers
6. Development of bio-production
7. Incentives for proprietary medicinal product production
8. Export sales declaration and national price territoriality
9. Epidemiology
10. Better access to health products

Sheet 1

Creating an investment fund for health biotechnologies

In order to encourage the development of French biotechnology expertise by helping enterprises that are in the development phase, the state and most of the pharmaceutical companies established in France have decided to set up an investment fund for innovative health biotechnology companies (bio-medicinal products and technological platforms) aims to compensate for the investment deficits resulting from the economic crisis. The fund will have over 100 M€ available and will be jointly funded by the Fonds Stratégique d'Investissement (strategic investment fund – FSI) and French and international pharmaceutical companies

Context and stakes

France has around 400 health biotechnology companies, employing approximately 20,000 people, which are a major source of innovation for the pharmaceutical industry. The development of a network of biotechnology companies offering either products or R&D services is in fact a major attraction over the long term in establishing and maintaining the health industry in France – 100,000 direct jobs. Because they are high-tech companies, their development requires major investment. In France in 2007, investment in biotechnology enterprises was 700 M€: 200 M€ from venture capital and 500 M€ raised on the stock market. The current crisis has severely reduced fund raising capacities on the stock market and is beginning to affect risk venture capital investment. The crisis related investment deficit has been estimated at between 300 M€ and 600 M€ for 2008. It has particularly impacted companies trying to raise funds for the first time, with venture capital investors concentrating on the investments they already have in their portfolios. State intervention is needed to stimulate investment in these companies, encourage their development and prevent companies with a strategic value being preyed upon.

Measure

The purpose of the fund will be to make investments in the order of 5 to 10 M€, including taking the role of lead fund, even if its contribution must represent a minority holding in the company equity. It will follow its investments up to the point of introduction on to the stock market or the sale of the company. It will help in line with market conditions with regard to enterprise valorization and dilution.

Established in the framework of a partnership between French and international pharmaceutical enterprises and the state in the form of a contribution to the Fonds Stratégique d'Investissement (FIS), the fund, with 100 M€ available, will offer assistance in the venture capital segment in the field of human health and in particular in bio-pharmacy. It will be aimed at SMEs that are directly or indirectly involved in developing innovative health products and in life sciences.

The fund will invest directly in companies that are potentially profitable, either alone or jointly.

Reciprocal undertakings

Governance methods were established in partnership between the FIS and the manufacturers with a view to signing the instrument creating the fund during the CSIS meeting.

Sheet 2

Jobs and training policy

The health industry is confronted with economic, technological and regulatory changes that will affect both their organization and jobs. R&D, production and marketing/sales staff may be concerned. The CSIS wishes the implementation of the mission entrusted to Professor Manuel Tunon de Lara, President oh the University Bordeaux II on range of training available, This mission, conducted in partnership with the players and aimed at prospective management of jobs and competencies that will enable between three and five bio-health training centers of excellence to be set up along with a virtual resource centre for health industry activities.

Context and stakes

The health industry sector is experiencing major changes that require new competencies at a time when it is increasingly difficult for young people to enter the workplace.

The state must support anticipatory management of jobs and prepare for the activities and talents that will be needed tomorrow by implementing measures that take account of the qualitative and quantitative developments in the job market, training related to the anticipated competencies and measures to support job mobility.

The quality of French life and health sciences education is recognized and should be supported. However, adapting training courses to the job market means breaking down the barriers between courses and encouraging multidisciplinary approaches. To acquire these multiple competencies, research and training platforms are required. They will bring together high level research laboratories, infrastructure and equipment as well as large and small life and health sciences companies. This organization will strength France's position in relation to world competition.

Preparing for new activities and the talents of tomorrow means bringing together enterprises and universities and improving the visibility of the range of courses available.

The measures

- Continue, in partnership with all players, to identify the academic and professional training required (introductory training and life-long training) and anticipate needs in terms of jobs and retraining and identify new types of jobs.
- Give special support to the creation and development of employer groupings in biotechnology labor catchment areas which will enable enterprises to share experienced staff and provide earlier availability of the critical competencies required for their development.
- develop training alternating et support experiments such as l'école des biotechnologies de Grenoble or alternate training in University de Bordeaux II
- Help develop between three and five multidisciplinary training platforms around an industrial, academic and health network
- Set up a "resource centre or virtual institute for health industry activities", making it a national benchmark in the field of life science industries in order to improve the clarity of training courses and the visibility of industry's requirements.

Reciprocal undertakings

The state and manufacturers,following the conclusion of the mission Valérie Pécresse entrusted to Professor Manuel Tunon de Lara, president de Bordeaux II, undertake to organize the implementation of his recommendations, in particular setting up the "resource centre or virtual institute for health industry activities",

The state and the manufacturers undertake to jointly fund the life and health sciences virtual resource center.

The state and the manufacturers will identify the training platforms and establish the objectives and joint resources for training as well as methods for state health service contracts.

Sheet 3

Creation of an operational multidisciplinary structure to combat counterfeit medicinal products

France will be setting up an operational multidisciplinary structure, of the central office type, with the legal power to conduct investigations into counterfeit medicinal products and with the power to instruct legal proceedings.

Context and stakes

Counterfeiting medicinal products and medical devices is a threat not only to public health but also to the economy and image of the sector (10% of medicinal products in the world are counterfeit). In 2006 around 3 million counterfeit medicinal products were seized by European Union customs officers. The quality of the French distribution system protects our country but the internet should not be underestimated as a means of bringing in counterfeit products. In fact according to the World Health Organization, 50% of illegal sales on the internet are counterfeits.

Combating counterfeits is currently scattered between different structures (national police force, customs and excise, criminal investigation departments, etc).

The measures

To improve measures to deal with counterfeits, the coordination of these authorities needs to be improved within an operational structure that has investigative and penal powers.

Furthermore, it would seem necessary to set up suitable training for the people that will employed to deal with counterfeit medicinal products.

Reciprocal undertakings

- France will be setting up an operational multidisciplinary structure, of the central office type, with the legal power to conduct investigations into counterfeit medicinal products and with the power to instruct legal proceedings.
- In the framework of prosecuting magistrate courses, specific training modules will be introduced to give them a better understanding of counterfeiting and help them identify the risks, in particular for patient health.
- In the next few weeks, Mr CSIS, responsible for implementing the undertakings of the fourth CSIS meeting, will bring together the administrations of the various ministries concerned in order to establish the resources available to this new structure and its missions.

Sheet 4

Increasing partnership research in France in the biomedical field

In order to support health innovation, which is increasingly being fed by collaboration between manufacturers and research laboratories, both academic and private, the manufacturers undertake to double their investment in these partnerships by 2012 and the Government undertakes to continue to simplify administrative procedures for the holders of the intellectual property rights attached to these discoveries and to maintain the same level of public support for health related partner research projects

Context and stakes

The ten top world pharmaceutical groups devote 16% of their turnover to R&D: public and privately funded research are complementary. In order to encourage the major industrial research centers to draw from the breeding ground of public research and attract international researchers from the pharmaceutical industry and SMEs, there are three essential conditions: to simplify technology transfers, support competitiveness centers, increase the visibility of French research and the mobility of researchers. The recent publication of the "hosting" decree relating to intellectual property rights management[1] was a first step in moving towards simplifying valorization.

The measures

- To continue to simplify valorization, (in particular during the phase of negotiating contracts transferring industrial and technological property rights).
- To increase support for biomedical competitiveness centers (co-ordinate their work on each theme in order to increase their visibility and networking, encourage major enterprises to actively participate in their activities by associating them more closely with governance, develop partnerships between manufacturers of medical devices and competitiveness centers, etc)
- To encourage public/private gateways (encourage mixed careers, develop training programs for research and industrial development of medicinal products, integrate the health industry and in particular their tenders in the ARIANE portal that has been recently opened by the ANR, etc)
- To promote French infrastructure and teams in the international decision making centers of major groups with research centers of excellence.
- To breathe new energy into clinical research in France by enhancing its image by involving patient associations and informing the general public, allowing hospital study related contracts to be managed by foundations authorized to receive private funds and improving the co-ordination of committees for the protection of persons, etc.

Reciprocal undertakings

Overall, partner - based research undertaken in France will double in three years on the basis of the methods that were subject to an undertaking signed during the meeting

The state undertakes:

- to continue its efforts in terms of professionalizing, rationalizing and pooling valorization and technology transfer activities.
- to continue its support for the Alliance pour les Sciences de la Vie et de la Santé, the ANR and the competitiveness centers in relation to governance and R&D activities.
- to continue to reorganize publically funded research in particular within the Alliance pour les Sciences de la Vie et de la Santé and within the hospital system by including manufacturers in preparing the reforms.

[1] Decree no. 2009-645 dated 9 June 2009 relating to management of the intellectual property rights to the results of research undertaken by state employees or public officers between public entities

Sheet 5

Make the Alliance Nationale pour les Sciences de la Vie et de la Santé the point of contact for manufacturers

In order to increase the attractiveness of and partnerships between public research and the health industry, the CSIS has decided to set up strategic partnerships between the health industry and members of the Alliance Nationale pour les Sciences de la Vie et de la Santé, with one single representative.

Context and stakes

The Alliance Nationale pour les Sciences de la Vie et de la Santé now brings together the principal French research institutions involved in this area (Inserm, CNRS, CEA, Inra, Institut Pasteur, Inria, IRD, Conférence des Présidents d'Université, Conférence de Directeurs Généraux de CHU). It offers new capacities in terms of strategic analysis, programming and research visibility, organized within ten multi-organization themed institutes (instituts thématiques multi-organismes - ITMO), functional research coordination bodies. The ITMOs have the objective of establishing a visible and clear inventory of French life and health science research providing the opportunity for strategic analysis and new programming and to improving the coordination of operational implementation.

This means of structuring public research provides an opportunity for establishing strategic partnerships with the health industry. The success of the day organized on 5 June 2009 at Hôtel Marigny, in partnership with the LIR, demonstrates the importance of this organization which puts scientific issues before institutional concerns. There was even a symposium conducted in collaboration with the LEEM recherché, l'Inserm and la Fondation Alzheimer on 18 september. The contacts established during the meeting on 5 June demonstrated the real attractiveness of French research with its quality, the appropriateness of the research topics to industrial development projects, favorable tax incentives (research tax credit CIR). A decisive factor in competitiveness in the face of international competition will be the responsiveness of our research network and its capacity to rapidly conclude strategic partnerships with industry.

Recent regulatory provisions have simplified the management of intellectual property rights between universities ad research organizations. In addition the mandates for representation, negotiation and managing partnerships between research players need to be simplified.

The measures

The following measures have been put forward:

- To give the President of Inserm the authority to represent and manage the Alliance Nationale pour les Sciences de la Vie et de la Santé, in particular with regard to establishing strategic partnership protocols between manufacturers and the Alliance pour les Sciences de la Vie et de la Santé
- Under the auspices of the "heath technologies" ITMO, constitute a permanent coordination committee including members of the Alliance pour les Sciences de la Vie et de la Santé and their valorization units in order to implement and monitor partnerships
- Through the valorization committee, provide support and specific expertise in life and health sciences for setting up and developing regional valorization companies
- To establish a map of laboratories under each major theme and organize, in partnership with industry, R&D speed dating sessions on the same pattern of meetings of June 5 and September 18, 2009 on the neurosciences
- To set up a single portal for promoting French research and exploring strategic partnerships

Reciprocal undertakings

- The members of the Alliance undertake to formalize the representation and management mandate entrusted to the President of Inserm

- The manufacturers will set up an organization that will interact with the Alliance pour les Sciences de la Vie et de la Santé and will integrate all dimensions of the health industry (medicinal products, medical devices, biotechnology, etc).

Sheet 6

Developing bio-production

In order to contribute to the development of biotechnologies in France, the state wishes to encourage the development of world class sites, enabling innovative enterprises to start bio-production for clinical trials and then for commercial batches. The availability of training and supervisory services will encourage their development. The state has decided to support opening up these sites to small and medium sized biotechnology companies through calls for projects for biomedical competitiveness centers in the framework of the single inter-ministerial fund, which covers all state aid for competitiveness centers.

Context and stakes

Biotechnologies are essential in driving innovation in the life sciences industry. They are involved in the design and development of medicinal products, developing medicinal products with the assistance of reactive agents produced through genetic and protein engineering as well as in the production of medicinal products from living organisms.

Although France, the n° 1 European medicinal product producer, has a strong foothold in producing certain biotechnology products (vaccines, insulin, etc) it is virtually absent in other fast developing segments. Production is principally located in Europe (Germany, United Kingdom, Ireland), Asia (China, Singapore), Israel and the United States. The fact that France is lagging behind is more due to a failure in organization than an industrial deficiency.

The measure:

Relying on the biomedical competitiveness centers, create two or three bio-production pharmaceutical establishments in France that have the capacity to produce clinical batches and commercial batches with a view to increasing European production capacity for the world market.

The sponsor (enterprise or ad hoc grouping) behind the industrial project should make a substantial contribution to financing and opening up the site to manufacturing orders, following the example of the Sanofi-Aventis Group which is planning to invest 200 M€ as part of restructuring its site in Vitry sur Seine (Val de Marne).

Reciprocal undertakings

The manufacturers present undertook to ensure that other initiatives of the same type see the light of day.

The state will encourage the development of these sites and opening them up to small and medium sized biotechnology companies as part of calls for projects and innovation platforms in the competitiveness centers. The state and the Caisse des Dépôts have therefore jointly put out a call for projects in order to speed up the establishment of innovation platforms, if they present a strategic interest for the competitiveness centre and if their emergence meets a significant need for enterprises. An amount that could be as much as 35 M € per year will be allocated by the state to all the projects that are selected. The bio-production sites may be eligible for this type of assistance.

Sheet 7

Industrial changes
Incentives aimed at the business of manufacturing proprietary medicinal products

In such a way as to allow sub contracting pharmaceutical establishments throughout Europe that make proprietary drugs and in particular generic drugs to be maintained, agreements between pharmaceutical enterprises holding the intellectual property rights to a proprietary drug and sub contractors will be encouraged. These pharmaceutical enterprises will be able to grant sub contracting pharmaceutical establishments the right to begin manufacturing operations before the rights attached to a brand name drug expire.

Context and stakes

Currently one packet of drugs in five sold in France contains a generic product. This figure will increase over the next few years. However, this manufacturing and subcontracting activity is increasingly frequently undertaken by companies that are located in other countries.

These relocations are in part due to the differences in national laws relating to the focus and scope of the concept of counterfeiting; some states authorize the manufacture of generic drugs before the intellectual property rights protecting the brand name drugs have expired. If this production leaves our country, nearly 5,000 jobs will be potentially under threat

The measure

Pharmaceutical companies holding the intellectual property rights to a particular brand name drug will, on a voluntary basis and in accordance with the provisions of the intellectual property code, be able to grant sub contracting pharmaceutical establishments the right to begin manufacturing operations before the rights attached to the brand name drug expire. 48 hours before the rights of the brand name drug laboratory expire, sub contractors will be able to release batches and will be in a position to deliver orders immediately after the rights have expired.

Reciprocal undertakings

The conditions, procedures and means of applying this article will be specified and defined in an addendum to the “state / industry” framework agreement (Accord-Cadre), which will be signed when the CSIS is held.

Sheet 8

Export sales declarations and territoriality of national prices

In relation to medicinal products for export, the state supports the practice of setting different prices to those resulting from price regulation in France. Concerned about health safety, it will put forward a system that will improve the identification of cross border trade.

Context and stakes

Heath safety issues mean it is important to monitor intermediaries that wish to benefit from the right of free circulation in relation to medicinal products. The possibilities for counterfeits being sold at this time and the risks of stock shortages in low price countries have recently led community and national authorities to consider that measures to organize or establish distribution quotas that do not affect parallel export rights are legitimate.

Such a measure would improve the traceability of medicinal products as a result of having more accurate information about the destination of the drugs sold as declared by the wholesalers, and would improve health safety.

The measure

In adherence with the European competition laws, a legislative change to the French public health code will be put before Parliament in such a way as to authorize the practice of setting higher prices for medicinal products for export than would result from price regulation.

Reciprocal undertakings

National price regulation will now only apply to sales on the national market.

It will be added to with an undertaking from manufacturers and wholesalers that they will take all the necessary measures to ensure the French market is supplied and that they will identify cross border trade.

Sheet 9

Developing Epidemiology in France

In order to reconcile public health requirements and the needs of the industry in respect of research and patient care, the CSIS has decided on a number of measures that will contribute to the development of effective epidemiological tools.

Context and stakes

Epidemiology allows populations and diseases to be observed and hypotheses in relation to decisive health factors and the development of pathologies to be produced. It therefore underpins basic research by opening new areas of development for therapies that are better suited to individuals but also provide useful information in clarifying health policy decisions and in optimizing rational patient treatment. It is increasingly essential to clinical research, making it possible to target patient recruitment for clinical trials and identify at risk patients, not only in relation to medicinal products but also in relation to medical devices.

In France setting up efficient, long term tools will speed up the development of knowledge, expertise and partnerships in the field. Epidemiology courses exist (in Paris, Bordeaux, and Nancy) but they are inadequately promoted, in particular to non-medical students, and need to improve their international visibility.

Measures:

Five measures have been proposed:

- To create a portal describing the content of existing private and public health databases and cohort studies (nature of the data, contact details of the holders, conditions for access) in line with the legal and regulatory provisions, in particular in terms of intellectual property rights and data protection. Access to these databases will make it possible to produce specific analyses that will more effectively identify the target populations for particular medicinal products, as well as the risks linked to their use (the analysis of a specific cohort has thus identified women that would most benefit from an osteoporosis treatment; a cohort of very premature babies made it possible to study the long term consequences of the use of analgesics)
- To define management methods, means of finance and harmonized rules of access to the various health databases. The database of those covered by national health insurance includes information about care consumption and medicinal products as well as data on pathologies through hospital stays and chronic diseases and is particularly interesting. It is unique in Europe making pharmaco-epidemiological studies possible. The means by which manufacturers will be able to access this database will be established.
- To develop one or more general epidemiological observatories and set up new long term observation systems. Access to the existing databases does not provide answers to all the questions posed about new medicinal products, notably in relation to their use, effectiveness and side effects (the CNAMTS database does not include information about the pathology outside hospitalization). It is therefore necessary to set up on or more observatories relying in particular on the existing cohorts such as “Constances”, which plans to monitor 200,000 people in the national health insurance scheme
- To map existing epidemiological training courses and promote actions required to cover needs.
- To secure eligibility for research tax credit (Crédit d’impôt recherché - CIR) for epidemiological studies, excluding those ordered by the authorities and that are obligatory and for which the CIR is no incentive.

Reciprocal undertakings

- In the framework of the Alliance Nationale pour les Sciences de la Vie et de la Santé, the state undertakes to put in place the “Epidémiologie France” portal.
- The manufacturers undertake to contribute, including financially, in partnerships that will allow major cohort studies and observatories to be set up.

- Leading the development of epidemiological observatories will be entrusted to the Alliance Nationale pour les Sciences de la Vie et de la Santé.
- The map of epidemiological training courses will be produced by the French public health school (Ecole des Hautes Etudes en Santé Publique - EHESP) in co-operation with doctoral schools in the universities.
- The state will formalize the rules of eligibility for research tax credit (CIR) for epidemiological studies through an exemption procedure.

Sheet 10

Better access to health products

Some regulatory provisions have been identified that alter the competitiveness of companies in the health industry, not only in terms of research and development but also in terms of market access processes. Various measures will be put forward to improve the situation.

Context and stakes:
The CSIS intends improving the clarity of the policies implemented in respect of medical technology evaluation and self medication. Two simplifications are being envisaged.

1. **Manage delays in the registration of reimbursement for medical procedures related to a medical device**

The time allowed for evaluating and setting the price of a medical device is set by the regulations at 180 days. Registering and pricing a new medical procedure made necessary by the registration of a medical device is not however subject to any particular timescale which may lead to significant delays in implementing new therapeutic practices or innovative diagnostics. A surgeon can in fact be in a paradoxical situation in which the medical device is registered for health insurance reimbursement but the surgical procedure required to fit it is not yet included on the list of procedures covered, which consequently prevents the particular medical device being fitted.

2. **Continuing the rapid growth of self medication in France**

A modern response to some everyday afflictions, self medication is less developed in France than in neighboring countries. In 2008 the Government, alongside the industry, launched a plan to support the development of self medication under the control of local pharmacists, with in particular, the display in pharmacies of a list of medicinal products produced by the AFSSAPS on the basis of public health criteria. The present system could be optimized to smooth the access of medicinal products to self medication status and allow them to be promoted to patients.

Measures
- more effectively synchronize the evaluation by the HAS and the procedure for prioritizing and pricing new medical procedures by the CCAM with the evaluation and coverage of new medical devices or medicinal products associated with these procedures
- Adapt the necessary resources to ensure efficient processing of applications to switch medicine from POM to OTC
- Authorize reminder advertising.

Reciprocal undertakings
Before the end of the year and under the authority of the ministers for health and for social security, a technical working group including representatives of the manufacturers in the CSIS, the administrations concerned, ATIH, UNCAM, UNOCAM, HAS and SNITEM will meet with a view to drawing up proposals for a framework for the procedure for registering a medical procedure associated with a medical device or medicinal product. The objective is to gradually reduce the time lag between the two procedures.

For innovative medical devices with a high anticipated service provision improvement (level I and II), the objective within two years will be to achieve a maximum registration time of 180 days, after a ruling by the CEPP, for procedures associated with these medical devices. The same delay will be apply to innovative medicines associated to medical device and to medical act.

Adopt regulatory measures that will allow reminder advertising for self medication medicinal products.

Panel 3

Setting the Environment Right: Lessons Learned from the Singapore Experience

Interviewer: **Mr. Yigal Erlich**
Founder, Chairman and Managing Partner
The Yozma Group
Chair
Public Policy Forum on Venture Capital

Panelist: **Mr. Png Cheong Boon**
Chief Executive
Spring

Panel's background information:

Introduction

Adequate supply of capital is only one part of a buoyant ecosystem for venture capital and emerging technology companies. Setting the environment right (R&D funding, legal, fiscal, intellectual property) and supporting the development of entrepreneurship and innovation are also key ingredients. Singapore's emerging technology cluster has developed initiatives in a short period of time to address these critical needs. How successful are its policies? What lessons can be learnt?

Interviewer

Mr. Yigal Erlich
Founder, Chairman and Managing Partner
The Yozma Group
Chair
Public Policy Forum on Venture Capital

Mr. Yigal Erlich is the founding father of the Israeli venture capital industry and one of the most prominent figures in the Israeli high-tech arena in the past 15 years.

At the beginning of the 1990s, Mr. Erlich identified a market failure and a huge need in to establish for the first time a professionally-managed venture capital industry that will fund the exponential growth of high tech ventures coming out of.

In late 1992, Mr. Erlich convinced the Israeli government to allocate $100 million for his venture capital vision. Within a period of three years, Erlich, along with the other members of the core team at Yozma, established ten venture funds. These ten funds, which include Gemini, JPV, Nitzanim (Concord), Polaris, STAR and Walden, are the backbone of the vibrant and sophisticated venture capital market that has today.

Mr. Yigal Erlich is the founder of the Israel Venture Association and currently serves as its Chairman. Between 1984 and 1992, Mr. Erlich served as the Chief Scientist of's Ministry of Industry and Trade. During his eight-year tenure as Chief Scientist, Mr. Erlich commanded an annual budget of $200 million, primarily directed at research and development projects of high-technology companies. In addition, Mr. Erlich initiated the Generic Technology program which fostered cooperation on long-term R&D activities through the creation of consortia of companies with research institutes and universities worldwide.

Mr. Erlich also started the Technology Incubator Program that led to the creation of 24 Incubation Centers throughout. Mr. Erlich was instrumental in the establishment of several bi-national industrial and technology R&D cooperation agreements with, the , and Mr. Erlich was the Chairman of the Executive Committee of the US-Israel Bi-national Industrial Research and Development Foundation (BIRD), and a Director of the Dead Sea Works, Israel Chemicals, Israel Oil Refineries, Hadassah's commercialization company - Hadassit, and the Technion Research and Development Co. Ltd.

Mr. Erlich holds B.Sc. and M.Sc. in Chemistry and an MBA from the Hebrew University of Jerusalem.

Panelist

Mr. Png Cheong Boon
Chief Executive
Spring

Png Cheong Boon is appointed as the Chief Executive of SPRING Singapore on 1 September 2008. He joined SPRING in July 2003 as its Deputy Chief Executive and has been leading SPRING's efforts in developing a competitive SME sector and nurturing innovative Singapore enterprises.

Prior to his current appointment, Cheong Boon spent ten years with the Economic Development Board (EDB), holding various appointments in Singapore and EDB's US operations.

Cheong Boon serves as a Director in the Employment and Employability Institute Pte Ltd (e2i) and Singapore Israel Industrial Research & Development Foundation (SIIRD). He is also a member of the Board of Governors for the Intellectual Property Academy.

He graduated with a Bachelor of Science (Electrical Engineering) with Distinction from Cornell University, USA and a Master of Science in Management (Sloan programme) from Stanford University, USA.

SPRING singapore
Enabling Enterprise

Quebec City Conference 2011
Public Policy Forum

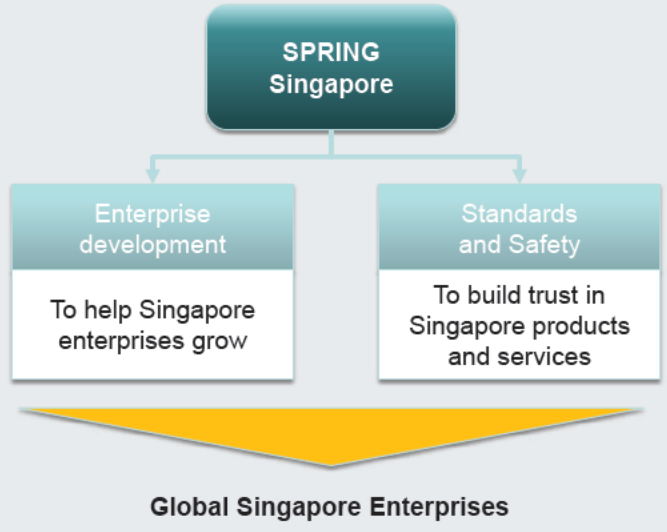
Singapore's Journey in Promoting Innovation & Entrepreneurship

24 October 2011

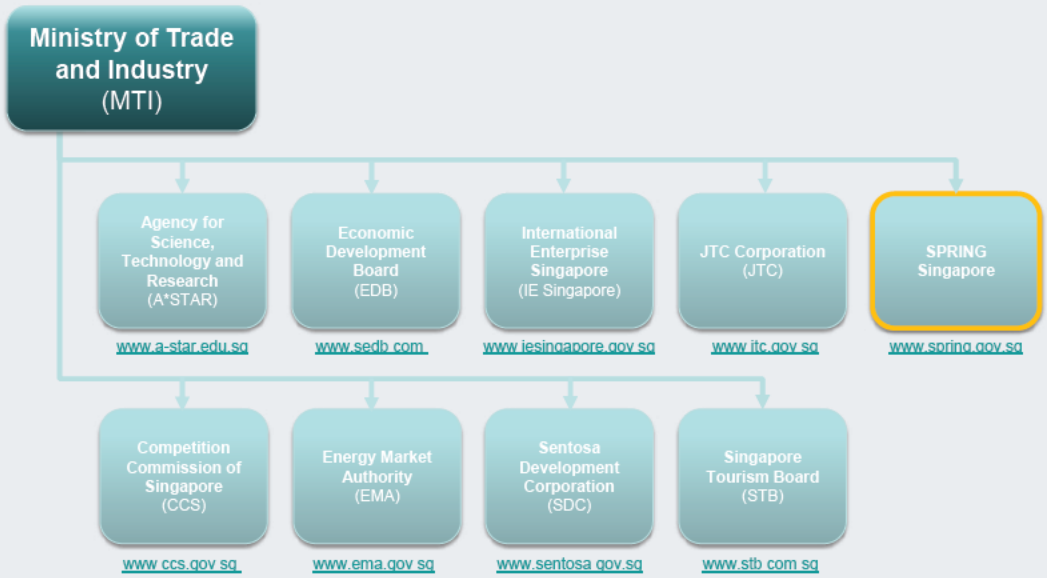
Presented by:

PNG Cheong Boon
Chief Executive
SPRING Singapore

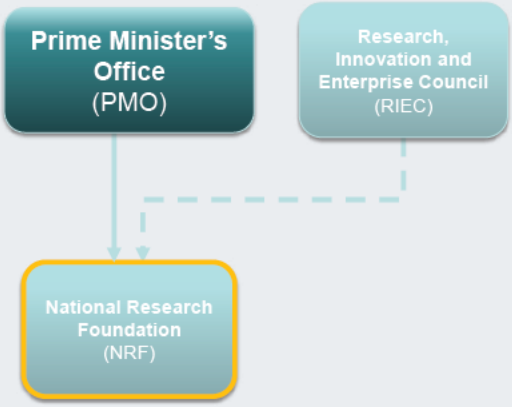
SPRING's Mission and Vision



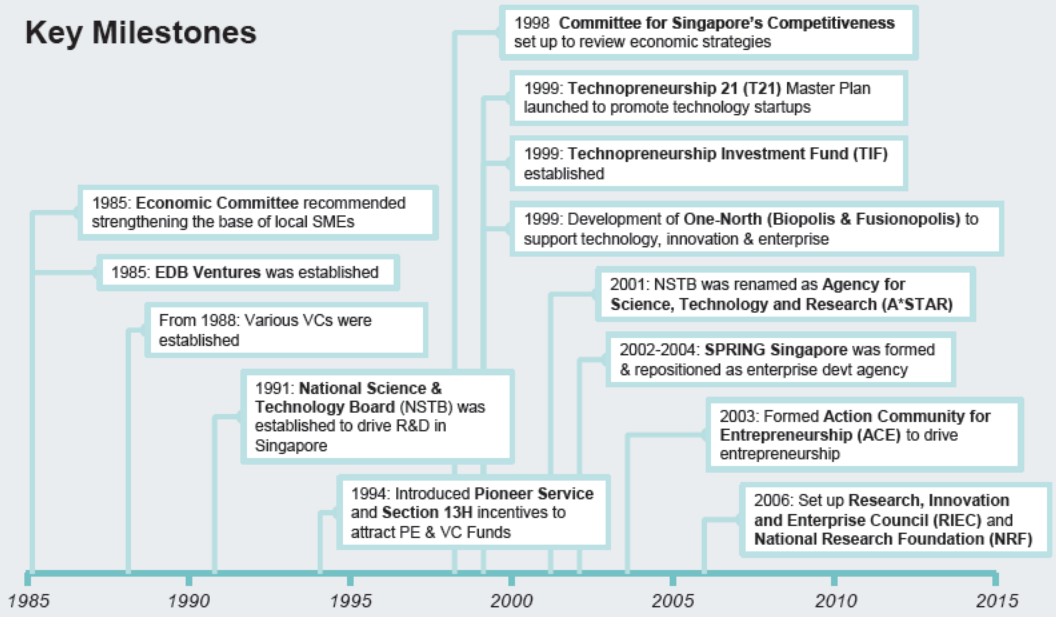
Statutory board under the Ministry of Trade and Industry



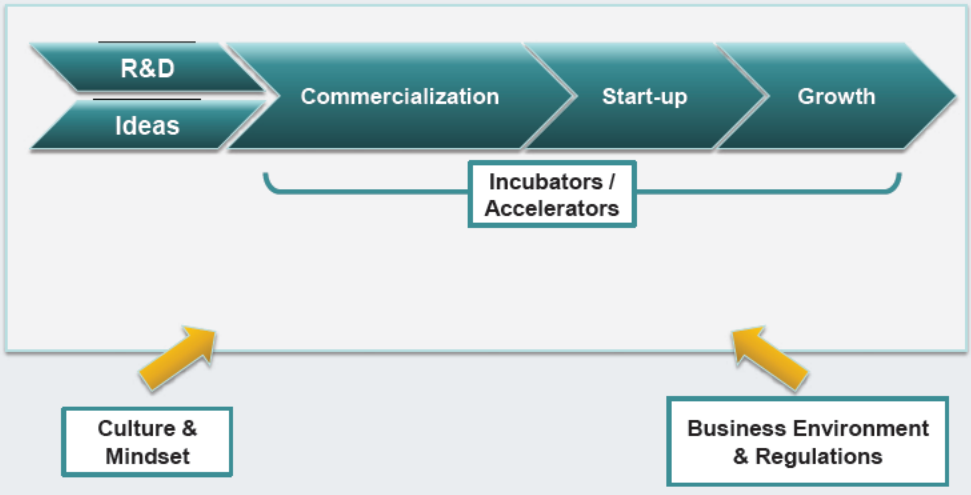
NRF is also a key organisation for I&E policies



Key Milestones

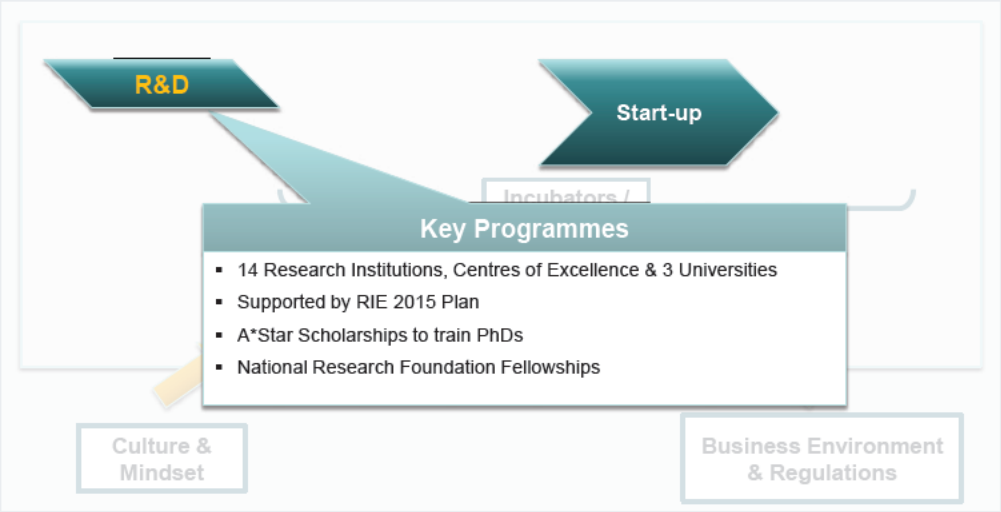


Policy framework

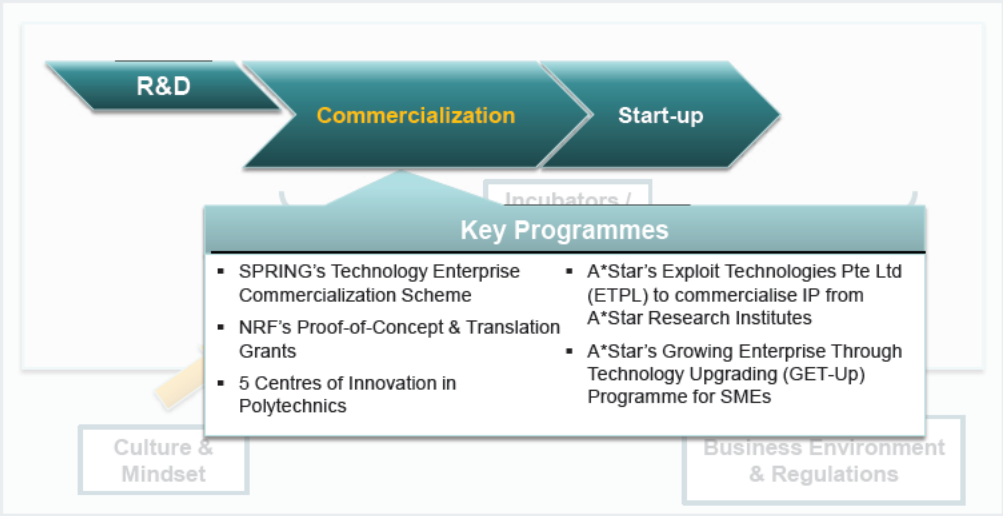


Starting-up

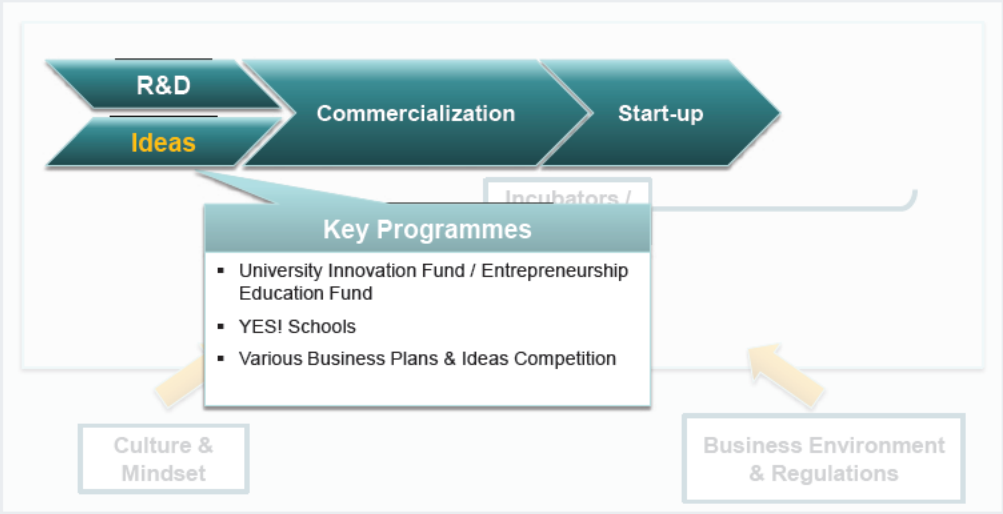
Supporting R&D



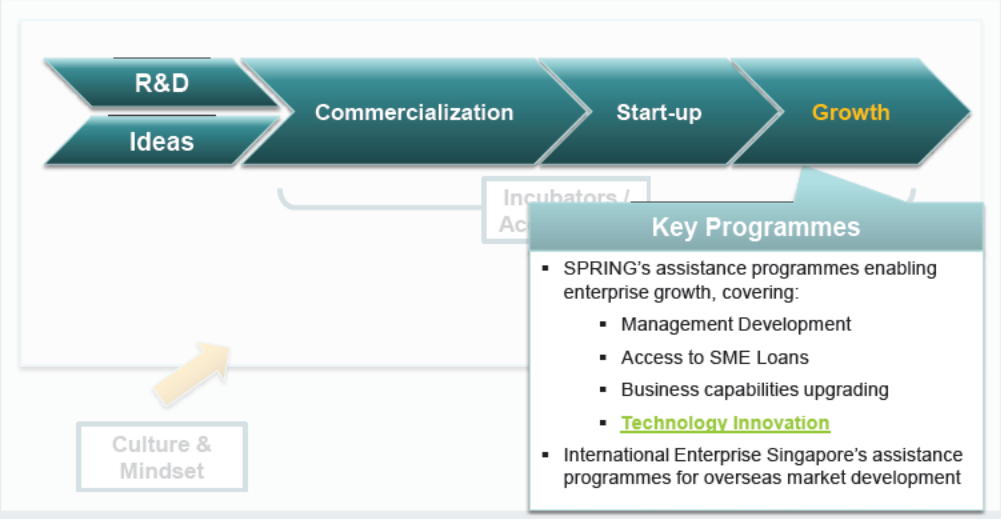
Commercializing R&D and Ideas



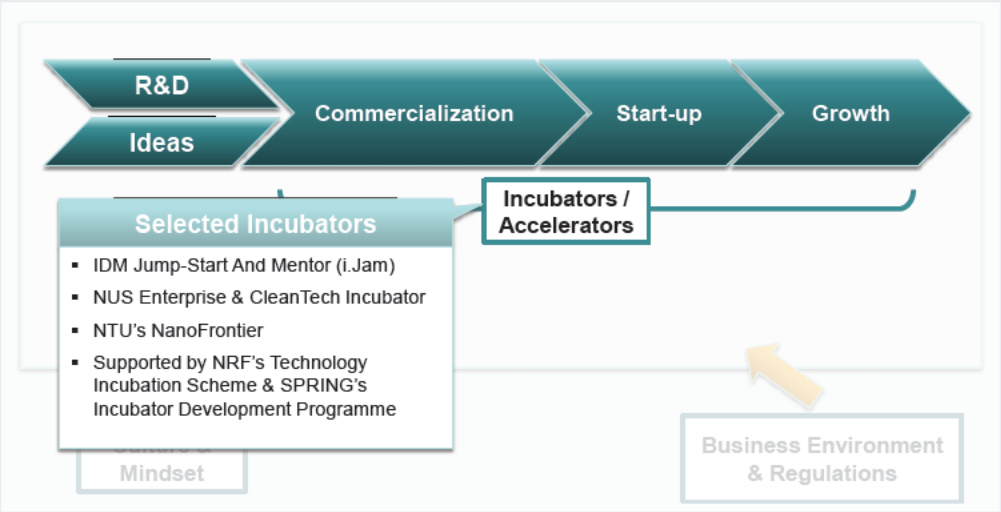
Generating Ideas



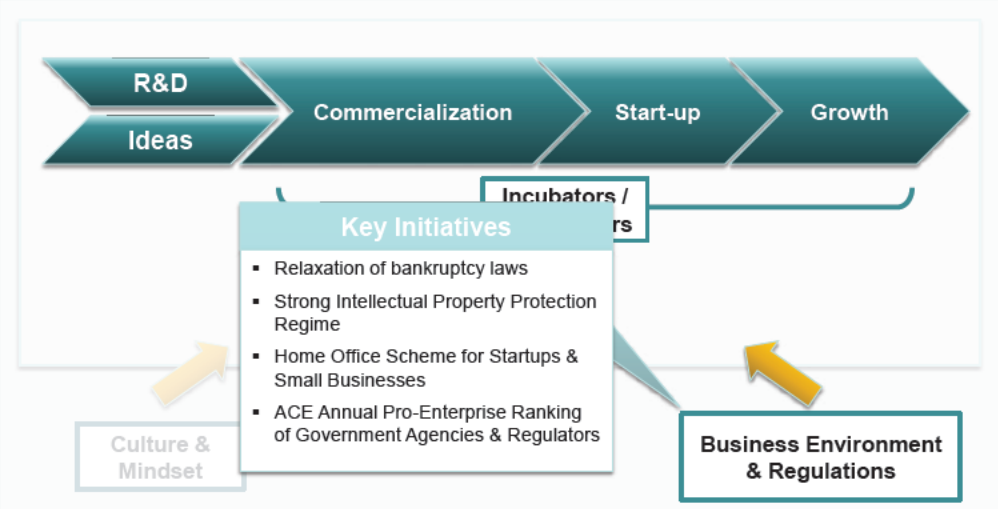
Growing the Business



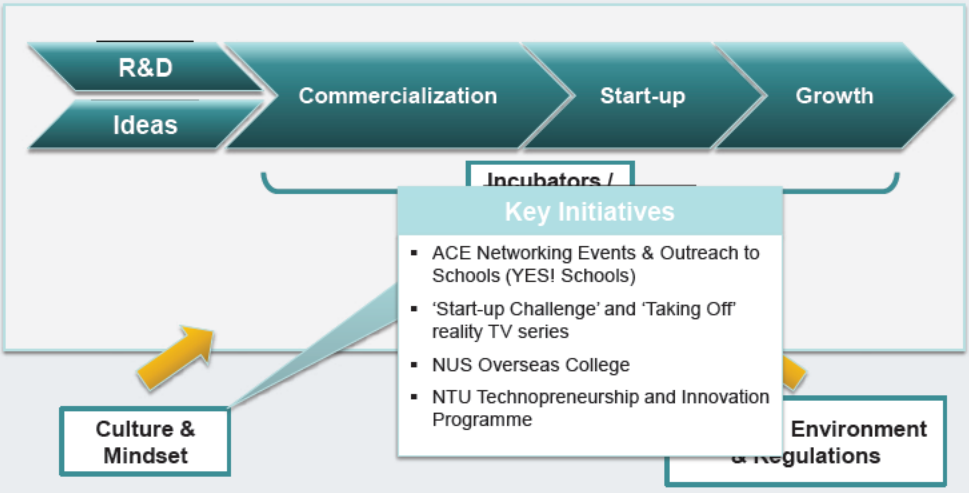
Role of Incubators & Accelerators



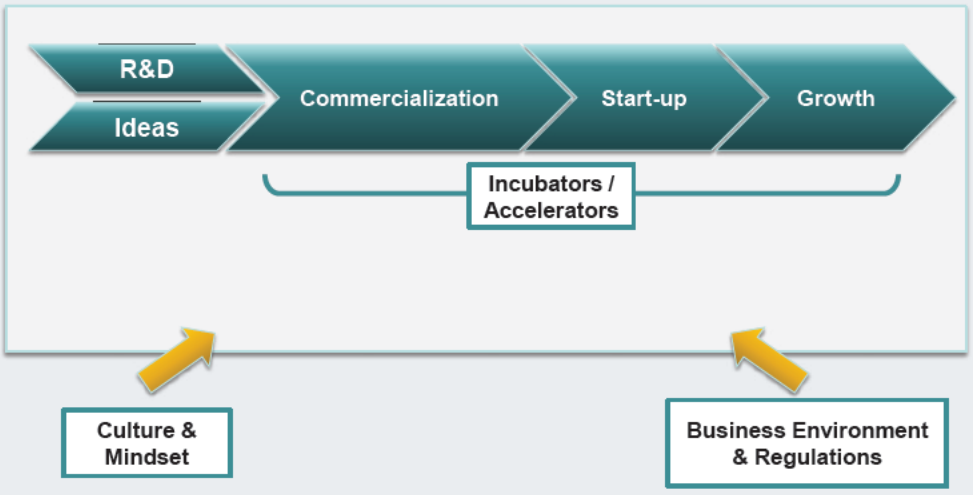
Pro-Business Environment & Regulations



Entrepreneurship Culture & Mindset



Recapping the policy framework



How successful has this journey been?

What others say

"Singapore is probably one of the best place globally for systematic innovation - attacking a known, understood, foreseeable market; and providing a solution ahead of the market need."

- Frank Levinson
Managing Director, Small World Group

"Singapore is already a conducive place for tech start-ups... with easy access to government funding, and strong infrastructure."

- Eduardo Saverin
Facebook co-founder

"With such strong support from the government, I am optimistic that we are on the right path to produce more home-grown companies capable of emerging as global champions."

- Mr Darius Cheung
Founder, tenCube

What others say

"When I was doing due diligence on the concept of the business, we looked globally at the best places to put it, and Singapore ended up being in the top spot. Doing business here is a lot more stringent and a lot more analytical compared with the US, but it's for the better. Rules and regulations, reporting systems are similar here, as if you're running a public company in the US.

"(After obtaining funding from SPRING SEEDS)... we migrated the investors to Singapore, we started the firm here and transferred all our intellectual property to Singapore...

"We were interested in SPRING's expertise and the Singapore Government's involvement... as we start doing cross-border expansion, we wanted to have a strong strategic partner with us to help us evaluate those opportunities and also for guidance within the Singapore market."

- Dr Miles Gilman
Founder, A2 Bioscience

Mixed results so far

VC & Private Equity Industry has grown

- Singapore's VC & PE industry jumpstarted by entry of major global players
- According to Singapore Venture Capital Association (SVCA):
  - Funds under management grew from ~US$50m in 1983 to US$17b in 2006
  - From less than 10 VC firms in 1983 to more than 160 VC firms in 2006

However

- VC investments in Singapore start-ups still low compared to fund size
- VC firms prefer to use Singapore as a base to invest in the region

Encouraging signs from global surveys

Innovation

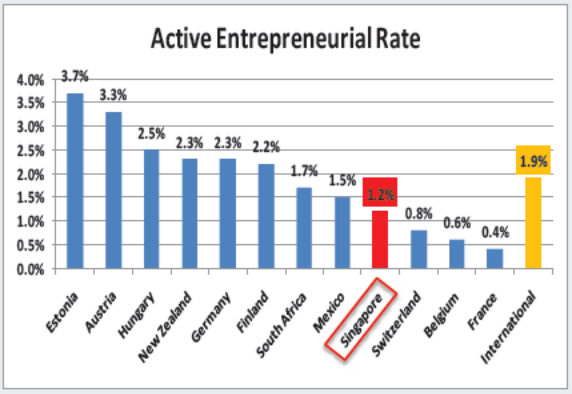
Country	The Atlantic Century Report by the Information Technology and Innovation Foundation	Boston Consulting Group's The Innovation Imperative in Manufacturing	WEF's Global Competitiveness Report 2010-2011	INSEAD and India's Confederation of Industry's Global Innovation Index 2009-2010
Singapore	**1**	**1**	**9**	**7**
Finland	7	7	3	6
Israel	-	16	6	23
Korea, Rep	5	2	12	20
Sweden	2	10	5	2
Switzerland	-	3	2	4
Taiwan	-	-	7	25

Encouraging signs from global surveys

Entrepreneurship

Rank	Survey / Organization
#1	in **pro-enterprise environment** World Bank Ease of Doing Business Report (2007-2011)
#1	in **government policies & corporate performance most encouraging to innovation** in BCG Global Innovation Index / NAM / MI International Innovation Index (2008)
#4	in **access to capital** in US Milken Institute Capital Access Index (2009)

Still some way to go



Source: GUESSS 2008

Results of Global University Entrepreneurial Spirit Students' Survey 2008:

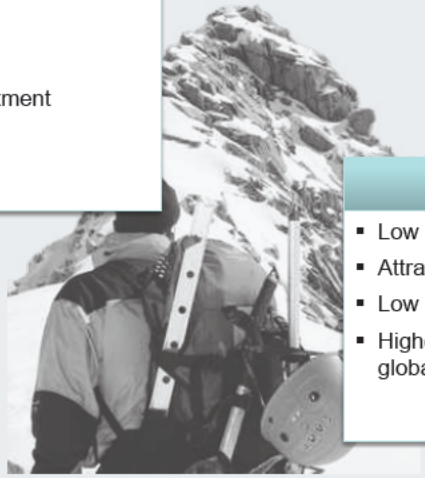
Entrepreneurship becoming a more accepted career choice for Singaporean students:
- No. of start-ups grew at 10.8% CAGR in past 5 years.
- No. of tech start-ups grew at 5% CAGR.

However, actual entrepreneurial rate still below international average for the survey:
- 81.4% of IHL students with entrepreneurial intentions, only 1.2% translated into action

Main challenges ahead

'Market' challenge

- Small domestic market limits growth
- Start-ups have to 'go global' at the onset
- Affects potential exit value
- Hard to attract investors
- Investors have other investment opportunities



'Mindset' challenge

- Low unemployment in Singapore
- Attractive career opportunities
- Low level of social safety net
- Higher risks as startup needs to go global at the onset

Thank You

For more information, please refer to the following websites:

SPRING Singapore:
www.spring.gov.sg

Action Community for Entrepreneurship (ACE):
www.ace.sg

EnterpriseOne (E1):
www.business.gov.sg

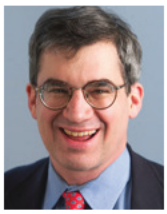
Harvard Business Case

Oriental Fortune Capital: Building a Better Stock Exchange – The Case of ChiNext, the Shenzhen Junior Market

Case Researcher & Moderator: **Dr. Josh Lerner**
Jacob H. Schiff Professor of Investment Banking
Harvard Business School

Case Researcher: **Mr. Keith Chi-ho Wong**
Senior Researcher
HBS-Asia Pacific Research Center

Case Researcher



Dr. Josh Lerner
Jacob H. Schiff Professor of Investment Banking
Harvard Business School

Josh Lerner is the Jacob H. Schiff Professor of Investment Banking at Harvard Business School, with a joint appointment in the Finance and Entrepreneurial Management Units. He graduated from Yale College with a Special Divisional Major that combined physics with the history of technology. He worked for several years on issues concerning technological innovation and public policy, at the Brookings Institution, for a public-private task force in Chicago, and on Capitol Hill. He then obtained a Ph.D. from Harvard's Economics Department.

Much of his research focuses on the structure and role of venture capital and private equity organizations. (This research is collected in two books, The Venture Capital Cycle and The Money of Invention.) He also examines technological innovation and how firms are responding to changing public policies. (The research is discussed in the book, Innovation and Its Discontents.) He founded, raised funding for, and organizes two groups at the National Bureau of Economic Research: Entrepreneurship and Innovation Policy and the Economy. He is a member of a number of other NBER groups and serves as co-editor of their publication, Innovation Policy and the Economy. His work has been published in a variety of top academic journals.

In the 1993-94 academic year, he introduced an elective course for second-year MBAs on private equity finance. In recent years, "Venture Capital and Private Equity" has consistently been one of the largest elective courses at Harvard Business School. (The course materials are collected in Venture Capital and Private Equity: A Casebook, whose fourth edition is forthcoming.) He also teaches a doctoral course on entrepreneurship and in the Owners-Presidents-Managers Program, and organizes an annual executive course on private equity in Boston and Beijing. He recently led an international team of scholars in a study of the economic impact of private equity for the World Economic Forum.

HARVARD | BUSINESS | SCHOOL

N9-811-105

MAY 23, 2011

This case explores what is arguably one of the most successful efforts to promote the development of a public market for entrepreneurial firms over the past decade.

As you read the case, please consider the following questions:

1. Why has the Chinese IPO market been so hot at the time when IPOs have been so slow at most places in the world?
2. Why have ChiNext tried to have strong listing requirements? Have they focused on the right requirements?
3. How does the competition between the Shenzhen and Shanghai exchanges affect ChiNext?
4. How has the Chinese market changed? What are the implications for how ChiNext's should adjust?
5. What can Western policymakers learn from the Chinese experience?

Josh Lerner

Professor Josh Lerner and Senior Researcher Keith Chi-ho Wong of the HBS-Asia Pacific Research Center prepared this case HBS cases are developed solely as the basis for class discussion Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management

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N9-811-105

MAY 23, 2011

JOSH LERNER

KEITH CHI-HO WONG

Oriental Fortune Capital: Building a Better Stock Exchange

The year 2011 is the craziest year I have seen as a venture capitalist. Venture investment has gone "wacko." The industry is now beginning to reshuffle but it will take quite some time before cooling down.[1]

— Dr. Wei Chen, Chairman & Founding Partner, Oriental Fortune Capital

Sitting in his modern yet minimalistic office in Shenzhen, China, Dr. Wei Chen was flipping through the magazine which featured his regular column on Chinese venture investment trends. The number of retail investors in China almost trebled from 3.3 million to 9.4 million over the previous decade,[2] and media coverage of securities markets had become increasingly popular. Chen, a veteran manager of domestic VC funds, was a pioneer of venture investment in China and had lived through the capital market's booms and busts since the turn of the century. Currently the founding partner of one of the twenty top VC firms in China, Chen regularly advised the Shenzhen Stock Exchange (SZSE) and other exchanges on regulatory and corporate governance issues.

The venture capital (VC) industry had grown rapidly beginning in the mid-2000s, when new rules and regulations were issued that provided a more structured legal framework for VC firms. But VC investments plunged in late 2008 after the export-oriented Chinese economy was dampened by the global financial crisis. VC activities revived in 2009 around the time that ChiNext, a NASDAQ-style junior market, or a second-tier market, was launched by the SZSE.

Sitting across from Chen was Xiaojin Wang, a Research Fellow of the SZSE's Research Institute. Formerly an economics professor focusing on venture capital issues, Wang joined SZSE in 2006. Since then, Wang conducted a series of studies on the relationship between second-tier markets and the VC industry. Over the course of her research, Wang met Chen regularly to glean insights from a practitioner's perspective. Chen's feedback was instrumental when ChiNext was set up in 2009. Sipping a cup of green tea, Wang reflected on Chen's statement on the investment climate of 2011: "What you said was spot on. That is why the SZSE needs to be careful, whatever move it makes now."

At the moment, many market participants, including those from the VC industry, were debating whether SZSE should relax its listing requirements to allow more companies to gain access to the capital market. One of the major concerns was that a large number of firms were lining up for initial public offerings (IPOs), and at the same time while retail investors were eagerly anticipating the

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Professor Josh Lerner and Senior Researcher Keith Chi-ho Wong of the HBS-Asia Pacific Research Center prepared this case HBS cases are developed solely as the basis for class discussion Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management

opportunity to speculate on newly listed ChiNext stocks. Wang acknowledged that ChiNext had helped numerous startups raise fresh capital to fuel their growth. But at the same time, an overly-relaxed listing and regulatory environment would make these companies more susceptible to corporate governance problems. Wang, therefore, was eager to hear Chen's opinions. Chen, looking at the large golf course outside his office block, said: "Xiaojin, Do you know this was just a piece of barren land when I first came to Shenzhen in 1999. Who would have thought of a golf course being built here? I think one has to be bold or nothing will be built."

Second Tier Markets Worldwide

Early initiatives

Early efforts to create "junior" securities markets, or second-tier markets separate from national stock exchanges, could be traced to the 1950s, when many regional exchanges in the U.S. were closed due to lack of liquidity. In 1962, the New York Mercantile Exchange set up a junior market called the National Stock Exchange so that companies too small for the New York Stock Exchange (NYSE) and American Stock Exchange (Amex) could trade their shares. Yet, very few companies chose to list on the National and it suffered from a lack of visibility, and thus illiquidity.[3] Further hampered by a series of scandals, it was closed in 1968. Three decades later, the Amex launched the Emerging Company Marketplace (ECM) with similar objectives. However, the ECM also faced low visibility, illiquidity, and scandals, and was shut in 1995, only three years after its formation.

But not all efforts to create second-tier exchanges were failures. One of the most successful attempts was by the National Association of Securities Dealers (NASDAQ). Founded in 1971, the NASDAQ was originally an electronic system that provided quotations for buyers and sellers engaged in the over-the-counter (OTC) trades. The NASDAQ gradually enhanced its reporting and trading systems. Its relaxed listing requirements allowed small companies, including Intel, Microsoft, Apple, Cisco, Oracle, and Dell, to obtain much-needed capital that was otherwise unavailable to them. Unrelated to NASDAQ, the Japan Securities Dealers Association (JASDAQ) also set up an electronic platform in 1991, superseding the OTC registration system in place since 1976. Both NASDAQ and JASDAQ were among the few successful junior market initiatives. Originating from pre-existing OTC markets, these exchanges accumulated adequate client numbers and trading volumes. Independent of the predominant national exchanges, they had strong motives to attract new companies and keep them from moving to the main boards.[4]

In Europe, fifteen national stock exchanges, including those in France, Germany, Italy, and the United Kingdom, launched junior boards during the 1980s.[5] Most of them served as the "transition market" between the senior boards and the existing OTC markets. Unfortunately, they suffered from an adverse selection, or "lemons," problem. Companies were expected to grow bigger and "graduate" to the senior boards, leaving less successful ones behind. The junior boards' troubled reputations made them a less attractive venue for new companies. Consequently, these markets were plagued with the problem of an inadequate number of stocks and insufficient illiquidity. By the mid-1990s, most of them were closed.

1990s: The dot-com bubble and its aftermath

During the latter half of the 1990s, the commercialization of Internet services and expectations about their exponential growth led to the "dot-com bubble," a rapid hike of stock prices for technology stocks. The NASDAQ composite index rose from 1,000 in July 1995 to a peak of 5,048 in March 2000. During this period, NASDAQ exceeded the NYSE in turnover volume and the number of IPOs, making it the largest stock exchange in the world.[6] Between 1995 and 2000, more than 40 junior boards were also established across the globe.[7] Apart from a few exceptions, such as the AIM in London, KOSDAQ in Korea, and TSX-Venture in Canada, most of them failed to attract a sufficient number of companies. The dot-com bubble soon imploded and the NASDAQ composite index fell from its peak of 5,048 to a trough of 1108 in October 2002. The shock wave spread worldwide and many junior boards took severe hits. For example, Neuer Markt in Germany and the GEM board in Hong Kong both lost more than 80% of their market capitalizations over this period.

With the flight of investors from tech stocks, and problems related to persistent illiquidity and multiple scandals, these junior markets faced a shrinking pool of IPO candidates. Many unlisted firms failed to draw enough funding to sustain operations during the 2001 recession. A number of junior boards either closed or merged with other exchanges (See **Exhibit 1**). Wang summarized some of the key insights she gained from the closure of these junior markets:

> One of the main reasons was the lack of IPO candidates. While there were over 40 junior boards around the world, many were located in countries that were either too small or too developed to have enough high-growth businesses lined up for an IPO. Also, all these local exchanges were facing globalized competition as leading exchanges such as NASDAQ, NYSE, and AIM were either attracting clients internationally or expanding their presence across borders through mergers or partnerships.
>
> The other concern was market mechanisms. After seeing the failure of many pioneers which had used an auction system, and the success of the dealer method at the NASDAQ,[8] dealer markets became the mainstream. Yet it is no guarantee of success. We are also aware of the adverse selection problem. If a junior board is set up as a "feeder market" for the senior board, it will soon lose many of its members. Lastly, the listing requirements at the junior boards are becoming less stringent. While this allows more companies to list, the exchanges' credibility may be at risk. We believe the "nominated adviser"[9] system, currently used by AIM and Catalist (of Singapore), may be worth following. But we also acknowledge the example of Hong Kong's GEM board, where newly listed companies violated major regulations once the sponsorship period expired.

The Second Board in Shenzhen: The Early Attempt

By the end of the 1990s, China was negotiating its way into the World Trade Organization, which stipulated a further opening of China's capital markets. The dot-com bubble was also evident in China as numerous domestic Internet firms were listed on the NASDAQ. In 1999, the State Council announced a policy to strengthen the country's innovation capabilities.[10] Soon afterwards, various parties, including the China Securities Regulatory Commission (CSRC), the Shanghai and Shenzhen bourses, academics, and practitioners, took up the issue of capital market liberalization. Wang recalled the groundwork laid down by her colleagues in the late 1990s:

> The initial thought was to create a board specifically for "high-tech" companies. However, they realized that it would be difficult to define what "high-tech" meant. They also found that there was no such thing overseas. Finally, it was named the "Growth Enterprise Board" (GEB) to cater to companies that offered enough growth potential. The second decision was where the board should be located. Both Shanghai and Shenzhen wanted it, but over-competition would obviously result if both were granted exchanges. Most of the multi-tier capital markets overseas, such as the NYSE and the NASDAQ, or Tokyo and Osaka, were formed by market forces. Here, the government segmented the markets for each of the exchanges. Shanghai specialized in state-owned firms and blue-chip companies, following the route of the NYSE. Shenzhen would be the venue for small, high-tech businesses, becoming the NASDAQ of China.

As the GEB was about to launch in 2000, the dot-com bubble burst. The demand for listings dropped severely, if not vanished. SZSE officials also realized that many of the pre-IPO companies were not entirely trustworthy. The investor community was calling for more stringent supervision over issues such as earnings manipulation, insider trading, and the proliferation of shareholder fraud. In light of these concerns, the SZSE decided to postpone the launch of the GEB.

The SME Board: The prologue

Then, in a move that reflected the state-directed pace of gradual development, a new board emerged at the SZSE in 2004. In February, the State Council promulgated a policy to create a multi-tier capital market in China. On May 27, the Small and Medium Enterprise Board (SME Board) was established at the SZSE, under the so-called "Two Remain" and "Four Separate" principles.[11] "Two Remain" meant that the existing securities laws and regulations and the IPO listing requirements governing the main board companies would remain unchanged for those listing on the SME Board. "Four Separate" indicated that the SME Board would have separate trading systems, supervisory mechanisms, stock coding, and price indexes. Wang recounted the lessons SZSE learned from the development of the SME Board prior to the creation of ChiNext:

> First, once a company is listed, a huge amount of money will be raised. The controlling shareholders may be tempted to appropriate the money for their private use. To contain this problem, we decided to create a separate bank account specifically for depositing all the money raised from an IPO. Second, our share issue system was far from mature. While all new IPO issuers needed to have a sponsor to underwrite their stocks, the sponsor finished the job once the company was listed. When we design the new rules for ChiNext, we then made the sponsors responsible for the ongoing monitoring of the performance of a newly listed company for a longer period of time. Lastly, we tightened control of the disposal of shares by the majority shareholders. We introduced a lock-up period under which they were not allowed to sell their shares in the open market.

Despite the "Four Separate" principle, the SME board was basically the same as the Main Board with the same set of listing requirements. Yet the SME board hosted mainly companies that were "smaller" in terms of revenues or assets or that operated in certain high-tech industries such as information technology or biotechnology, unlike the Main Board, where large, state-owned enterprises dominated. Between 2004 and 2009, Wang asserted, no major problems occurred on the SME board and it laid a solid foundation for the subsequent launch of ChiNext.

Proliferation of IPOs

As China's economy recovered steadily in 2010 due in part to a RMB 4 trillion (US$586 billion) economic stimulus program, China also started to lead the world in IPOs. In 2010, a total of 476 Chinese companies were listed across various exchanges worldwide, representing about 62% of all newly listed firms or 57.6% of the total funds raised during the year[12] (See **Exhibit 2** for details). Among all these Chinese IPOs, 45%, or 347, were conducted on the domestic exchanges in Shanghai or Shenzhen, representing 39.4% of the total IPO capital raised in the world[13] (See **Exhibit 3** for details). As a new player, ChiNext was able to list 117 IPOs in 2010, accounting for one-third of the new listings on all of China's exchanges.

ChiNext: China's answer to NASDAQ?

A quick and lucrative exit for VCs/PEs

Opened for trading on October 30, 2009, ChiNext presented a much-anticipated gateway for investors to access high-growth companies, and provided a long-awaited exit for the domestic VC industry which had previously looked to overseas markets in New York, London, or Hong Kong to go public. Among the first batch of 28 ChiNext companies, 23 were backed by venture capital firms. And ChiNext did not disappoint investors. The initial 28 stocks closed on average 76.5% higher than their issue prices at the end of their first trading day.[14] The average IPO Price/Earnings multiple (P/E) stood at 56.6 times at the end of the first trading day, while the overall average for the A-share markets in Shenzhen and Shanghai was 25.[15]

By October 2010, the VCs who had taken their companies public on ChiNext had attained outstanding returns. One measure of success was the ratio of the capital gain achieved by the venture investor via the IPO (the valuation of the VC's stake at the IPO price minus the investment amount) to the amount invested. Newly listed ChiNext companies had an average multiple of 12.1, while the overall multiple of IPOs on China's two stock markets was 10.4, and Chinese companies that conducted their IPOs on NASDAQ only recorded an average multiple of 2.8.[16]

At year-end 2010, 153 companies with a total market capitalization of RMB 736.5 billion (US$ 111 billion) had listed on ChiNext, raising RMB 116.75 billion (US$17.61 billion).[17] Most of these were high-tech companies belonging to one of the seven "strategic emerging industries" designated by the China's central government, such as clean energy, semiconductors, chemical engineering and pharmaceuticals, alternative materials, and new-generation IT services. During the first three-quarters of 2010, the profits for all ChiNext-listed companies grew an average of 26.9% on a year-on-year basis, and revenues increased by 36.5%.[18]

Stock markets in China

After China began pursuing economic reforms in 1979, the state took various steps to liberalize the economy. It abolished state controls on prices and institutionalized the formation of private enterprise. Integral to reforms was the establishment of special economic zones in Shenzhen, Zhuhai, Shantou, and Xiamen, where favorable tax and other policies were offered to foreign investors. This was followed by initiatives to modernize the banking system and establish capital markets. New stock exchanges were set up, first in Shanghai in November 1990, and then in Shenzhen in December 1990. It was hoped that the exchanges would help enhance the corporate governance of companies

that listed, which were mainly state-owned-enterprises (SOEs), and relieve SOEs' over-reliance on bank debt.[19] Shares traded on both exchanges were classified into two categories: the RMB-denominated "A-shares," which were restricted to domestic investors; and "B-shares." The latter issues were denominated in RMB but traded in foreign currencies (US dollars in Shanghai and Hong Kong dollars in Shenzhen) and only available to foreign investors until 2001, when they were opened to domestic investors.

The China Securities Regulatory Commission (the "CSRC") was established in 1992 to regulate capital markets. Reporting directly to the State Council, the CSRC performed a role similar to the Securities and Exchange Commission in the U.S. It formulated laws and regulations and exercised supervision and compliance functions for the securities and futures markets. It supervised public offerings and the trading, clearing and settlement of securities, governed information disclosure, and regulated the business activities of industry practitioners.[20] In particular, all companies preparing IPOs had to be approved by the CSRC's Public Offering Review Committees.

Since its inception in 1990, the Shenzhen Stock Exchange (SZSE) had been smaller than its counterpart in Shanghai and targeted a different niche than the Shanghai and Hong Kong exchanges, which typically hosted listings by large SOEs. The Shenzhen special economic zone where the SZSE was located was dominated by small- to medium-sized enterprises in sectors such as information technology, biotechnology, and pharmaceutical research, and SZSE became the main listing venue for these companies. Starting as a regional market with around 100 listed companies during its initial years, SZSE hosted 1,169 companies by the end of 2010 on three boards,[21] the Main Board, the SME (small-and-medium-sized enterprise) Board, and the ChiNext, with a daily transaction of over RMB 102 billion (US$ 15 billion) (See **Exhibit 4** for a summary of the market statistics).

Key listing requirements at ChiNext

In December 2008, right after the outbreak of the global financial crisis, China's State Council called for the establishment of "the Second Board at a good time."[22] The CSRC then issued a document in March 2009 to lay down rules for the second board (see **Exhibit 5** for an excerpt from the document). Most of the listing requirements were lower than on the Main Board. At the same time, various measures were taken to safeguard investors' interests.

The major difference between the listing requirements for ChiNext and the Main Board was the "profit test" (see **Exhibit 6** for a comparison of the listing requirements on ChiNext, SZSE Main Board, and major junior boards worldwide). To qualify for listing on the Main Board, the issuer (the company to be listed) must have been profitable over the previous three years consecutively, while listing on ChiNext only required two years. Accumulated profits over the three-year period had to be at least RMB 30 million (US$4.6 million) for the Main Board, but only RMB 10 million (US$1.6 million) for ChiNext. A company could also list on ChiNext if it had been profitable only in the most recent year, with a minimum net profit of RMB 5 million (US$0.76 million), provided that it attained no less than RMB 50 million (US$7.6 million) in revenues and achieved more than 30% revenue growth over the last two years prior to the IPO. (See Article 10 on **Exhibit 5** for details).

Other rules and regulations at ChiNext

The CSRC also tightened information disclosure standards for ChiNext. All prospectuses for ChiNext shares had to include a statement that disclosed the "high investment risks" involved,

including operation risks, delisting risks, and the subsequent market risks. Additionally, SZSE established its own market risk warning system and set up a continuing investor education program

The ChiNext listing rules also stipulated measures to enhance market efficiency. A one-year "lock-up period" was imposed during which the directors, supervisors and senior management of a ChiNext-listed company could not dispose of their shares. At the expiry of the lock-up period, they could sell only 25% of their shares every 12 months. If they left the company, they were not allowed to trade shares within six months of their resignation. After the six months were up, they could sell half of their shares within the next 12 months, and all the remaining shares thereafter.

Sponsors of ChiNext-listed stocks had to agree to "continuous supervision and guidance" for three full fiscal years after the listing. The "supervision" period for the Main Board stock was only two years. During this period, the sponsor was required to compile a follow-up report within 15 days of the issuer's release of annual and interim reports. The follow-up report consisted of the sponsor's analysis and independent opinion on the issuer's financial performance.

Delisting conditions on ChiNext were also stricter than on the Main Board. If a company recorded audited negative net assets for the most recent fiscal year, or the company's auditor issued an adverse opinion or a disclaimer of opinion on the annual results, a delisting warning would be issued. If the company was unable to publish the annual or interim report two months after missing the statutory deadline, trading in its shares would be suspended. This happened after six months on the Main Board. To ensure adequate liquidity on ChiNext, a delisting warning would be issued to a company if the cumulative trading volume of its share dropped below one million shares consecutively over 120 trading days. Wang commented on these choices:

> We have thought of lowering the requirements substantially, say, accepting companies that are losing money. Apart from the problems of corporate governance and earnings quality, it would lead to an excessive number of companies qualified for IPOs. Can we handle such a huge volume of work? Also, if we let them float on the market, we will face monumental challenges in keeping up our supervisory work. So, we decided to maintain a high enough barrier that only those that are making money can get listed first. Actually, when compared with the Main Board, we have more than halved the profitability requirements from RMB 30 million to RMB 10 million on ChiNext. There was also a 40% drop in the requirements for share capital.

The VC Industry in China

In terms of the relative development of the VC industry, the U.S. is a 45-year adult in his prime years whilst China is just a toddler learning to walk.[23]

— Dr. Wei Chen

China's venture capital industry may have been a toddler in 2011, but it was growing very quickly. From 2001 to 2009, capital raised by VCs in China increased from US$1.32 billion to US$18.8 billion, for an annual growth rate of 39.4%.[24] Investments made by the VCs also grew from US$420 million in 2002 to US$2.7 billion in 2009, a 546.1% increase.[25] Meanwhile, VC investments in the developed world, such as the U.S., the U.K., and France, experienced double-digit percentage declines after the financial crisis of 2008.

In 1985, the State Science and Technology Commission (SSTC) and the Ministry of Finance (MoF) cofounded the first domestic VC firm in China in an attempt to replicate the "Silicon Valley model."[26] Until the early 1990s, however, most of the venture investments were directed at infrastructure and property projects, commissioned primarily by state-owned enterprises.[27] Many of the early, government-sponsored VCs also failed due to a lack of understanding of the capital market,[28] including the SSTC-MoF joint venture which went bankrupt in 1997.

The first turning point came in 1998, when the National People's Congress passed a resolution on the creation of privately-funded VC firms.[29] Many publicly listed companies also formed their own VC funds, foreseeing that a "second board" would soon emerge to offer them a quick exit.[30] Foreign VCs also penetrated the market promptly and brought path-breaking Chinese high-tech firms, such as the then top three largest Internet portals in China--Sohu, Sina.com, and Netease--to the NASDAQ. After the 2001 global market crash, the growth of the VC industry slowed and institutional changes were introduced to strengthen the legal framework. In 2003, China began to allow foreign VCs to set up as investment partnerships, with formal limited partnership for these investors being allowed in 2007.[31]

Another turning point came in 2006. The introduction of the *Provisional Rules Governing Administration of Venture Capital Enterprises* finally gave foreign VCs a clear legal framework to comply with. They started to dominate the market which was once led by government-sponsored VCs. The year also saw amendments to the *Company Law* and the *Securities Law* which allowed open trading of the "non-circulating" shares held by the majority shareholders of listed firms.[32] These changes paved the way for many early-stage investors to exit from the companies that they had invested in. Also in 2006, Chinese authorities effectively stopped Chinese firms from setting up offshore Special Purpose Entities for the purpose of listing overseas. As overseas listings became more challenging, both domestic and foreign VCs began to look to the local bourses as their exit destination. VC investors became more active as the economy grew and the stock market rebounded (See **Exhibit 7)**. The expanding domestic consumer market fostered the success of many consumer labels, boosting the pool of IPO candidates.

Due to strict foreign exchange controls in China, fund structures were complex. Foreign VCs, and domestic VCs raising funds from foreign sources, had traditionally raised capital in dollar-denominated funds. These funds had to face a variety of regulatory reviews, and were restricted in terms of the industries in which they could invest.[33] Domestic VC firms had traditionally raised funds from local sources in RMB, and had greater freedom to invest these RMB funds. By 2009, RMB-denominated funds had exceeded US-dollar funds both in terms of number and total monetary value (see **Exhibit 8**).

By 2011, this situation was in flux. Foreign VC firms had started to obtain permission to raise RMB funds. Meanwhile, the domestic VC industry received investments from China's large social security funds and from other major corporations,[34] while listed companies, both state-owned and privately-owned, were rejoining the VC arena. Nonetheless, domestic funds remained less substantial than the foreign counterparts, in terms of their average size (see **Exhibit 8**). Foreign groups still accounted more than half of the top 20 VCs in China (see **Exhibit 9**).

Wei Chen and Oriental Fortune Capital Co., Ltd.

Shenzhen Oriental Fortune Capital Co., Ltd. (OFC) was an indigenous, privately owned venture capital firm co-founded by Dr. Wei Chen, and also one of the earliest limited partnerships in China. A PhD in accounting from Xiamen University and formerly a visiting scholar at Nyenrode Business University in the Netherlands, Chen was an academic before joining the VC industry. In 1999, he was hired by Shenzhen Capital Group (SCGC), a state-owned VC firm seeded by the Shenzhen municipal government. First hired as a researcher, Chen eventually became the firm's President. Before departing SCGC, Chen maintained the company's position among the top three Chinese VC firms, with investments over RMB 4 billion in capital holdings over 100 companies. In 2006, Chen persuaded several of his SCGC collages to join him as general partners (GPs) at OFC. By early 2007, Chen recruited several limited partners (LPs), mostly real estate developers, and raised RMB 320 million to create OFC's first VC fund. Among the early investments Chen made was 3NOD, one of the largest multimedia audio systems manufacturers in the world, specializing in products such as speakers and headphones, which listed on the Korean KOSDAQ in August 2007, completing an exit in about six months after the injection of capital.

As of March 2011, OFC had raised over RMB 6.542 billion in four RMB-denominated VC funds (the second closed in October 2009 with a total of RMB 758 million, the third in December 2010 with RMB 2.464 billion, and a logistics industry investment fund raised RMB 3 billion). In addition, OFC planned to set up an offshore fund of about US$100 million in 2011. The company had invested in more than 60 companies, of which seven had been publicly listed: three on the SZSE's SME Board, three on ChiNext, and one on KOSDAQ. OFC's investment thesis revolved around the opportunities created by the rapid development of the economy, on the back of fast-growing businesses that developed exceptional technical or business model innovations. The firms' investments focused in five major industries: information technology (IT), advanced manufacturing, new energy and new materials, consumer products, healthcare, and medicine. (See **Exhibit 10** for the distribution of OFC's investments). Within each industry, the OFC team attempted to cover the entire value chain from upstream to downstream activities. For instance, the company's investment in the IT industry started with an E-sports game platform and gradually covered companies that were developing wired and wireless communication infrastructure, network security, and payment applications, as well as content providers. Such a specialized approach allowed OFC to differentiate itself from many of the rival VC firms that pursued a generalized investment approach. Chen believed such a discipline helped OFC achieve exceptional returns, with over 100% growth in THE FUND'S net income in 2008 and over 50% in 2009.

When OFC first started its operation in 2007, Chen focused on pre-IPO stage projects which delivered immediate results to impress his LPs. As the global financial crisis began to affect China in late 2008, OFC started taking on more early-stage projects as rapid exits became unrealistic under the prevailing economic conditions. By the end of 2010, 20% of OFC's portfolio companies were in their early stages, and around 40% each in the growth and the pre-IPO stages. To accommodate the new strategy, Chen preferred to set a VC fund's lifetime to around five to seven years and an investment cycle to two to three years, in contrast to the shorter life span of many domestic VC funds. As a result, the company could keep the right balance of different projects while allowing adequate time to improve the performance of early-stage investments.

Another feature of OFC's investment strategy was its close attention to state policy. Chen said, "I watched the prime time TV news broadcast on the state TV channel every night. I listen to what the

(Communist) Party says, and I follow in the Party's footsteps." It was essential to keep track of changes in state policy. For instance, he singled out the emergence of many solar and wind energy companies as a result of the government's urge to substitute alternate energy sources for traditional fossil fuels.

ChiNext: The reality check

Positive notes

By April 2011, eighteen months into its operation, ChiNext established itself as a market with adequate liquidity that offered investors substantial returns. ChiNext also helped small-and medium-sized companies, most of which were privately-owned, access capital from a source other than the state-owned banking system. Wang explained how ChiNext helped these companies:

> In the past, many companies opted for an overseas listing because it was a lot faster to get listed. We used to have a few hundred companies lining up for an application but only around 100 were approved each year. But now it's the opposite. There were over 300 IPOs completed in China in 2010 and over 90% were in Shenzhen. We now have two separate departments to look at these applications. As a result, many companies complete their IPOs in a year. The fastest one took only around 100 days.
>
> We knew they couldn't wait for too long as they desperately needed new capital to expand production capacity. Most of these companies were in the "Technology, Media, and Telecommunication" sector where product life cycles were extremely short. Getting market shares was also a top priority. Therefore, these companies really needed the money from their IPOs. Also, as many of the developed economies are still recovering from recession, Chinese companies are eyeing "golden" opportunities to move overseas, or engaging in cross-border mergers and acquisitions.

The creation of ChiNext therefore provided a timely exit for the domestic venture capital firms who previously had limited options to recoup their investments other than going to markets such as NASDAQ, Hong Kong, or London. The emergence of ChiNext also meant that local entrepreneurs did not need to deal with legal and regulatory hurdles overseas, where language, cultural, and geographic distances often complicated efforts to raise capital on foreign exchanges. Chen illustrated the situation:

> In the old days, VCs or sponsors were looking to NASDAQ, Hong Kong, Korea, or Singapore. These days, the entrepreneur or the sponsor does not need to exhaust too many options because the domestic markets offer much higher valuations. The legal complexity and costs brought by Sarbanes-Oxley also made NASDAQ less attractive to Chinese entrepreneurs.

The "home effect," as Wang called it, was apparent in China, particularly as local governments at provincial, municipal or even prefecture levels were eagerly pushing local companies to list on ChiNext. Funds raised in the capital markets were seen as direct investments into these localities, and a publicly-listed firm could contribute more tax revenues. More importantly, IPOs provided comparatively lower-cost capital to fund indigenous research and development (R&D) projects that could not only give a boost to individual companies' but also raise the nation's capacity for innovation. Wang reported the impact on companies' R&D output after listing:

We conducted a research project together with the "Torch High Technology Industry Development Center," a government agency under the Ministry of Science and Technology, to analyze the impact of an IPO upon the research capacity of newly-listed companies. First, we identified 188 ChiNext companies (out of a total of 209 as of April 2011) that could be classified as genuine "high-tech enterprises." In fiscal year 2010, these companies spent a total of RMB 3.6 billion, or an average of RMB 19 million, on R&D, representing an increase of 38.1% on a year-on-year basis. Remember, all these companies had been listed for less than a year, so these increases could likely be attributed to their IPOs. If we focused on those companies in the "strategic emerging industries," the increase in R&D expenditures was even higher at 45.8%.

Negative effects

One of the problems common to ChiNext-listed companies was an "equity glut" from founders or top management. A lock-up period limited a company's founding shareholders and top management from selling their shares for a year, but the rule could be circumvented if they resigned their positions. After resigning, they could not sell any shares within the next six months but were allowed to sell half of their shares in the twelve months after the IPO. As a result, more than 60 senior executives from 37 ChiNext-listed companies had resigned from their posts by October 2010, just one year after ChiNext was launched.[35] Eventually, the rules were changed so that officers leaving a company were prohibited from selling shares within eighteen months from their departure day.[36] Meanwhile, limits on the controlling shareholders had become even more stringent since ChiNext's inception. Controlling shareholders had to promise that they would not transfer the companies' shares issued prior to the IPO within three years of the listing. They could, however, sell their shares one year after the listing, provided that the transaction was between a parent and a subsidiary and was approved by the SZSE.

While the high P/E multiples on ChiNext led to favorable valuations for both the owners looking for extra funding and the early stage investors seeking a favorable exit, the sponsors faced difficulties determining the issuance prices. Among the first 36 listed companies, most raised twice as much as their initial target (see **Exhibit 11**).[37] Seeing share prices skyrocket on the opening trades often left the majority shareholders with a feeling that the sponsors had failed to maximize the potential proceeds. On the other hand, regulators were concerned about the excessive funds raised from the IPOs, fearing possible embezzlement by the majority shareholders. In response, the SZSE added more restrictive rules on companies' disposal of IPO proceeds. The exchange stipulated that a maximum of 20% of the proceeds in excess of the original listing prices could be used for repaying debts or as working capital. The use of more than RMB 50 million or 20% of the extra proceeds for these purposes would be subject to shareholders' approval.

The Road Ahead: Options Available

Listing requirements

The most pressing issue that SZSE faced was whether ChiNext should lower its listing requirements. Wang told Chen about some of the rumblings she had overheard in the market:

Should the requirements be lowered so that even companies losing money or lacking an adequate operation history can get listed on ChiNext? Many Internet companies, such as, Baidu, dangdang.com, or youku.com, were either losing money or not making enough profits

to qualify for any of the markets in China. So, they opted for NASDAQ or NYSE. If the requirements remain the same, ChiNext may lose more and more new IPOs to exchanges overseas. But, you know, we're always a believer in gradualism. We are used to doing things step by step. We may lower the requirements, but maybe not in the near future.

Chen replied:

Believe it or not, I'm calling for higher listing barriers on ChiNext. First, there are just far too many Chinese companies that qualify. I guess there are at least several thousand, if not a hundred thousand. As a VC, I welcome this arrangement as it means fewer backlogs in applications. It can speed up the approval process and quality firms can get to the market faster. Of course, a VC always wants an easier exit. So, the listing requirements should also be lowered, not on ChiNext, though, but on a third board, probably. Or ChiNext's listing requirements should depart substantially from those of the SME board. Either way, the existing ChiNext or the new third board can allow new ventures that lack operation history, or profits, or substantial revenues, to be listed and to receive much needed funding. Otherwise, we would never see an indigenous "Microsoft" or "Google" emerge on any of our local boards, but only those companies entrenched in traditional business models, or carrying substantial fixed assets, as stipulated by the listing requirements.

Delisting stocks

Another area where Chen thought that ChiNext needed to look at was its mechanism for delisting underperforming stocks. Despite the provision for a delisting warning, there was no specific rule governing how exactly a stock would be delisted. Chen noted:

In the absence of a clear path for delisting, the risk and reward of investing in a ChiNext-listed company is asymmetric. We will get a bigger and bigger bubble on ChiNext as retail investors see buying a ChiNext stock as a sure bet. The speculative frenzy in the secondary market jacks up the current or trailing P/Es, and eventually leads to higher P/Es for future IPOs. The upside for a VC investment in a pre-IPO company then came primarily from the price hike after its IPO, instead of the growth of the company's fundamentals. So there was little incentive for a VC to seek out new projects that could offer tremendous growth potential. They would rather look for companies that had proven business models or track records. On the other hand, underperformers will not be delisted but undergo endless "restructuring." Yet a "restructured" company often ends up having an even higher share price than before. This leads to unrealistic investor expectations that the government or the state would always bail out failed businesses, not with cash, but through "administrative procedures." ChiNext will soon no longer be able to fulfill its mission of encouraging growth and innovation.

Before formalizing the delisting mechanism, the listing requirements were tightened. In 2010, more than 60 IPO applications to the ChiNext board were rejected by the CSRC.[38] Measures under consideration were either to delist underperformers directly or to demote them to the OTC market, now running in Beijing's Zhongguancun Science Park and available exclusively to institutional investors. Wang contended:

First, local governments regard these IPOs as one of their major achievements (which directly link to their performance appraisals). So they don't want these companies to be delisted. They will try their best to go through restructuring. That's actually a major headache

for us. Once the companies go into restructuring, a lot of insider trading activities follow. Second, if a firm is delisted, the minority shareholders' interests are not well protected under the current legal or regulatory framework. It's very difficult for them to sue the majority shareholders. The minority shareholders can easily see all of their investments wiped out. They may then take to the streets to demonstrate or petition to higher levels of government. There will be a lot of social instability. This is the last thing we want to see.

Secondary offerings, information disclosure, and other issues

Chen then remarked on the limitations on, and in many cases simply the unavailability of, secondary offerings in China's capital market. This was a drawback, Wang replied, saying:

> In the West, all you need [to do a secondary offering] is to get it approved by the board under most circumstances. In China, the Securities Law stipulates such a deal must go through the shareholders' general meeting, and then secure the approval of the CSRC. This is too rigid and does not help companies that need funds to expand their production capacity or market share. We need to think of a more effective way to help Chinese companies become more competitive in the global market. But to do so, we need to change the law. And this could be a lengthy process.

To make ChiNext a more efficient market, Chen also believed that more thorough information disclosure should take place. ChiNext-listed companies should be required to report not only all information to the Exchange, but also on its own website or via other direct channels to investors. At the same time, both investors and entrepreneurs needed more education on what an IPO meant and how its proceeds should be used. Until recently, most entrepreneurs treated an IPO as a short-cut to greater fortune and fame. Yet, they were less aware of the fiduciary responsibilities of being a director. Conversely, Chen felt retail investors should also be aware that becoming a shareholder of a listed company did not equate to winning a lottery. And they should familiarize themselves with the factors that led to the volatility of share prices.

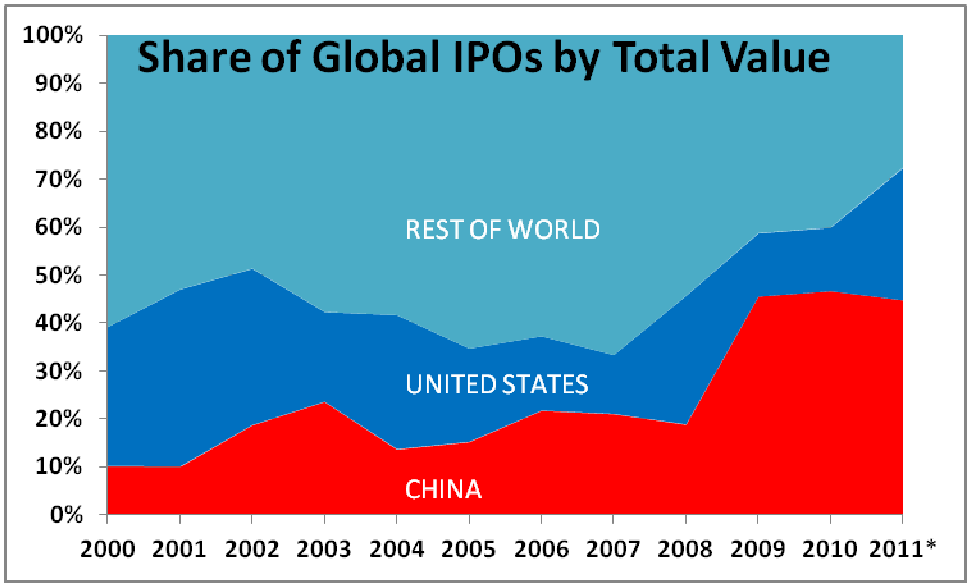
Wang echoed Chen's comments and revealed that progress was being made on broadening information disclosure channels. Wang's major concern, however, remained about the occurrence of a major scandal at a ChiNext-listed company. Be it insider trading or false accounting, any scandal, Wang feared, would jeopardize the credibility SZSE worked so hard to establish. Chen, however, replied: "You shouldn't be too afraid of having a scandal on ChiNext. It will happen for sure, it's just a matter of when it happens and how large it is. Instead, you should prepare yourself and try to learn how to reduce the possibility of having a scandal, and to mitigate risk so as to protect the interests of both investors and entrepreneurs."

Exhibit 1 Major Junior Markets Closed After 2001

Country	Market	Year founded	Year closed	Companies Listed (2001)	Market Cap in 2001 (US$ bn)	Companies Listed at its closure	Market Cap at its closure (US$ bn)
Germany	Neuer Markt	1997	2003	327	18.32	240	10.41
Italy	Nuovo Mercato	1999	2005	45	9.34	40	10.19
Belgium	NASDAQ Europe	2001	2003	48	5.43	41	3.57
Switzerland	SWX New Market	1999	2003	15	1.14	9	0.67
Denmark	KVX Growth Market	2000	2003	13	0.93	10	0.63
Ireland	Developing Companies Market	1997	2005	4	0.03	3	0.49
Japan (Osaka)	New Market Section	1999	2003	4	0.02	4	0.03

Source: Lan, X., (2008) "The Reform and Polarized Development of Overseas Growth Enterprise Market in the New Century" (in Chinese), *Securities Market Herald*, Apri 2008.

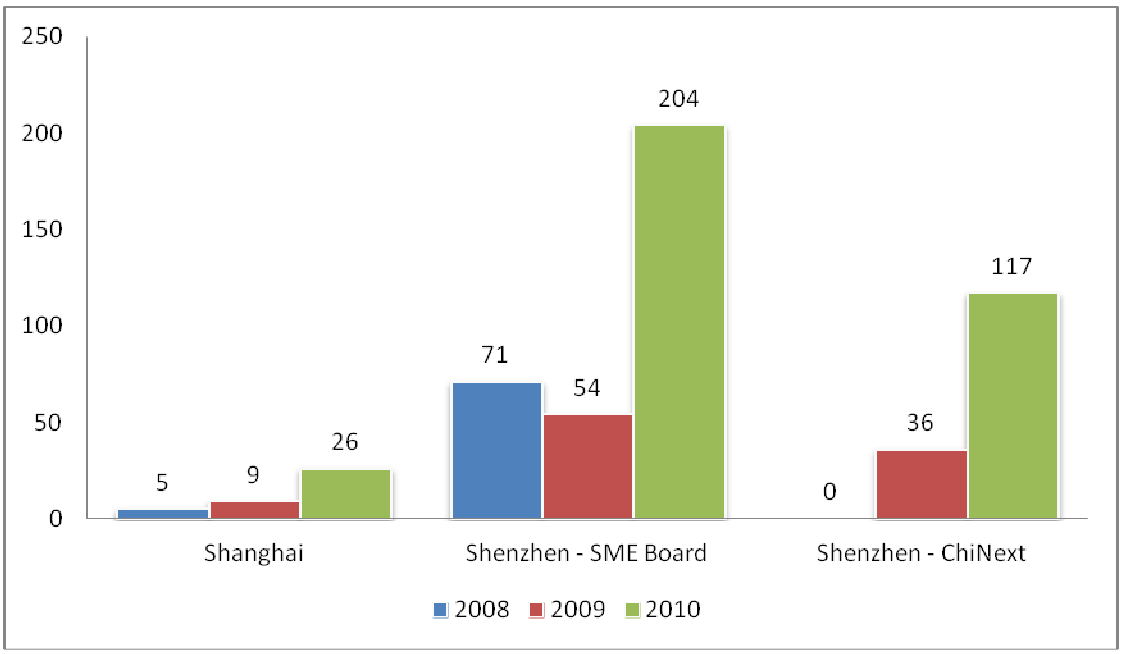
Exhibit 2 IPOs originated from China vs. the rest of the world



Source: Created by casewriters with data from Thomson Reuters Financial.

Note: * Through 5/8/2011

Exhibit 3 Number of IPO deals across various stock exchanges in China, 2008-2010



Source: Adapted from Lu Yibing, and Xiang Wei, "Capital raised from IPOs in 2011 exceeds RMB 600 billion?" (in Chinese), *Shenzhen Wanbo*, January 5, 2011, A04.

Exhibit 4 SZSE Market Summary, 2003-2010

	2003	2004	2005	2006	2007	2008	2009	2010
Listed companies	505	536	544	579	670	740	830	1,169
Market capitalization (RMB billion)	1,265	1,104	933	1,779	5,730	2,411	5,928	8,641
Total volume (RMB billion)	1,215	1,642	1,327	3,873	18,764	9,938	19,873	24,742
Daily average volume (RMB million)	5,042	6,757	5,485	16,073	77,539	40,401	81,448	102,242

Source: The Shenzhen Stock Exchange, *Shenzhen Stock Exchange Factbook 2010,* p. 3-4.

Exhibit 5 An excerpt from "Interim Measures on the Administration of Initial Public Offerings and Listings of Shares on the ChiNext"

Chapter II Offering Conditions

Article 10: The issuer that applies for IPO of shares shall meet the following conditions:

1. The issuer must be a duly incorporated company limited by shares and must have been in operation for more than three consecutive years.

For any company limited by shares which has been transformed as a whole from a limited liability company by converting its original book value of net assets into shares, the required operation period may be counted from the date of establishment of the limited liability company.

2. The issuer must have been profitable in the most recent two consecutive years, with accumulated profits no less than RMB 10 million and in steady growth; or the issuer must have been profitable in the most recent year with net profits of no less than RMB 5 million and revenues of no less than RMB 50 million, and its revenue growth rate for either of the most recent two years must have been no less than 30%. Net profits shall be calculated based on the amount before or after deducting non-recurring profits and losses, whichever is smaller.

3. The issuer must have net assets of no less than RMB 20 million at the end of the most recent accounting period with no uncovered losses; and

4. The issuer must have a total share capital of no less than RMB 30 million after the IPO.

Chapter III Offering Procedures

Article 32: The sponsor that sponsors an issuer's share offering and listing on the ChiNext shall conduct due diligence investigations and make prudential judgment on the issuer's growth and render special opinions thereon. The sponsor shall also explain the issuer's innovative capability in its special opinions if the issuer is an innovative enterprise.

Chapter IV Information Disclosure

Article 40: The issuer shall make a statement in a prominent position in its prospectus as follows: "The shares to be offered in the contemplated IPO will be listed on the ChiNext which is characterized by high investment risk. Companies on the ChiNext are susceptible to inconsistent performance and high operation risk and delisting risk which expose investors to high market risk. Prospective investors should be fully aware of the investment risk associated with the ChiNext and the risk factors disclosed by the Company and should make the decision to invest only after due consideration."

Chapter V Supervision and Legal Liabilities

Article 51: The stock exchange shall establish the systems of listing, trading and delisting as well as other relevant systems appropriate to the characteristics of the ChiNext. It shall urge sponsors to fulfill their continuous supervisory obligations and shall impose regulatory measures on violations of applicable laws and regulations as well as the rules of the stock exchange.

Article 52: The stock exchange shall establish a market risk warning system and a continuing investor education system appropriate to the characteristics of the ChiNext and urge issuers to establish and perfect an investor protection system and an internal control system for preventing and correcting illegal and irregular acts.

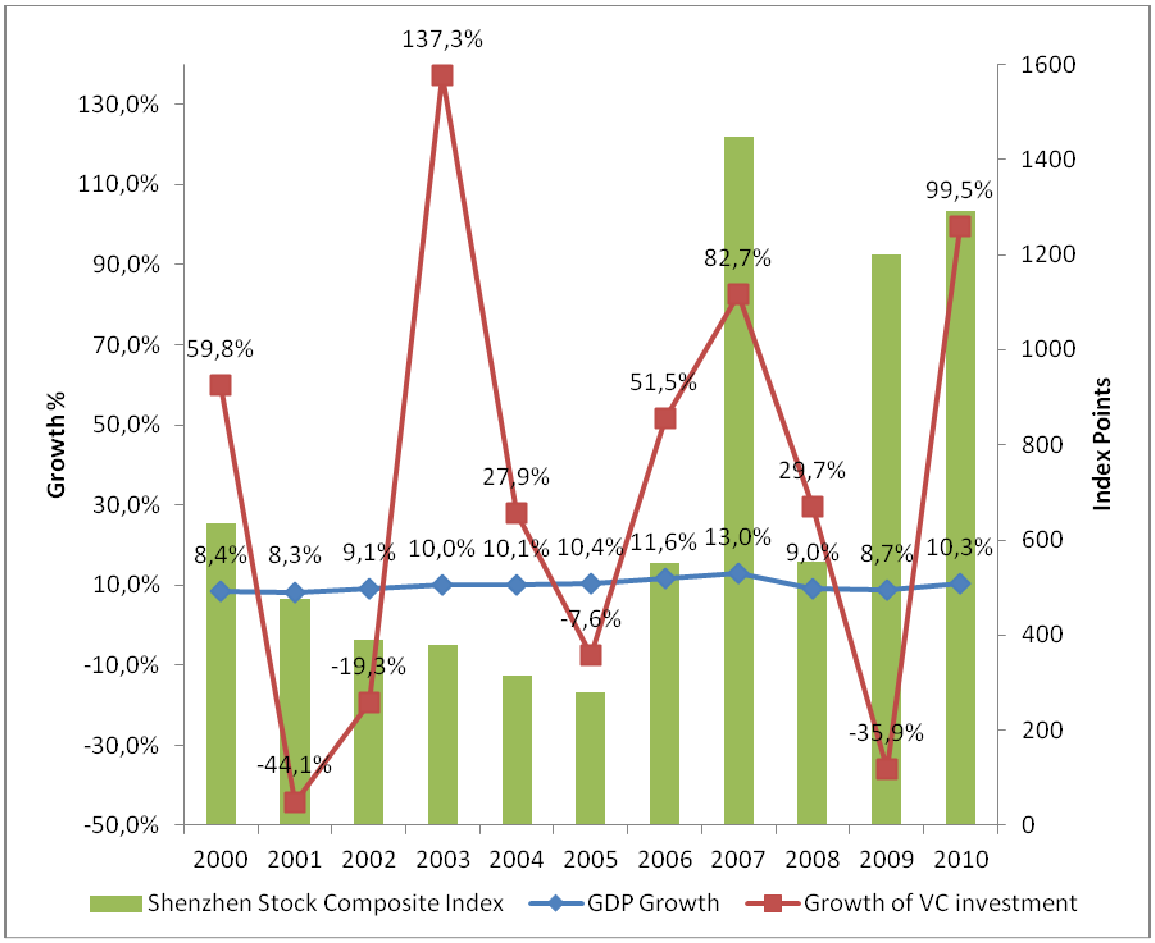
Source: The Shenzhen Stock Exchange.

Exhibit 6 Comparison of Key Listing Requirement for Major Second Boards

	SZSE: ChiNext	SZSE: Main Board	Hong Kong: GEM	Hong Kong: Main Board	NASDAQ Global Market	AIM, London	KOSDAQ, Korea	Catalist, Singapore
Liquidity requirements								
Shareholders Spread	200	NA	100	300	400	NA	500	200
Publicly held shares	25% of issued capital; 10% if capital > US$61mn (RMB 400mn)	25% of issued capital; 10% if capital > US$61mn (RMB 400mn)	25% of issued capital	25% of issued capital	1.1mn shares	NA	30% of issued capital; OR 10% of 100mn-500mn shares	15% of issued capital
Market capitalization of public float	NA	NA	US$3.8mn	US$6.4mn	US$8-20mn depends on standards	NA	NA	NA
Stockholders' equity	Post IPO: US$4.6mn (RMB 30mn)	Pre IPO: US$4.6mn (RMB 30mn)	NA	NA	US$0-30mn depends on standards	NA	US$1.6-3.2mn depends on standards	NA
Operating history	3 years	3 years	2 years	3 years	0-2 years depends on standards	NA	0-3 years depends on standards	NA
Financial requirements								(3)
Profits	Aggregated US$1.5mn (RMB10mn) for last 2 years; **OR**	Aggregated US$4.6mn (RMB30mn) for last 3 years; **AND**	NA	US$6.4mn for last 3 years; **AND** US$2.6mn last year (1); **OR**	US$0-1mn depends on standards	NA	Ordinary profit	NA
Cash flow	NA	Aggregated US$7.6mn (RMB50mn) for last 3 years; **OR**	Aggregated US$2.6mn for last 2 years;	NA	NA	NA	NA	NA
Revenue	US$7.6mn last year (with net profits of US$0.76mn & 30% revenue growth for last 2 year)	Aggregated US$46mn (RMB300mn) for last 3 years	NA	US$64mn last year if market cap > US$512mn (2)	NA	NA	NA	NA

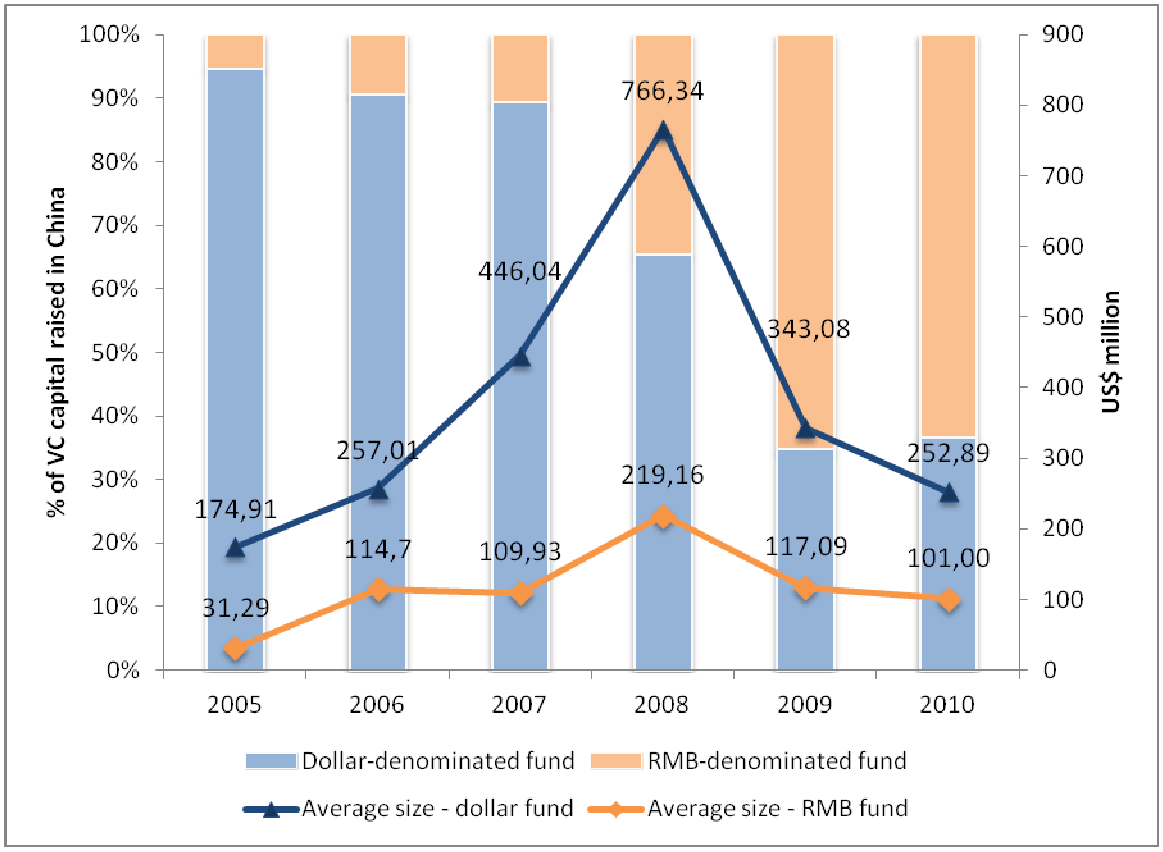
Source Compiled by casewriters with data from the websites of SZSE, Hong Kong Exchanges and Clearing Limited, NASDAQ, AIM, KOSDAQ, Singapore Exchange, and Grant Thornton (2008), "Global growth markets the changing face of world finance", p 18-19 Note (1) under the "Profit Test"; (2) under the "Market Cap/Revenue Test"; (3); sufficient working capital was required

Exhibit 7 Growth of GDP and VC Investments in China, and stock performance on SZSE



Source: Created by casewriters, using data extracted from zero2ipo on http://www.pedaily.cn/Item/124782.aspx, retrieved April 2011, and data in *Shenzhen Stock Exchange Fact Book 2010*.

Exhibit 8 Relative importance of Dollar-denominated funds and RMB-denominated funds in China's VC industry



Source: Created by casewriters from data provided by Zero2ipo Research Center, via pedaily.cn, February 1, 2010, http://www.pedaily.cn/Item/123755.aspx, accessed April 2011, and PEdaily.cn, January 30, 2011, http://www.pedaily.cn/Item/205073.aspx, accessed May 2011.

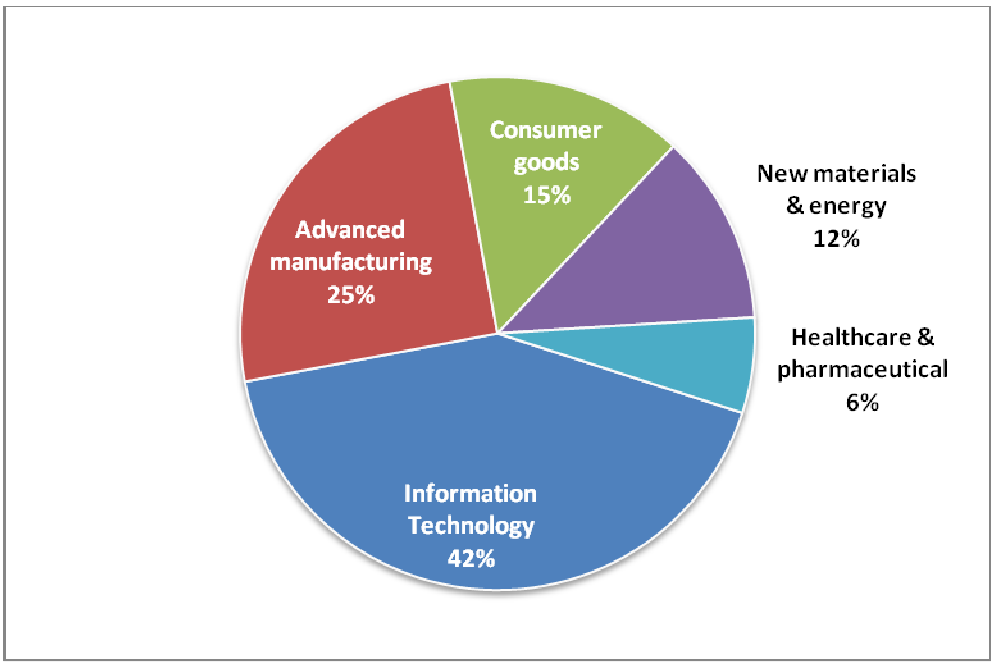
Exhibit 9 Top 20 VC Firms in China, 2010

Rank	Name of VC Firm	Origin
1	Shenzhen Capital Group Co., Ltd.	Domestic
2	Sequoia Capital China	Foreign
3	IDG Capital Partners	Foreign
4	SAIF Partners	Foreign
5	Shenzhen Fortune Venture Capital Co., Ltd.	Domestic
6	Jiangsu Govtor Capital Group	Domestic
7	Shanghai NewMargin Ventures	Domestic
8	China Science and Merchants Capital Management Limited	Domestic
9	Shenzhen Co-win Venture Capital Investment Limited	Domestic
10	Legend Capital	Domestic
11	Green Pine Capital Partners Co.	Domestic
12	CDH Venture Ltd.	Foreign
13	Shenzhen Oriental Fortune Capital Co., Ltd.	Domestic
14	GGV Capital	Foreign
15	SIG Asia Investment, LLLP	Foreign
16	Intel Capital Corporation	Foreign
17	Softbank China Venture Capital	Foreign
18	Kleiner Perkins Caufield & Byers - China	Foreign
19	DT Capital Partners	Foreign
20	Walden International	Foreign

Source: Zero2IPO Group, *China Venture Capital & Private Equity Annual Ranking 2010*, December 10, 2010, http://www.zero2ipogroup.com/f/research/20111129403339915.pdf, retrieved April 2011.

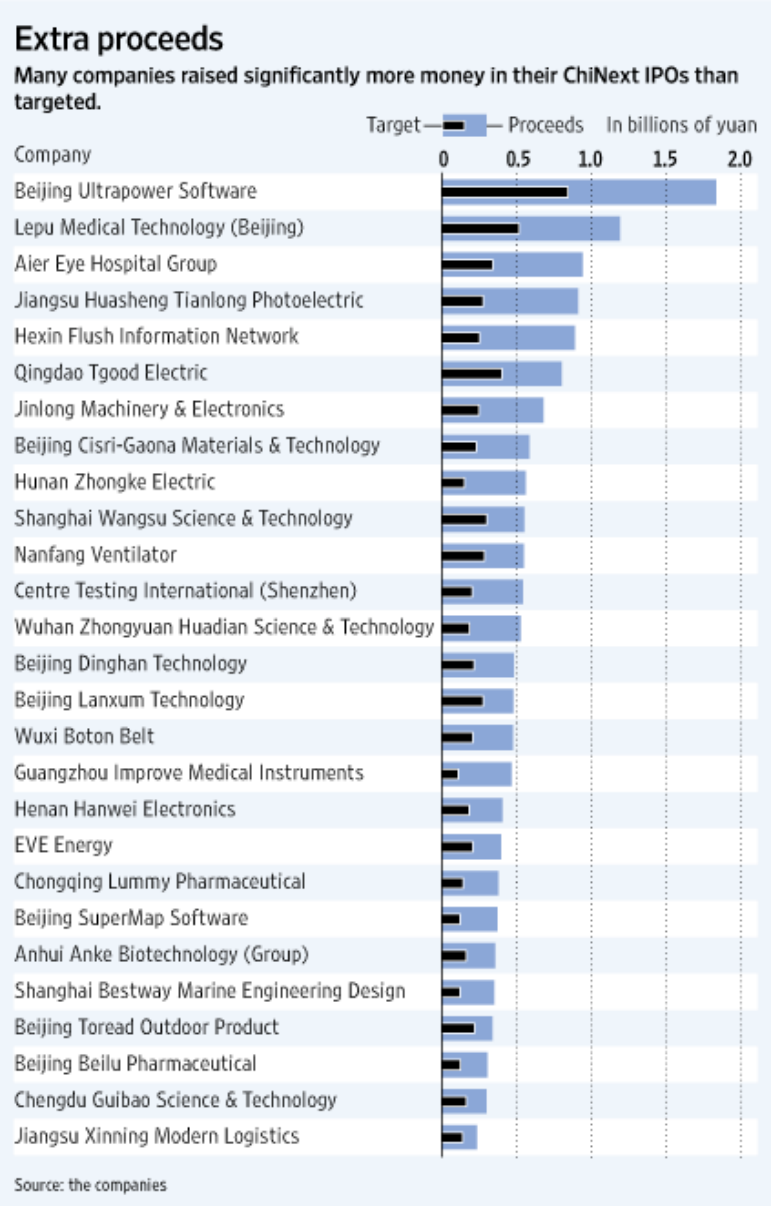
Note: The ranking is based on an undisclosed ranking scheme that includes, among other measures, the amount of managed capital, the amount of newly raised funds, the number of investment deals, the amount of invested capital, the number of exits, and return on investment.

Exhibit 10 OFC Investments by Industry Sector



Source: Oriental Fortune Capital.

Exhibit 11 Extra proceeds raised from ChiNext IPOs



Source: Wynne Wang, "Shenzhen Exchange Tightens ChiNext Rules", *Wall Street Journal*, January 7, 2010, http://online.wsj.com/article/SB10001424052748703882804574641682869069924.html, retrieved April 2011.

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[8] Most of the early junior markets were auction markets, where buyers and sellers traded their stocks by announcing their bid and ask prices on an open auction. NASDAQ, however, was a dealer market in which buyers and sellers did not trade directly but through dealers. The dealers held the shares under their account and earned profits through the bid-ask spreads between buyers and sellers. Usually, the bid-ask spreads on an auction market are smaller than in a dealer market, given adequate information transparency. However, a dealer might have more incentive to "make the market" by completing more trades, thus, enhancing the liquidity of the stocks. For further information on how the market mechanism influenced the growth of junior markets, see Reena Aggarwal and James J. Angel, "The rise and fall of the Amex Emerging Company Marketplace", *Journal of Financial Economics* 52 (May 1999): 257-289.

[9] The "nominated adviser" (Nomad) was a system first introduced by AIM in 1995. Each company applying for an AIM listing needed to appoint a Nomad to guide it through the IPO approval process and oversee its operation through its listing on the exchange. A Nomad, usually the underwriter of a newly-issued stock, had to assess whether a company was appropriate for listing on AIM, to conduct the due diligence process, and to assume on-going responsibilities in supervising an AIM company's compliance with information disclosure, corporate governance, and trading requirements. Source: *AIM Rules for Nominated Advisers*, London Stock Exchange publications, (London, UK, February 2007), http://www.londonstockexchange.com/companies-and-advisors/aim/publications/aim-rules-for-nominated-advisers.pdf, accessed April 2011.

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PARTICIPANTS WILL BE INVITED TO CHOOSE THEIR TABLE IN ADVANCE AMONG THE FOLLOWING THEMES

THEME 1:

Are new incentives needed to attract private sector investors back to venture capital? If so, which ones are the best? (Several countries have shown renewed interest in guarantee schemes and protection against first losses. Will these approaches work?)

THEME 2:

In many countries, venture capital funds are subscale in size and expertise. Are cross-border funds a way to address this issue? If so, how can they be created and funded?

THEME 3:

More and more countries are considering policies to support business angel investment: what are the best examples of these new policies? The worst? Which will work, and why?

THEME 4:

Can government agencies and other public entities attract and retain the talent needed to implement programs to support venture capital and innovation, in the absence of an ability to pay them compensation at private industry level? How is this problem solvable?

THEME 5:

What is the role of growth equity in building an entrepreneurial ecosystem in emerging markets? Will that growth equity be available?

THEME 6:

What new fund models will align interests of LPs and GPs, including in the many ecosystems other than Silicon Valley? What are the most promising new developments?

THEME 7:

Technology transfer from universities and research centers: who owns the IP? Who should own the IP? Who should do the transfer, and under which terms? What universities are doing it right? MIT? Harvard? Oxford? Toronto?

Participants

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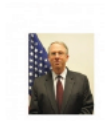

Consul General of the United States in Quebec City

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