

**CREATING AND GROWING NEW BUSINESSES:
FOSTERING U.S. INNOVATION**

HEARING
BEFORE THE
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
COMMITTEE ON SCIENCE, SPACE, AND
TECHNOLOGY
HOUSE OF REPRESENTATIVES
ONE HUNDRED TWELFTH CONGRESS
FIRST SESSION
WEDNESDAY, NOVEMBER 2, 2011
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CONTENTS

Wednesday, November 2, 2011

| | |
|-----------------------|-----------|
| Witness List | Page 2 |
| Hearing Charter | 3 |

Opening Statements

| | |
|---|---|
| Statement by Representative Benjamin Quayle, Chairman, Subcommittee on Technology and Innovation, Committee on Science, Space, and Technology, U.S. House of Representatives | 5 |
| Written Statement | 6 |
| Statement by Representative Donna Edwards, Ranking Minority Member, Subcommittee on Technology and Innovation, Committee on Science, Space, and Technology, U.S. House of Representatives | 7 |
| Written Statement | 9 |

Witnesses:

| | |
|---|----|
| Brink Lindsey, Senior Scholar in Research and Policy, Ewing Marion Kauffman Foundation | 11 |
| Oral Statement | 12 |
| Written Statement | 12 |
| Julian Mann, Co-Founder and Vice President, Product Development and Research, Skybox Imaging | 16 |
| Oral Statement | 18 |
| Written Statement | 18 |
| Ray Rothrock, Partner, Venrock | 20 |
| Oral Statement | 23 |
| Written Statement | 23 |
| Steve Dubin, Former CEO, Martek Biosciences, and Senior Advisor to DSM Nutritional Products | 28 |
| Oral Statement | 30 |
| Written Statement | 30 |
| Discussion | 33 |

Appendix 1: Answers to Post-Hearing Questions

| | |
|---|----|
| Brink Lindsey, Senior Scholar in Research and Policy, Ewing Marion Kauffman Foundation | 50 |
| Julian Mann, Co-Founder and Vice President, Product Development and Research, Skybox Imaging | 54 |
| Ray Rothrock, Partner, Venrock | 59 |
| Steve Dubin, Former CEO, Martek Biosciences, and Senior Advisor to DSM Nutritional Products | 65 |

Appendix 2: Additional Material for the Record

| | |
|---|----|
| Rebuilding the IPO On-Ramp: Putting Emerging Companies and the Job Market Back on the Road to Growth | 70 |
|---|----|

**CREATING AND GROWING NEW BUSINESSES:
FOSTERING U.S. INNOVATION**

WEDNESDAY, NOVEMBER 2, 2011

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, DC.

The Subcommittee met, pursuant to call, at 10:06 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Benjamin Quayle [Chairman of the Subcommittee] presiding.

RALPH M. HALL, TEXAS
CHAIRMAN

EDDIE BERNICE JOHNSON, TEXAS
RANKING MEMBER

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

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Subcommittee on Technology and Innovation
Creating and Growing New Businesses: Fostering U.S. Innovation
Wednesday, November 2, 2011
10:00 a.m.-12:00 p.m.
2318 Rayburn House Office Building

Witnesses

Mr. Brink Lindsey
Senior Scholar in Research and Policy, Ewing Marion Kauffman Foundation

Mr. Julian Mann
Co-Founder and Vice President, Product Development and Research, Skybox Imaging

Mr. Ray Rothrock
Partner, Venrock

Mr. Steve Dubin
Former CEO, Martek Biosciences; Senior Advisor to DSM Nutritional Products

HEARING CHARTER

**COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
U.S. HOUSE OF REPRESENTATIVES**

**Creating and Growing New Businesses:
Fostering U.S. Innovation**

WEDNESDAY, NOVEMBER 2, 2011
10:00 A.M.—12:00 P.M.
2318 RAYBURN HOUSE OFFICE BUILDING

Purpose

On Wednesday, November 2, 2011, the Subcommittee on Technology and Innovation will convene a hearing to examine the current state of small, innovative startup companies, which are engines of both transformative innovations and job creation. The Subcommittee will seek testimony on obstacles limiting those with the ideas and desire to either start a new company, or take a fledgling company to a place of rapid growth.

Witnesses

- **Mr. Brink Lindsey**, Senior Scholar in Research and Policy, Ewing Marion Kauffman Foundation.
- **Mr. Julian Mann**, Co-Founder and Vice President, Product Development and Research, Skybox Imaging.
- **Mr. Ray Rothrock**, Partner, Venrock.
- **Mr. Steve Dubin**, Former CEO, Martek Biosciences; Senior Advisor to DSM Nutritional Products.

BACKGROUND

New businesses have historically played a major role in advancing both job creation and innovation in the U.S. economy. According to research conducted by the Kauffman Foundation and the U.S. Census Bureau's Business Dynamics Statistics, startup companies (those in their first year of existence) added an average of three million jobs per year between 1977 and 2005, whereas existing companies (those aged one year and older) experienced net job losses over the same period.¹ By their very nature, new businesses advance innovation because entrepreneurs identify market opportunities that current businesses are not addressing and create companies to satisfy these market opportunities. Through the last decade, many business efforts that started with an individual or small group have grown and transformed the way we live our lives. For example, social media startups such as Facebook and Twitter have introduced new ways to communicate both personally and professionally.

Innovation and High-Growth Industry Startups

The Organization for Economic Co-operation and Development (OECD) defines innovation as the introduction of a new or significantly improved product (good or service), process, or method.²

Examples of innovation include the development of new products which have the capacity to fundamentally change the market, such as the personal computer or the semiconductor. Alternatively, innovation can lead to improvements of existing products and services, such as improving the speed of microprocessors, or the

¹ T. Kane, "The Importance of Startups in Job Creation and Job Destruction," Ewing Marion Kauffman Foundation, July 2010; http://www.ces.census.gov/index.php/bds/bds_home.

² "The OECD Innovation Strategy: Getting a Head Start on Tomorrow," OECD 2010.

functionality of software. An example of process innovation is the implementation of lean manufacturing.

Innovative companies have played a central role in the growth of the U.S. economy by providing mid-term and long-term employment and income growth.³ Indeed, innovation has been responsible for approximately 80 percent of the growth in the U.S. economy since World War II⁴ and new businesses in high-growth sectors have contributed significantly to the country's innovative capacity.

Over the past decade, the high-growth sectors of the U.S. economy have centered on information technology, health care, energy, defense, and advanced manufacturing. These sectors are dependent on the output of scientific and engineering-related research and development, and many small companies are also started based on intellectual property derived from basic research conducted at universities and other research organizations.

Job Creation

According to the Kauffman Foundation, job creation from startup companies remained relatively consistent between 1977 and 2005, even during periods of recession. 1A⁵ However, in recent years, startup companies have witnessed a significant decline in job creation. 1A⁶ While companies are still being created, they are starting up with smaller numbers of employees, and not adding employees at a rate that has been historically characteristic of small business growth. 1A⁷ This trend is troubling for the long-term outlook of job growth from small businesses. While the current economic environment may have exacerbated the situation, this data suggests the pattern predates the recent recession, leading to questions about whether a systemic change in the relationship between new company formation and job creation may be occurring.⁸

Issues for Examination

Many factors influence those with innovative ideas who want to start companies. The Committee is interested in understanding how local, State, regional, and federal policies influence the environment for new company creation or growth. Issues for examination within this hearing include:

New Business Formation, Job Growth, and Innovation

- What is the historical relationship between new business formation and job creation in the country?
- What is the role of new businesses in driving the nation's innovative capacity and competitiveness?
- Do existing policies adequately address recent trends in job growth affiliated with new businesses?
- What challenges are unique to entrepreneurs in the technology and innovation sector?

Policy Obstacles and Opportunities

- Local, State and federal stakeholders are all interested in both making targeted investments and removing barriers to companies starting and growing. What are the most significant policy levers?
- How do federal policies influence potential research partnerships between startups and research institutions, or larger companies?
- Should federal policies have a greater focus on new business formation, or on promoting business growth?

³ R. Atkinson, D. Castro, S. Andes, S. Ezell, D. Hackler, and R. Bennett, "Innovation Policy on a Budget: Driving Innovation in a Time of Fiscal Constraint," Information Technology and Innovation Foundation, September 2010.

⁴ Information Technology Industry Council, www.itic.org.

⁵ T. Kane, "The Importance of Startups in Job Creation and Job Destruction," Ewing Marion Kauffman Foundation, July 2010; http://www.ces.census.gov/index.php/bds/bds_home.

⁶ J. Haltiwanger, R. Jarmin, and J. Miranda, "Business Dynamics Statistics Briefing: Historically Large Decline in Job Creation from Startup and Existing Firms in the 2008–2009 Recession," Ewing Marion Kauffman Foundation, March 2011.

⁷ E.J. Reedy and Robert E. Litan, "Firm Foundation and Economic Growth, Starting Smaller, Staying Smaller: America's Slow Leak in Job Creation," Kauffman Foundation Research Series, July 2011, http://www.kauffman.org/uploadedFiles/job_leaks_starting_smaller_study.pdf.

⁸ Ibid.

- Are there any federal policies that discourage potential entrepreneurs who are considering starting or expanding a company?

Access to Capital

- How important is access to capital in today's environment? How have investment trends changed the types of innovations in the pipeline, and potential for companies to go public?
- What opportunities exist for raising capital for startup companies that are located in areas without great concentrations of venture capital companies? What steps do venture capital companies take to identify investment opportunities outside their immediate geographical area?

Chairman QUAYLE. The Subcommittee on Technology and Innovation will come to order. Good morning. Welcome to today's hearing entitled "Creating and Growing New Businesses: Fostering U.S. Innovation." In front of you are packets containing the written testimony, biographies, and truth-in-testimony disclosures for today's witnesses. I will now recognize myself for five minutes for an opening statement.

Before we get started, even though Ms. Edwards is not here, I would like to welcome her when she gets here because she is the new Ranking Member of this Subcommittee, and I am very eager to be working with her in the next coming year and a half. So we are very excited to have her as the new Ranking Member.

But the goal of today's hearing is to learn more about U.S. startup companies, which are engines of both transformative innovations and job creation. We will be hearing testimony on the obstacles impeding entrepreneurs from starting a new company from scratch or from expanding a fledgling company to a place of rapid growth. As this Subcommittee sits at the intersection of technology and innovation, we are uniquely positioned to address topics affecting competitiveness of emerging high-growth industries. Today's discussion is the second in a series focused on advanced U.S. innovation in a constrained budget environment.

Earlier this fall, we held a hearing on the opportunities and challenges of cloud computing. In the coming months, it is my intention to address a range of topics including the role of standards in international trade, the importance of collaborative research partnerships in the innovation ecosystem, and new developments in wireless communications. In these difficult times, it is important that we continue to empower our Nation's innovators to maintain our economic competitiveness.

Entrepreneurs and new businesses have played a vital role in advancing both job creation and innovation in our country. Over the last three decades, new businesses have created nearly 40 million jobs and have been responsible for nearly all net new job creation. New businesses also facilitate the spread and adoption of innovation because they are more likely to seize new developments in order to create market niches for themselves.

From our founding, the United States has always cultivated the entrepreneurial spirit of its citizens, recognizing the vitality new businesses bring to commerce. Economist Robert Solow was awarded the Nobel Prize for his work demonstrating how economic innovation was the most powerful factor driving our country's growth and productivity in the 20th century. The public and private sectors have worked to support entrepreneurship by facilitating new

business formation, access to capital, and financial rewards for success. In turn, these new businesses have added significantly to the growth and dynamism of our economy.

Unfortunately, recent studies have found that the environment for new businesses has grown increasingly unfavorable. In the past three years, the number of new businesses launched has fallen 23 percent. Recently, the World Bank's "Doing Business" report showed that the United States has dropped in the ease of starting a business category from third to 13th since 2007. Capital investment in startup companies has decreased, and far fewer small companies are holding initial public offerings.

But, as some of our witnesses may testify today, a number of these challenges predate the economic downturn of the last few years. The continued decline in new business formation and growth puts our Nation's job creation and innovative capacity at risk. Recognizing this link between startup businesses, innovation, and job creation, the Subcommittee is interested in hearing from today's witnesses about the environment for new business formation, and obstacles preventing entrepreneurs from forming new companies and accelerating their growth. This is a difficult question to answer given our current budgetary challenges, so I especially hope to hear from our witnesses examples of what the Federal Government can do to eliminate barriers to entrepreneurship, in addition to any other creative ideas they may have.

I would like to extend my appreciation to each of our witnesses for taking the time and effort to appear with us today and we look forward to your testimony.

I now recognize the gentlelady from Maryland, the new Ranking Member of this Subcommittee, Ms. Edwards, for her opening statement and welcome to the Subcommittee as the Ranking Member.

[The prepared statement of Mr. Quayle follows:]

PREPARED STATEMENT OF CHAIRMAN BEN QUAYLE,
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY, U.S. HOUSE OF
REPRESENTATIVES

Good morning. Before we get started, I would like to take a moment to welcome Congresswoman Donna Edwards of Maryland to her new role as Ranking Member of this Subcommittee. I look forward to working with you and your staff in the 112th Congress.

The goal of today's hearing is to learn more about U.S. startup companies, which are engines of both transformative innovations and job creation. We will be hearing testimony on the obstacles impeding entrepreneurs from starting a new company from scratch or from expanding a fledgling company to a place of rapid growth.

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Unfortunately, recent studies have found that the environment for new businesses has grown increasingly unfavorable. In the past three years, the number of new businesses launched has fallen 23 percent. Recently, the World Bank's "Doing Business" report showed that the U.S. has dropped in the ease of starting a business category from third to 13th since 2007. Capital investment in startup companies has decreased, and far fewer small companies are holding initial public offerings. But, as some of our witnesses may testify today, a number of these challenges predate the economic downturn of the last few years.

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I'd like to extend my appreciation to each of our witnesses for taking the time and effort to appear before us today. We look forward to your testimony.

Ms. EDWARDS. Thank you, Mr. Chairman, and I apologize if I am late. Usually, my military dad would have reminded me that I should be on time, which I usually am, and so I apologize. And thanks for welcoming me to the Committee and for calling this hearing on small business creation and the way to spur innovation. I want to thank our witnesses for joining us here today to discuss the obstacles and the challenges that face small businesses and what this Subcommittee can do to help.

Mr. Chairman, I am also honored to join you on this Subcommittee as Ranking Member, and I look forward to working with you on the many issues that come under our jurisdiction and ways in which we can actually work together in a collaborative and bipartisan way.

I am certain there isn't a person in this hearing room today that doesn't recognize how important small businesses are to our economy. We say it all the time, particularly new small businesses that spur innovation and create jobs. According to the Small Business Administration, small businesses generated 65 percent of net new jobs over the past 17 years. And as we continue our efforts to put our economy back on track, we should be committed to fostering the creation of small businesses and give them the support and resources they need to succeed.

And I am also certain that many of us here today would also agree that there is much that can be done to reduce the regulatory burden on emerging small businesses by reviewing duplicative or outdated regulations, as well as reducing bureaucracies that slow progress and add cost to business. I expect that many of us will also be united in our desire to create an environment for small business creation, and we can support policies that provide additional tax incentives to foster growth. I have long championed pro-

viding incentives to companies that co-locate research and development activities with domestic manufacturing. I think this is good public policy; it is good tax policy, and these federal policies can incentivize good behavior and spur homegrown innovation, progress, and manufacturing—21st century manufacturing.

We should also ensure that our communities have the proper infrastructure and support to help businesses thrive. For that reason, I appreciate the shout-out from Mr. Rothrock to the I-270 Corridor in your prepared remarks. The critical investments that our State in Maryland has made to support and grow businesses has been recognized by Bloomberg News in its naming of the region as one of the top 10 places for startups. And that is not by accident; it is by policy.

There are additional ways to support small business creation, including amending our intellectual property laws to spur greater innovation and updating our immigration laws so that small businesses will have access to the most skilled workforce possible and enable entrepreneurs from throughout the world to set up shop here in the United States.

And while there may be a shared interest in tackling these sort of matters, they unfortunately do not fall within this Subcommittee's jurisdiction and are not the items on which we have the authority to legislate. So we should do what we can. We have to do a better job of transferring new ideas and technologies out of federal or university labs and into the hands of startup companies in this country. I believe there are many opportunities for us to strengthen and improve federal technology transfer, build on the lab-to-market efforts that are already underway within the Administration. And Mr. Chairman, I hope that this is an issue that we can explore together in the months to come.

I think that we have to recognize that there is a role for the Federal Government as well. There are countless technologies that we use every day that can trace their origin back to federal research and development investments. I hope that our witnesses will testify about that today. The indisputable truth is that without new discoveries, we won't have new game-changing technologies or the small businesses to make and sell them. The reality, though, is that those early risks are sometimes things that government needs to do and can do and then allow the commercial sector to take over.

If we want a vibrant small business community that spurs innovation and creates new jobs, we have to provide sufficient funding to our federal research agencies. They are key. And if we turn our back on federal research and development, the medium- and long-term impacts on small business creation will be devastating.

Finally, we should be building on the foundation this Committee laid last year in the *America COMPETES Reauthorization Act* to enhance and expand federal support for the commercialization of new technologies by small businesses. Over the last year, the Administration has made significant strides through its Startup America Initiative to ensure that the Federal Government does not turn its back on struggling small businesses. These efforts are helping to provide small businesses with the tools and resources they need to innovate and transform promising technologies into marketable products.

This Subcommittee ought to be doing what it can to build upon the Administration's efforts, and we should be taking our cue from international competitors who are developing and investing in groundbreaking programs that help small businesses innovate and commercialize new products.

For example, this year, Germany is investing \$545 million in cooperative research and development projects conducted collaboratively by a number of small manufacturers or by small manufacturers in collaboration with public research institutions.

Again, Mr. Chairman, I want to thank you for holding this important hearing, and I look forward to hearing from our witnesses today on this topic.

[The prepared statement of Ms. Edwards follows:]

PREPARED STATEMENT OF RANKING MEMBER DONNA EDWARDS,
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY, U.S. HOUSE OF
REPRESENTATIVES

Mr. Chairman, thank you for calling this hearing on small business creation and ways to spur innovation. And thank you to our witnesses for joining us here today to discuss the obstacles and challenges facing small businesses and what this Subcommittee can do to help.

Mr. Chairman, I am also honored to join you on this Subcommittee as Ranking Member. I am certainly looking forward to working with you on the important issues that come before this Subcommittee. I believe that there is a lot of common ground on these matters, and I fully expect that we will be able to work together in a collaborative and bipartisan way to address them.

I am certain that there isn't a person in this hearing room today that does not recognize how important small businesses are to our economy. Small businesses, particularly new small businesses, spur innovation and create new jobs. According to the Small Business Administration, small businesses generated 65 percent of net new jobs over the past 17 years. As we continue our efforts to put our economy back on track, we should be committed to fostering the creation of small businesses and give them the support and resources they need to succeed.

I am also certain that many of us here today would agree that there is much that can be done to reduce the regulatory burden on emerging small businesses by reviewing duplicative or outdated regulations, as well as, reducing bureaucracies that slow progress and add costs to businesses.

I expect that many of us will also be united in our desire to create an environment for small business creation. We can support policies that provide additional tax incentives to foster growth. I have long championed providing incentives to companies that co-locate research and development with domestic manufacturing. These federal policies incentivize good behavior and spur home-grown innovation and progress.

We must also ensure that our communities have the proper infrastructure and support to help businesses thrive. For that reason, I appreciate the shout-out from Mr. Rothrock to the I-270 corridor in his prepared remarks. The efforts and the critical investments the State has made to support and grow businesses have been recognized by Bloomberg News in its naming of the region as one of the top 10 places for startups.

There are additional ways to support small business creation, including amending our intellectual property laws to spur greater innovation and updating our immigration laws so that small businesses will have access to the most skilled workforce possible and enable entrepreneurs from throughout the world to set up shop here in the United States. While there may well be a shared interest in tackling these sorts of matters, they unfortunately do not fall within this Subcommittee's jurisdiction and are not items upon which we have the authority to legislate.

Fortunately, there is a lot within this Subcommittee's jurisdiction that can be done to support and foster the creation of new small businesses, and it is my hope that we will be able to focus today's discussion on these issues.

There are countless technologies that we use every day that can trace their origin back to federal research and development investments. The indisputable truth is

that without new discoveries, we won't have new game-changing technologies or the small businesses to make and sell them. If we want a vibrant small business community that spurs innovation and creates new jobs, we simply must provide sufficient funding to our federal research agencies. If we turn our back on federal research and development, the medium- and long-term impacts on small business creation will be devastating.

We must also do a better job of transferring new ideas and technologies out of federal or university labs and into the hands of startup companies in this country. I believe there are many opportunities for us to strengthen and improve federal technology transfer and build upon the lab-to-market efforts that are already underway within the Administration. Mr. Chairman, I hope that this is an issue that we can explore together in the months to come.

Finally, we should be building upon the foundation this Committee laid last year in the *America COMPETES Reauthorization Act* to enhance and expand federal support for the commercialization of new technologies by small businesses. Over the last year, the Administration has made significant strides through its Startup America initiative to ensure that the Federal Government does not turn its back on struggling small businesses. These efforts are helping to provide small businesses with the tools and resources they need to innovate and transform promising technologies into marketable products.

This Subcommittee ought to be doing what it can to build upon the Administration's efforts. We should be taking our cue from our international competitors who are developing and investing in ground-breaking programs that help small businesses innovate and commercialize new products. For example, this year, Germany is investing \$545 million in cooperative research and development projects conducted collaboratively by a number of small manufacturers or by small manufacturers in collaboration with public research institutions.

The truth is that when our Federal Government has stepped up to the plate and taken an active role in private sector innovation—whether through the widely popular Small Business Innovation Research program or the Advanced Technology Program at NIST—we've witnessed great success. I am hopeful that we can begin to move past historical debates about industrial policy and picking winners and losers, and acknowledge that this is instead about ensuring that our country and our small businesses win in the global market.

Mr. Chairman, thank you again for holding this important hearing. I look forward to hearing from our witnesses today on this important topic.

Chairman QUAYLE. Thank you, Ms. Edwards.

If there are Members who wish to submit additional opening statements, your statements will be added to the record at this point.

At this time, I would like to introduce our witnesses, and then we will proceed to hear from each of them in order.

Our first witness is Mr. Brink Lindsey, Senior Scholar in Research and Policy at the Ewing Marion Kauffman Foundation. Mr. Lindsey has conducted research and has written on the structural reforms needed to revive entrepreneurial innovation from formation and job creation.

Next, we will hear from Mr. Julian Mann, Cofounder and Vice President of Product Development and Research at Skybox Imaging. Mr. Mann is an aerospace engineer who balances near-term product development and long-term technology strategy for his company.

Our third witness is Mr. Ray Rothrock, a Partner at the venture capital firm Venrock. Mr. Rothrock is a nuclear engineer who has spent much of his career growing companies.

Our final witness is Mr. Steve Dubin, former CEO of Martek Biosciences and Senior Advisor to DSM Nutritional Products. Early this year, Martek was inducted into the Small Business Innovation Research Hall of Fame in recognition of its success in research, innovation, and commercialization within the SBIR program.

Thanks again to our witnesses for being here this morning. As our witnesses should know, spoken testimony is limited to five minutes each. After all witnesses have spoken, members of the Committee will have five minutes each to ask questions.

I now recognize our first witness, Mr. Brink Lindsey, for five minutes.

**STATEMENT OF MR. BRINK LINDSEY,
SENIOR SCHOLAR IN RESEARCH AND POLICY,
EWING MARION KAUFFMAN FOUNDATION**

Mr. LINDSEY. Chairman Quayle, Members of the Committee, thank you very much for the opportunity to appear here today.

Today's hearing is premised on a connection between encouraging new businesses and fostering innovation, and that premise is very well supported by the evidence. It turns out that a significant fraction of U.S. productivity growth comes from the entry and exit of firms, what the economist Joseph Schumpeter called "creative destruction." Generally speaking, exiting firms are less productive than existing firms, which in turn are less productive than surviving new firms. According to a recent paper by the economist John Haltiwanger at the University of Maryland and research supported by the Kauffman Foundation, net entry of firms has contributed about 30 percent of recent total productivity growth in the manufacturing sector and virtually all productivity growth in the retail sector. New firms are thus the lifeblood of rising productivity, and, consequently, rising living standards.

And when it comes to promoting prosperity through job creation, the role of new enterprises can hardly be overstated. According again to research from the Kauffman Foundation, there were only seven years between 1977 to 2005 in which existing firms created more jobs than they destroyed. So the bottom line is simple—without startups there would be no net job creation in the United States.

Unfortunately for both the short-term prospects for a rebound in employment and the long-term prospects for productivity and growth, the creation of new businesses in America is in a slump, and that slump predates the Great Recession that began in 2008. According to that paper by John Haltiwanger I just mentioned, average annual gross job creation by startups has fallen from 3.5 percent of total employment in the 1980s to three percent in the 1990s to 2.6 percent since 2000, a 25 percent cumulative drop. With this slump has come a drop in overall gross and net job creation for the U.S. economy.

The timing of this deterioration suggests that the problem is structural, not merely cyclical. That is, it is not merely linked to the current downturn. And structural problems call for structural solutions. Specifically, the ultimate answer to restoring both innovation and vigorous job growth lies in policy reforms that create a more favorable environment for the creation and growth of new businesses. Barriers to entrepreneurship need to be identified and systematically dismantled.

This conclusion is further supported by my own research into the growth challenges confronting not only the United States but all advanced countries operating at the technological frontier. My find-

ings can be summarized as follows: The available sources of growth—and the policy requirements of growth—change over time with a country’s advancing economic development. In particular, as countries get richer, they become ever more heavily dependent on homegrown innovation, as opposed to simply expanding existing activities or borrowing good ideas from abroad in order to keep the growth machine humming. And since new firms play an absolutely vital role in the innovation process, that means that removing barriers to entrepreneurship becomes increasingly important to maintaining economic dynamism and prosperity.

In an effort to identify the kinds of policy reforms needed to reduce the structural barriers to entrepreneurship, innovation, and job creation, the Kauffman Foundation unveiled in July of this year a series of legislative proposals called the Startup Act of 2011. Let me review now the major elements of this plan: an entrepreneur visa along the lines of the revised Kerry-Lugar Startup Visa Act; green cards for foreign students when they receive so-called STEM degrees from U.S. universities; exemption from capital gains taxation for investments in startups held for at least five years; a 100 percent exclusion from corporate income tax for qualified small businesses on their first year of taxable profit followed by a 50 percent exclusion in the subsequent two years; allowing shareholders of companies with market valuations under \$1 billion to opt out of Sarbanes-Oxley requirements; higher fees for better, faster service at the Patent and Trademark Office to clear the backlog there—happily, I can say that this proposal was included in the recently enacted patent reform legislation; mandating that all federal research grants to universities be conditioned on universities affording their faculty members the ability to choose their own licensing agents rather than having to rely, as they do at present, on the monopoly of their own university’s technology licensing office; instituting a requirement that all major regulatory rules sunset automatically after 10 years; subjecting all proposed and existing major regulatory rules to a uniformed cost-benefit analysis; and finally, instituting monitoring of business climate in states and localities along the lines of what the World Bank’s “Doing Business” report does for different countries.

The proposals contained in the Startup Act represent a kind of greatest hits collection produced—picked from a far broader set of promising reform ideas. Some of these other ideas can be found in a book published this year by the Kaufmann Foundation entitled “Rules for Growth.”

A great deal of additional work needs to be done on fleshing out what we can do to change the legal and regulatory environment, but in the current crisis, first steps are urgently needed. We believe that the proposals put forward in the Startup Act would make excellent first steps towards a better climate for firm formation, innovation, and prosperity.

Thank you very much.

[The prepared statement of Mr. Lindsey follows:]

PREPARED STATEMENT OF MR. BRINK LINDSEY,
 SENIOR SCHOLAR IN RESEARCH AND POLICY,
 EWING MARION KAUFFMAN FOUNDATION

Chairman Quayle, Ranking Member Edwards and distinguished Members of the Subcommittee, my name is Brink Lindsey, and I am a senior scholar in research and policy at the Ewing Marion Kauffman Foundation. I thank you for the invitation to appear at today's hearing and share some perspectives on the crucial challenge of reviving new firm formation and restoring dynamism and prosperity to the U.S. economy.

Today's hearing is premised on a connection between encouraging new businesses and fostering innovation, and that premise is well supported by the evidence. Existing firms contribute much to innovation as well, but such innovation tends to be incremental: improvements in existing products or production processes or introduction of new products through pursuit of well-established R&D agendas. But when it comes to so-called discontinuous or disruptive innovation—the kinds of breakthroughs that topple the status quo and give rise to whole new industries—the agents of change tend to be new firms. Think FedEx, WalMart, Microsoft, Google, all of which were upstarts without any stake in the existing way of doing things. In this regard, the remarkable career of Steve Jobs at Apple is the exception that proves the rule. The reason he was so exceptional was precisely that he launched multiple business revolutions from the same company. That is a rarity.

Economic research bears out the importance of new firms to America's economic dynamism. It turns out that a significant fraction of U.S. productivity growth comes from the entry and exit of firms—what Joseph Schumpeter called creative destruction. Generally speaking, exiting firms are less productive than existing firms, which in turn are less productive than surviving new firms. According to a recent paper written by economist John Haltiwanger and supported by the Kauffman Foundation, net entry of firms has contributed about 30 percent of total productivity growth in the manufacturing sector and virtually all productivity growth in the retail sector.¹ New firms are thus the lifeblood of rising productivity, and, consequently, rising living standards.

And when it comes to promoting prosperity through job creation, the role of new enterprises can hardly be overstated. According to research from the Kauffman Foundation, there were only seven years from 1977 to 2005 in which existing firms created more jobs than they destroyed. The bottom line is simple: Without startups, there would be no net job creation in the United States.²

Unfortunately for both the short-term prospects for a rebound in employment and the long-term prospects for productivity and growth, the creation of new businesses in America is in a deep slump. And what is more, additional research from the Kauffman Foundation reveals that slump predates the Great Recession that began in 2008. Census data show that the number of new employer businesses created annually began falling after 2006, dropping 27 percent by 2009. Meanwhile, the average number of employees per new firm has been trending gradually downward since 1998. And the pace of job growth at new firms during their first five years has been slowing since 1994.³

A picture of even longer-term decline is revealed by the recent paper from John Haltiwanger mentioned above. Average annual gross job creation by startups has fallen from 3.5 percent of total employment in the 1980s to three percent in the 1990s to 2.6 percent since 2000—25 percent cumulative drop. With this slump has come a drop in overall gross and net job creation for the U.S. economy.

The timing of this deterioration suggests that the problem is structural, not merely cyclical. And structural problems call for structural solutions. Specifically, the ultimate answer to restoring both innovation and vigorous job growth lies in policy reforms that create a more favorable environment for the creation and growth of new businesses. Barriers to entrepreneurship need to be identified and systematically dismantled.

This conclusion is further supported by my own research into the growth challenges confronting not only the United States but all advanced economies operating

¹ John Haltiwanger, "Job Creation and Firm Dynamics in the U.S.," National Bureau of Economic Research, May 2011, <http://www.nber.org/chapters/c12451.pdf>.

² See Tim Kane, "The Importance of Startups in Job Creation and Job Destruction," Kauffman Foundation Research Series: Firm Formation and Economic Growth, July 2010, <http://www.kauffman.org/uploadedFiles/firm-formation-importance-of-startups.pdf>.

³ E.J. Reedy and Robert E. Litan, "Starting Smaller, Staying Smaller: America's Slow Leak in Job Creation," Kauffman Foundation Research Series: Firm Formation and Economic Growth, July 2011, <http://www.kauffman.org/uploadedFiles/job-leaks-starting-smaller-study.pdf>.

at the technological frontier. My findings can be summarized as follows: The available sources of growth, and the policy requirements of growth, change over time with a country's advancing economic development. In particular, as countries get richer, they become ever more heavily dependent on home-grown innovation—as opposed to simply expanding existing activities or borrowing good ideas from abroad—to keep the growth machine humming. And since new firms play an absolutely vital role in the innovation process, that means that removing barriers to entrepreneurship becomes increasingly important to maintaining economic dynamism and prosperity.⁴

To get more specific, our long-term growth prospects are dimmed today by shifting demographics. Over the course of the 20th century, U.S. growth rates got a steady and considerable boost from the ongoing rise of women in the workforce. As a result, the American labor force climbed from 56 percent of the adult population in 1900 to 67 percent in 2000. This is a classic form of non-innovative growth: boosting inputs into the production process, as opposed to figuring out how to get more output from a given quantity of inputs. But now this source of growth is all but exhausted. The female labor force participation rate peaked in the 1990s and then began dipping well before the Great Recession. Meanwhile, male participation has been falling gradually for decades because of later entry into the workforce, longer retirements, and the aging of the population. Consequently, according to a study by the McKinsey Global Institute, growth in the workforce will add only 0.5 percentage points to the overall growth rate between 2010 and 2020—as compared to 2.0 percentage points in the 1970s. Because of these unfavorable demographics, McKinsey estimates that productivity growth will have to increase by almost 25 percent to keep real per capita growth going at its long-term historic rate of 1.7 percent a year.⁵

In an effort to identify the kinds of policy reforms needed to reduce structural barriers to entrepreneurship, innovation and job creation, the Kauffman Foundation unveiled in July of this year a series of legislative proposals called the Startup Act of 2011.⁶ Let me review now the major elements of this plan:

- **Welcoming job creators to the United States.** First, we propose an entrepreneur visa along the lines of the revised Kerry-Lugar Start-Up Visa Act. Initially, entrants would be screened for temporary visas based on either the outside capital they had attracted or revenues from U.S. sales they already had recorded. Permanent work visas (green cards) would be granted once these entrepreneurs had hired a minimum number of U.S. workers. Although the Kerry-Lugar bill imposes a limit on the number of visas granted, we believe a strong case can be made for a visa without any caps. A second, mutually reinforcing idea would grant green cards to foreign students when they receive their so-called STEM degrees—degrees in science, technology, engineering and mathematics—from U.S. universities. Admittedly, most STEM graduates who are given visas will compete with U.S. workers for jobs. In the long run, however, given the greater propensity of immigrants to found businesses, it is likely many of the STEM graduates permitted entry now eventually will go on to form scale businesses that hire American workers.
- **Facilitating early-stage financing for new firms.** The first proposal here is for a capital gains tax exemption for long-held investments in startups. The Small Business Jobs Act of 2010 currently provides such an exemption for investments in “qualified small businesses” (those with less than a \$50 million valuation at the time of investment) held for at least five years. The exemption is currently due to expire at the beginning of 2012, but the National Advisory Council on Innovation and Entrepreneurship (NACIE), created by the Department of Commerce, has recommended a permanent exemption for these critical initial investments in startups. It is appropriate for this idea to be included in any comprehensive startup legislation. NACIE also has suggested a 100 percent exclusion on corporate taxable income earned by qualified small businesses (again, using the same test as for the proposed capital tax exemption) on the

⁴ Brink Lindsey, “Frontier Economics: Why Entrepreneurial Capitalism Is Needed Now More Than Ever,” Kauffman Foundation Research Series on Dynamics of Economic Growth, April 2011, http://www.kauffman.org/uploadedFiles/frontier_economics_4_06.pdf.

⁵ McKinsey Global Institute, “Growth and Renewal in the United States: Retooling America’s Economic Engine,” February 2011. http://www.mckinsey.com/mgi/publications/growth_and_renewal_in_the-us/pdfs/MGI-growth-and-renewal-in-the-us-full-report.pdf.

⁶ Kauffman Foundation, “The Startup Act: A proposal for new legislation aimed at jump-starting the U.S. economy through successful startups,” http://www.kauffman.org/uploadedFiles/startup_act.pdf.

first year of taxable profit, followed by a 50 percent exclusion in the subsequent two years. We believe additional incentives along these lines are worthy of support.

- **Facilitating access to public capital markets.** The provisions of the Sarbanes-Oxley Act, especially the verification of internal controls embodied in Section 404 of the Act, impose a disproportionate burden on new, small companies and thus act as a barrier to going public. In 2010, Congress implicitly recognized this problem when granting a permanent exemption from the Section 404 audit requirements for public companies with market capitalizations of less than \$75 million. Any comprehensive startup legislation should go further, for a very simple reason: The best judges of whether the benefits of the SOX requirements outweigh their costs are the shareholders of the companies for whose benefit the law was enacted in the first place. Accordingly, rather than simply raising the market cap threshold for exempting smaller public companies from SOX's requirements, the most logical SOX reform is to allow shareholders of public companies with market valuations below \$1 billion to opt in to at least Section 404 compliance, if not to all of the SOX requirements. Companies whose shareholders do not elect to comply with SOX should have special designations in their exchange listings to denote this fact so that all shareholders, current and potential, are put on notice.
- **Accelerating the formation and commercialization of new ideas.** Recently enacted patent reform legislation contains various provisions whose likely impacts on innovation and startups are not clear. We believe that at least one provision of the legislation—namely, higher fees for faster or better service—is very likely to be positive in its effects. To obtain patent protection for new ideas, inventors first must receive a patent from the U.S. Patent and Trademark Office (USPTO). In recent years, however, USPTO examiners have been unable to keep up with the pace of new applications, to the point where there is now a backlog of more than 700,000 patent applications at the office. There is an old saying that “justice delayed is justice denied,” and the same certainly applies to a patent regime that is too slow to process incoming patents.

More than 30 years ago, Congress enacted the Bayh-Dole Act, granting recipients of federal research monies intellectual property rights in innovations discovered with the use of those funds. Since Bayh-Dole was enacted, faculty members typically have been required under their university contracts to use the university's own technology licensing office (TLO) as the exclusive agent for licensing the rights to faculty-developed innovations either to the inventors themselves or third parties. In effect, university TLOs have become monopoly licensing agents and gatekeepers, preventing innovative faculty from using their own attorneys or other third parties, or even other university TLOs, to license and commercialize their innovations. The Federal Government can and should remedy this odd situation. One simple way to do so is to mandate that all federal research grants to universities be conditioned on universities' affording their faculty members the ability to choose their own licensing agents. A university's own TLO could compete in this new environment or, at minimum, provide informational services and mentoring to university faculty members. Licensing freedom for faculty inventors and true competition in innovation licensing would speed up the commercialization of faculty innovations, benefiting the innovators, their universities and our society.

- **Removing regulatory barriers to entrepreneurship.** Because of their size, small and new businesses bear an especially heavy burden when complying with the multitude of local, State and federal rules that govern business behavior. To help alleviate this burden, the Startup Act contains two proposals for systemic reform of the federal regulatory process. The first is a simple requirement that all major rules (those with estimated costs of at least \$100 million) sunset automatically after 10 years. Rules then would be allowed to lapse unless and until re-proposed and implemented (under new standards outlined next). This would regularly cleanse the books of inefficient and costly rules and, thus, barriers to business formation and growth for all businesses, including startups. The second proposal is for all major rules to be subject to a uniform regulatory review process. Under this screening procedure, no major rules would be implemented or maintained (after a sunset review) unless agencies can determine that the rules' benefits outweigh their costs. Furthermore, the form of these rules should be such that the option chosen is the most cost-effective of the alternatives available.

In addition, the Startup Act offers a new mechanism for monitoring and thereby potentially curbing regulatory abuses and excessive costs at the State and local levels. Although the Federal Government should not step on the toes of local and State governments, it can facilitate healthy competition among these jurisdictions for favorable startup environments. Just as the World Bank has assessed the favorability of the legal environment toward business in different countries through its annual Doing Business reports, there should be some recognized entity that does the same (with a special emphasis on policies and practices affecting the formation and growth of new businesses) for each of the 50 States and all cities above a certain size. The Doing Business rankings have proven to be an important spur to regulatory reform around the world. A similar Doing Business project for jurisdictions inside the United States could have the same result. Both the government and private sector have roles in this effort. Because the underlying data are likely to be costly and difficult to gather, it could be useful and important to charge and fund one government agency with collecting the raw data that could be made available to the public, which would permit either nonprofit or for-profit rating systems to develop.

The proposals contained in the Startup Act represent a kind of “greatest hits” collection picked from a far broader set of promising reform ideas. Some of these other ideas can be found in a book published this year by the Kauffman Foundation entitled *Rules for Growth: Promoting Innovation and Growth through Legal Reform*. That book was the product of an ongoing Kauffman Foundation initiative—the Project on Law, Innovation and Growth—that we hope will make further major contributions to our understanding of how to improve our legal and regulatory system to make it more conducive to entrepreneurial dynamism.

Much work remains to be done, but in the current crisis, first steps are urgently needed. We believe the proposals put forward in the Startup Act would make excellent first steps toward reviving firm formation, innovation and prosperity.

Thank you.

Chairman QUAYLE. Thank you, Mr. Lindsey.

I now recognize Mr. Julian Mann to present his testimony.

**STATEMENT OF MR. JULIAN MANN,
CO-FOUNDER AND VICE PRESIDENT, PRODUCT
DEVELOPMENT
AND RESEARCH, SKYBOX IMAGING**

Mr. MANN. Mr. Chairman and Committee, thank you very much for the opportunity to be here this morning.

In 2007, I was working as a student intern with NASA and realized that the billions of dollars we were spending building satellites as a Nation was largely driven by the antiquated set of technologies on which these satellites were based. But I had an epiphany. The technology that we were using to build academic satellites in our Stanford University research lab could have real impact on the way in which our Nation conducts business in space if only we could bring the necessary investment from the private sector to accelerate the development and commercialization of the technology. This idea became Skybox.

I co-founded Skybox Imaging in January 2009 to revolutionize the use of satellite imagery in characterizing daily activity across the surface of our planet. At Skybox, we combine our own low-cost microsatellite design with the Silicon Valley approach to storing, processing, and disseminating massive quantities of imagery and derived data. We have raised \$21 million in venture capital to date, have quadrupled in size over the last nine months and now directly and indirectly employ over 75 engineers across the United States.

People talk about the decline in American competitiveness, but there is a real opportunity to make up that lost ground. We need more companies like Skybox, and I have three ways in which we

can facilitate that growth: improve the transfer of commercially viable IP out of research institutions and into the private sector, create mechanisms that assist startup companies in alleviating governmental regulations that are restricting innovation, and reforming acquisition practices to make the government a better customer to emerging ventures.

As we started seriously investigating making Skybox a reality, Stanford provided a number of resources that were essential to our commercial growth. We were also encouraged to take the idea outside the university if we were serious about such commercialization. There was sound reason for this. Graduate students conducting steadily progressing, multiyear projects produce the majority of university research. The pace within new ventures is much faster. New ventures are successful due to their ability to rapidly change course in order to ensure convergence between product and market opportunity. This inherent lack of synchronicity between the two groups makes productive collaboration restrictively difficult to pursue. Instead, by transitioning the work from academia to industry when the focus shifts from fundamental research to commercialization, Stanford ensures alignment between the current stage of development and the environment in which said development is taking place.

Stanford is particularly effective in providing programs that assist in facilitating this transition from courses designed to help entrepreneurial-minded researchers understand the business plan creation and venture capital financing processes to investor and advisor introductions provided through the extended Stanford network; a distinct pipeline exists to help educate and foster entrepreneurship within the university.

There are numerous examples of this technology transition approach working extremely effectively—Google, Cisco, Hewlett Packard, Yahoo, Sun Microsystems, and VMware were all founded in this way. Skybox follows a long tradition in progressing from research to commercialization by leaving academia.

Navigating burdensome federal regulations while simultaneously trying to build and grow a business can kill a new venture. As a commercial satellite imaging company, Skybox has felt this pain since the day of our founding. One set of regulations has been particularly restrictive: the International Traffic in Arms Regulations (ITAR). Beyond driving up our engineering costs by up to a factor of 10, of greater concern is how ITAR has reduced American competitiveness. Because the majority of the global market for small satellite technology is international, domestic suppliers restricted by the ITAR have fallen behind their foreign competitors.

When we have approached these foreign suppliers with the idea of a deeper collaboration or co-development, they have largely declined. They are concerned that they will not be able to provide the resultant technology to their existing customer base if they partner with American companies. This is a real problem. Rather than having the government attempt to create what amounts to public venture capital, the government needs to consider how it can be a better customer to innovative and growing companies.

Ultimately, the private sector is very efficient at identifying technologies that have real commercial viability and providing the cap-

ital necessary to grow these technologies. Existing government acquisition models have not kept up with the pace of technological innovation and failed to express the market need in a way that is addressable by commercial product companies. Consequently, many innovative technology companies do not even consider doing business with the Federal Government because it is simply too costly to do so. Entrepreneurs are successful in the private sector because they find ways of delivering capabilities that do more with less. This is the same challenge that we face as a Nation today.

Working with new ventures is dissimilar from working with other types of organizations. It requires alternate communication and outreach strategies, new acquisition methodologies, and differing types of governmental support. It also yields novel solutions, engages our Nation's best and brightest innovators, and ensures that we remain the technological powerhouse that has been our enduring strength. We must find new ways of tapping the incredible resource that is our entrepreneurial base to solve the challenges that face our Nation. This change will not be immediate, nor does it require astronomical capital to support. With concentrated effort, advocacy, and partnership we can bring government and the technology innovation sector together for our mutual and enduring benefit.

Thank you.

[The prepared statement of Mr. Mann follows:]

PREPARED STATEMENT OF MR. JULIAN MANN,
CO-FOUNDER AND VICE PRESIDENT, PRODUCT DEVELOPMENT
AND RESEARCH, SKYBOX IMAGING

I co-founded Skybox Imaging Inc. to revolutionize the use of commercial satellite imagery in characterizing daily activity on the surface of our planet. At Skybox we combine our own low-cost microsatellite design with a Silicon Valley approach to storing, processing and disseminating massive quantities of imagery and derived data. Skybox was incorporated in January 2009, after a year of incubating the concept while conducting graduate research in Aeronautics & Astronautics at Stanford University. We received our initial venture investment led by Khosla Ventures in the summer of 2009, with a second financing round a year later, in which Bessemer Venture Partners joined our initial investors. To date Skybox has received 21 million dollars in venture capital financing. Throughout the process of conceptualizing, funding, and growing a high-tech venture, we have been the beneficiaries of several opportunities without which our progress to date would not have been possible; we have also faced numerous challenges along the way.

As graduate students at Stanford, my co-founders and I were presented with a number of resources that were instrumental in the creation of the company. From courses designed to help innovators understand business plan creation and the venture capital financing process to numerous investor introductions provided through the extended Stanford network, there existed a distinct pipeline to help educate and foster entrepreneurship from within the University. That being said, the University was also very clear through its practices and actions that, should one be truly interested in pursuing an entrepreneurial venture, the proper venue for such activity was outside the University.

Even with these incredible resources at our disposal, we still found substantial barriers preventing us from getting our company off the ground. The primary hurdle, and the one faced by all entrepreneurs, was gaining access to capital. Venture investors are experts at pattern recognition, they observe opportunity trends that have been successful in the past, and look for new investments that exhibit the potential to follow the same trend. As a result, it is incumbent upon the entrepreneur to find a way of demonstrating how his or her venture has the potential to follow one of these valued trends. For some companies this is easy, but we were attempting to convince investors surrounded by opportunities vying to be the next Facebook or Twitter to invest in a company building, launching and operating satellites. Even

with the myriad of introductions to venture capitalists that we received, it took months of restructuring the opportunity, and hundreds of meetings that ended in eloquent variations of “no,” to finally find a way of positioning our company as a good fit for venture capital.

Although built upon a foundation of experience fostered within a university research setting, Skybox does not maintain any active research partnerships with universities. In general, it is very difficult for new ventures and universities to find productive methodologies for co-development of new technologies. Both entities are typically capital constrained, and often have competing goals with respect to commercialization of technology and publication of research. New companies are myopically focused on customer adoption and creating competitive barriers; universities are interested in maintaining a sustainable base of novel research.

Beyond a difference in objectives and commonality in resource scarcity, direct collaboration between universities and new ventures is often challenged by a fundamental mismatch in operational tempo between the two types of organizations. Graduate students, conducting multi-year projects, produce the majority of university research. Conversely, the pace within new ventures is much faster. For example, our organization has grown almost 400% over the last nine months. This inherent lack of synchronicity between the two groups makes productive collaboration restrictively difficult to pursue. Based upon these challenges, and the manner in which Stanford made it clear to us that it was time to take our idea outside the University if we were going to pursue it further, it is my strong opinion that the proper time for separation from universities is when a new venture moves beyond the realm of fundamental research and into the world of commercialization.

Numerous universities have programs, Stanford University’s Office of Technology Licensing, for example, that assist in fostering relationships between university researchers and organizations interested in the commercialization of their intellectual property. The difference between such programs and the aforementioned difficulties in collaboration is that these licensing programs are typically designed to facilitate the transfer of existing IP to external entities for commercialization rather than collaboration in research. There are numerous instances in which this type of intellectual property transfer has worked extremely effectively; Google and Yahoo were both founded through this mechanism, for example. Although Skybox is not based upon direct transfer of IP from the university, we exhibit the same transition from untargeted research to focused commercialization as we departed from academia into the world of entrepreneurship.

It is similarly challenging for new ventures to engage and collaborate with larger, more entrenched companies. Large organizations often operate on similar time scales to universities, creating the same set of challenges addressed previously. Most start-up companies tend to be very flat organizations, lacking traditional organizational bureaucracies, and are characterized by their decisiveness and ability to change directions quickly. This nimbleness is one of the key reasons why startup companies are able to innovate. Larger, more established, organizations are often much more hierarchical and resistant to change. In fact, the type of rapid iteration and course-correction that is essential to new venture success is often characterized as high-risk activity when observed within large organizations. Consequently, this operational incompatibility makes it very difficult for startup companies to successfully collaborate with large organizations.

A common thread found among most entrepreneurs in the technology sector is that they are working on technologies that are fundamentally transformative within their respective markets. Many, if not most, of these companies eventually come into conflict with existing regulatory environments. This stems from the fact that when the particular regulations were originally developed, the type of technology creating conflict was not even in the realm of consideration. As a member of the aerospace industry, Skybox has felt this pain since the day of its founding.

As a commercial Earth observation satellite company, we must operate under NOAA, FCC and ITAR regulation. Each one of these has presented its own set of challenges in our growth. For example, in obtaining a license from the FCC to operate an Earth observation satellite, a company must post a five million dollar surety bond. While this may not be overly burdensome for a traditional imaging satellite program, which costs over 500 million dollars, our satellites are over an order of magnitude less expensive, resulting in greater than 10 percent of the overall program cost being consumed by a federal licensing bond. This is a very difficult challenge for a new venture being funded with equity dollars to weather.

The second major example of burdensome federal regulation is ITAR. As a satellite manufacturing company, virtually everything done by our engineering organization is governed under the ITAR. Even the most benign mechanical bracket can only be manufactured by an ITAR certified machine shop. The vast majority of local

machine shops are not ITAR certified, and have no interest in becoming certified due to the high cost, burdensome documentation requirements, and increased liability. As a result we have an artificially reduced supply market, which has resulted in our manufacturing costs being increased by a factor of 10. Furthermore, these machine shops are typically very busy, which means we have a lead-time that is two to three times longer than if we were operating in a less regulated industry.

Perhaps even more concerning is the fact that the ITAR regulations have had the unintended consequence of actually decreasing domestic competitiveness in the aerospace industry. As a relative newcomer to the industry, I have not seen the progression of the regulations over the years. What I have seen, however, is that when it comes to low-cost, transformative, satellite technologies, international developers have significantly surpassed the state of domestically developed technologies. A number of our high-performance specialty components are obtained from international suppliers. Additionally, when we have approached these suppliers about the possibility of co-development or manufacturing support, they have declined due to the fact that their primary customer base is outside the United States. International developers are rejecting the idea of deeper collaboration with American companies due to the concern that they will not be able to export the resulting technology to their existing customers due to ITAR; this is a real problem for American innovation.

While I have highlighted a few specific regulations that have impeded growth at Skybox, it is important to remember is that there is no "one-size-fits-all" solution when it comes to reducing regulatory burden for entrepreneurs. What are needed, however, are mechanisms to help entrepreneurs recast these issues as blockers to innovation, with the ultimate goal of alleviating the regulatory burden. No one wants to inhibit innovation within our nation, yet it is incredibly expensive and difficult for entrepreneurs to interact with the Federal Government. At Skybox we have spent thousands of man-hours and hundreds of thousands of dollars solely trying to better understand the regulations that are relevant to us, and educate regulators about what we are doing and how we are doing things differently. We are the lucky ones; we are well financed and have comparatively strong ties to the Federal Government. Many other entrepreneurs are not so lucky.

I was asked to recommend ways in which the Federal Government can promote new business creation and growth in technology innovation. Ultimately, the private sector is very efficient at identifying technologies that have real commercial viability and providing the capital necessary to grow these technologies. The best way that the government can assist in this process is become a better customer to innovative companies. Existing government acquisition models have not kept up with the pace of technological innovation. Traditionally, the government has explicitly defined the technologies that it is interested in obtaining, and the contractors build systems that meet exactly those requirements. This is not how the private technology sector does business. I am not advocating government acquisition of technology merely to support private research and development. I am intimating that entrepreneurs in the technology sector have made numerous capabilities for the private sector, which may also be applicable to the public sector. Many innovative technology companies do not even consider doing business with the Federal Government because it is simply too costly to do so. Entrepreneurs are successful in the private sector because they find ways of delivering capabilities that do more with less; this is the same challenge that we face as a Nation today.

Working with new ventures is dissimilar from working with other types of organizations. It requires alternate communication and outreach strategies, new acquisition methodologies, and differing types of governmental support. It also yields novel solutions, engages our Nation's best and brightest, and ensures that we remain the technological powerhouse that has been our enduring strength. We must find new ways of tapping the incredible resource that is our entrepreneurial base to solve the challenges that face our Nation. This change will not be immediate, nor does it require significant capital to support. With concentrated effort, advocacy, and partnership we can bring government and the technology innovation sector together for our mutual and enduring benefit.

Chairman QUAYLE. Thank you, Mr. Mann.

I now recognize Mr. Rothrock for five minutes for his testimony.

STATEMENT OF MR. RAY ROTHROCK, PARTNER, VENROCK

Mr. ROTHROCK. Chairman Quayle, Ranking Member Edwards, and the Committee, my name is Ray Rothrock and I am a General

Partner of the venture firm Venrock, one of the oldest ventures capital firms in the United States. Venture capitalists like myself are always committed to funding America's most innovative entrepreneurs. I am also a member of the Board of Directors of the National Venture Capital Association. As the voice of the U.S. venture capital community, the NVCA advocates policies that support entrepreneurship, encourage innovation, and reward long-term investment.

I am grateful for the opportunity to be here today and to answer your questions regarding the obstacles that entrepreneurs face in turning innovative ideas into successful companies and about what role public policy plays in that process.

Venture capitalists work closely with entrepreneurs to transform breakthrough ideas and innovations into emerging growth companies that drive U.S. job creation, economic growth, and general well-being. The results of venture-backed companies is quite meaningful. Over 12 percent of all the private sector jobs in the United States today were originally venture-backed companies representing 22 percent of America's GDP. This ecosystem is well established and works very well. Congress and the American public should continue to support it and embrace it if we want to keep America competitive.

Regrettably, in recent years, certain obstacles have impeded company formation and the building process. Fortunately, we have the opportunity to address many of those obstacles immediately and inexpensively by making some specific and limited adjustments to existing policies. These obstacles and how we can remove them are described in detail in my written testimony.

I would like to use my time now to discuss the challenges that entrepreneurs face within the context of basic R&D, the role that it plays in fostering and commercializing innovation. I will also touch on the role of technology transfer.

Further to this point, it should be known that no great company, not one, was ever created overnight. It was started by one or two people working very hard for a very long time. It started with an idea, an invention, a new process, but always a small group of people. This story has been repeated over and over and over for decades if not for hundreds of years in this country. You get a great, successful country by first supporting the creation of companies and making the road to success as smooth as possible. If successful, that first R&D dollar will be leveraged by thousands, even millions of dollars of investment and possibly billions of dollars of economic activity. It does take time and it works. It works very well for the benefit of all Americans.

There are many steps from innovation to the market. Let me speak first of R&D. Maintaining America's global innovation advantage requires continued federal funding for basic research and development at every venue—national labs, universities, and all the agencies. Basic R&D is the lifeblood of innovation. It pays for the scientific breakthroughs from which innovative products, companies, and even whole industries are created. Without basic R&D, America's innovation pipeline would dry up. That is why we must maintain funding for basic R&D and keep the barriers that entre-

preneurs face in bringing those innovations out to the marketplace as low as possible. Here are four suggestions:

- First, we need to continue to support programs of R&D, programs such as the Advanced Research Projects Agency at Energy, or ARPA-E, is paramount. ARPA-E exists today because of good work of this committee. I realize there is some skepticism by Members of the Subcommittee about the program, but at a time when every program is at risk for reduction or elimination, Congress should weigh the immense benefit of ARPA-E-like innovations against the relatively small financial cost and understand how those successful investments result in further investment by the private sector, which leads to great companies and results in what we all know as the economic multiplier effect.

Our global competitors, for example, are putting billions of dollars into basic research to innovate in the clean energy area. These innovations ultimately generate economic growth in those geographies. We need that innovation here in America, and I can tell you with certainty that these investments will yield tremendous results in the coming years and decades ahead and they will help keep America competitive. Without R&D, great companies are simply not born.

- Second, Congress should restore the eligibility for Small Business Innovative Research—or SBIR—grants to venture-backed companies. This exclusion, a recent innovation, works against the program’s objectives because it has prompted many companies to end promising research projects. This jeopardizes future scientific advances and job growth. By explicitly restoring that eligibility for venture-backed companies, Congress and the SBA can ensure the pool of SBIR grant seekers comprises the very best companies. This will maximize the impact of every SBIR dollar—again, a leverage. This catapults ideas to reality in launching potentially great companies.
- Third, Congress can encourage the Department of Energy to award more DOE grants to innovators. Venture-backed companies are not excluded by law from earning DOE grants, but most of them get passed over in favor of large, multinational energy conglomerates. Rather than continuing and reinforcing the status quo, the DOE should redirect at least a portion of those pools of grants and loans to clean-tech innovators with the potential to create entire new industries here in the United States. These grants should focus on the future, not the past.
- Fourth, we must ensure that all of our research institutions, all of them, have clear, transparent, and predictable processes for the transfer of innovation technology from the lab to the entrepreneur. Entrepreneurs face many burdens in starting a company. They have to raise the capital, they have to attract employees, they have to ultimately find customers who want to buy their products. Making it hard is just one more difficulty in that process.

Every time those entrepreneurs go elsewhere to start their companies, even if the invention was developed here in the United

States, this country loses a very special opportunity to start the process of creating jobs and possibly a whole industry. If we seize these opportunities to reduce uncertainty and obstacles facing entrepreneurs, we can ensure that innovation and the economic growth that continues will continue to thrive in the United States.

Furthermore, the unique public-private partnership between government-funded research institutions, entrepreneurs, and venture capitalists may be America's greatest export. Therefore, we must do all we can to foster innovation in R&D.

In closing, I want to personally thank you for the opportunity to discuss these important issues with you today and I am happy to answer your questions. I also wish to thank you for your service to our country in your capacity as Members of Congress. Thank you.

[The prepared statement of Mr. Rothrock follows:]

PREPARED STATEMENT OF MR. RAY ROTHROCK, PARTNER, VENROCK

Chairman Quayle, Ranking Member Edwards, my name is Ray Rothrock, and I am a General Partner of Venrock—one of the oldest venture capital firms in the United States. Venture capitalists are committed to funding America's most innovative entrepreneurs, working closely with them to transform breakthrough ideas into emerging growth companies that drive U.S. job creation, economic growth, and general well-being. Venture capital in the United States has been supporting entrepreneurs for over 70 years. Beginning in the 1960s, venture capital was professionalized, leading to an industry today of 500 firms and \$180 billion of invested capital. During this time the industry has mastered, if not perfected, the process of allocating scarce capital and human resources towards the most promising new opportunities for companies. Today, the results of the industry reach across the country and the globe, and they touch every aspect of our lives. Venture capital is now a global activity with every developing nation pursuing it at some level. Putting the impact of U.S. venture capital in quantitative terms: Venture-backed companies accounted for 12 million private sector jobs and \$3.1 trillion in revenue in the United States in 2010, according to a 2011 study by IHS Global Insight. That equals approximately 22 percent of the Nation's GDP. The U.S. venture capital industry has created this level of impact just in the last 50 years alone.

I am also a member of the Board of Directors of the National Venture Capital Association. As the voice of the U.S. venture capital community, NVCA advocates for policies that encourage innovation and reward long-term investment. It shares industry-wide best practices with all its members, and participates in a number of forums, including testifying before Congress, to keep all beneficiaries of venture capital investment—including the public—apprised of the U.S. venture community's efforts impact.

I am grateful for the opportunity to be here today and to answer your questions regarding the obstacles that entrepreneurs face in turning innovative ideas into successful companies and what role public policy plays in this process. I will address those issues within the context of the role of basic research and development and technology transfer in fostering and commercializing innovation. I'd like to begin, however, with a broad overview of some factors driving uncertainty for entrepreneurs today.

Overview: Entrepreneurs

Being an entrepreneur and starting a company are very difficult. Within reason, the United States should do everything it can to foster entrepreneurial activity and to reduce the friction to success. Every company ever created began its life as the idea of a single person or a small team of people. This is true of Henry Ford, Thomas Edison, Thomas Watson, Fred Smith, Steve Jobs and Steve Wozniak, and on and on. These innovators were able to grow their ideas into some of America's most successful companies over time. Following these models, entrepreneurs have created entire new industries, including computers, electronics, pharmaceuticals, and telecommunications. These industries advanced the United States in every way.

Building a business around an innovative product spurred by a novel scientific discovery involves an enormous amount of risk—for the entrepreneur and for inves-

tors. This risk persists through every stage of the company's development, but is particularly acute at the earliest stages. Failure is more common than success. For this reason, innovators crave any certainty and stability they can find when deciding if, when, and how to build a company out of a scientific breakthrough. In colloquial terms, the fewer number of moving parts, the better chance of success. Presently, a number of factors are working against entrepreneurs in this regard.

One of the most significant sources of uncertainty for entrepreneurs and investors remains the current volatility in the U.S. economy and capital markets, and the sluggishness of their recovery in the wake of the Great Recession. As someone who speaks with entrepreneurs on a daily basis, I can tell you that the prospect of building a business from scratch—especially one based on a novel and unproven innovation—seems especially daunting under current conditions. I recognize that opinions may differ among the Committee Members regarding the extent to which public policy can mitigate these conditions, but as long as the adverse conditions persist, or the lack of action to remedy those adverse conditions persists, so too will the level of uncertainty facing entrepreneurs. This will result in fewer new companies being started. If such companies are not started, they will never have the chance to be great.

In addition to the challenges created by current economic conditions, a number of policy issues are also generating obstacles for entrepreneurs looking to build innovative, emerging growth companies. In these cases, we have the opportunity to help reduce uncertainty for entrepreneurs and encourage the innovation they generate. Fortunately, none of them require increased government spending, but they do involve a closer look by government and more understanding on the part of those people making the laws and enforcing them.

Capital Markets

We have an opportunity to reconnect privately held emerging growth companies with capital from the public markets, which they need in order to continue to grow to be great. In the early 2000s and even recently, well-intended and appropriate regulations have been enacted with the goal of policing large public companies and protecting investors. In the wake of Enron and WorldCom, these were important acts that have benefited many. Unfortunately, these regulations have had an unintended negative impact by increasing the friction for small emerging growth private companies seeking access to public capital. In short, it now costs more and takes twice as long for young companies to go public. This has produced negative impacts on U.S. job creation—given that 92 percent of a company's job growth occurs after its initial public offering—and on the health of our entire capital markets system. Rather than explore this issue in depth with the committee today, I'll recommend to you a recently released report entitled *Rebuilding the IPO On-Ramp*, which was produced by my colleagues across the emerging growth company ecosystem at the request of Secretary Geithner and others. The report provides a comprehensive analysis of the U.S. IPO crisis and provides policymakers with a clear roadmap for reconnecting emerging growth companies with the public capital they need to create jobs and grow their businesses. The report is included with my submitted written testimony.

[The report may be found in Appendix 2.]

Regulatory Review

We have opportunities to reduce uncertainty for entrepreneurs who must seek regulatory approval for their innovative new products. Here, the specific situation at the U.S. Food and Drug Administration provides an illustrative example. For decades, the FDA provided a well-organized method for evaluating new drugs and devices intended for the American market. During this time, entrepreneurs and venture capitalists worked with FDA to bring amazing health care benefits to our citizens and ultimately the world. The FDA function was understandable, predictable and allowed for the proper vetting of risk by the entrepreneur and investors going forward. This is a critical point, because it enabled entrepreneurs to judge—in a timely fashion—whether to continue to raise private capital for more development in the event that the proposed drug or device had merit, or avoid wasting further time and money if the product idea was not suitable. Today, for most entrepreneurs and investors, the FDA review process has grown too cumbersome and unpredictable—with the later being the most critical concern. The result has been fewer groundbreaking treatments and technologies available to patients, and an exodus of innovators and investment to foreign shores, where the regulatory path to market is more predictable. That's why my colleagues at the NVCA and I support reforms

to the FDA review and approval process that clarify the path to market, increase transparency at every stage, and restore the balance between the benefits and the risks of new therapies and technologies for seriously ill patients. If the situation is left unaddressed, critical therapies and technologies will not be funded and therefore will not reach the patients that need them; those that are funded may not be brought to market in the United States, which will cost American jobs and our global competitiveness in an industry we have led for more than 40 years. It would be a tragedy not to address this problem quickly and effectively. We must restore an otherwise well-established and effective FDA for the benefit of entrepreneurs and patients alike.

Immigration

We have an opportunity to reduce uncertainty for entrepreneurs through legal immigration reform. Over the last decade, it has become increasingly difficult for foreign-born entrepreneurs and highly skilled workers to enter the United States and remain here, despite their enormous contributions to American innovation and economic growth throughout our history. This uncertainty with regard to their immigration status is compelling many of the foreign-born students who earn their degrees and who have conducted their breakthrough research at U.S. institutions, often with U.S. research dollars, to return to their native countries to work and found new companies, as opposed to doing so here. We can reverse this trend by streamlining the pathway to Green Cards for foreign-born graduate students who wish to remain in the United States upon completion of their studies. The proposed Start-Up Visa Act would also help support foreign-born entrepreneurs who wish to innovate and build their companies here in the U.S. It would provide a temporary Green Card to entrepreneurs who raise venture capital investment to start a business. After a period of time, the Green Card will become permanent if they can show that they have created jobs in the U.S. or that they are continuing to grow their company by raising additional capital. This small program would be a breath of fresh air to budding foreign-born entrepreneurs and a great first step in keeping these innovations and the talent which created them in the U. S.

Basic Research

Finally, we have an opportunity to encourage entrepreneurs and foster innovation by maintaining our national commitment to funding basic research and development activities at government-funded labs and universities. These institutions remain the germination points for the breakthrough ideas that can be commercialized by entrepreneurs and venture investors. I believe that how we get from point to point—from research to breakthrough to the transfer of that breakthrough from the lab to the entrepreneur—merits closer examination today. That's where I will now focus my remarks.

Fostering Innovation Through Basic Research and Development

Maintaining America's global innovation advantage requires continued federal funding for basic research and development. Basic R&D is the lifeblood of innovation because it produces the scientific breakthroughs from which innovative new products can be developed and around which new companies can be built. Without basic R&D, America's innovation pipeline would dry up.

For decades, the public sector of the U.S. has conducted such R&D through federal institutions and agencies such as the National Institutes of Health, the National Academies of Sciences and the Defense Advanced Research Projects Agency, or DARPA. The Federal Government has also funded research at universities across the U.S. through grants, scholarships and the like. This unique public-private partnership has delivered countless innovations to the American public. For example, the Internet grew from DARPA research on a "best-efforts" communication infrastructure. Google was the result of government-funded Ph.D. research on search and taxonomy of language at Stanford. Sun Microsystems was government funded Ph.D. research on computer architectures at Stanford and computer operating systems at U.C. Berkeley. Genetech was formed from the invention and understanding of recombinant DNA, which was originally developed at U.C. San Francisco. These and many many more are just a few of the examples of successes have generated a decisive competitive advantage to the U.S. economy.

To preserve this advantage, the U.S. must maintain its commitment to funding basic research at its labs and universities. That means keeping current funding levels where they are—even in the face of deficit reduction. In difficult economic times, budgets for basic R&D may look like easy targets, but future costs in lost innovation

and economic growth are nearly impossible to estimate. But the costs in jobs, economic benefits, and societal well-being are easily imagined when you consider if Sun, Google, and Genetech were never created. R&D dollars are the highest multiplier dollars in terms of their ability to attract additional financing over the long term, once inventions are proven out.

In addition to maintaining current general funding levels, we have the opportunity to provide certainty for entrepreneurs and foster innovation through three specific initiatives:

- First, thanks to the good work of this Committee, the Advanced Research Projects Agency–Energy, (ARPA–E) program is finally enacted. Congress established ARPA–E in 2007 under two broad rubrics. First, America’s dependence on foreign fossil fuels cannot continue at its current rate. Second, the nation that grows its economy with clean energy will lead the global economy of the 21st century. Those two constructs remain true today. Presently, our global competitors are putting billions of dollars into basic research to develop innovative clean technologies. Those innovations will generate economic growth. We need that innovation and that growth to occur here in America. If Congress fails to commit to fully funding ARPA–E over the long term, the United States risks ceding its technology leadership position to foreign countries and potentially operating at a competitive disadvantage for decades. I want to thank this Committee for its leadership and commitment to supporting ARPA–E. At a time when every program is at risk for reduction or elimination, ARPA–E survived floor votes to cut funding and was able to increase its appropriation. I am very familiar with the work that ARPA–E does under the leadership of Director Majumdar, and I can tell you with certainty that this investment will yield tremendous results in the coming years and help to keep America competitive.
- Second, Congress should restore eligibility for Small Business Innovative Research, or SBIR, grants to venture-backed companies. Congress created the Small Business Innovation Research (SBIR) program in 1982 to stimulate technological innovation and to encourage small businesses to meet federal research and development needs. Today, however, the Small Business Administration’s interpretation of the SBIR eligibility requirements excludes companies with majority venture funding—a complete reversal from the program’s original intention and practice, which had worked well for decades. This exclusion works against the program’s objectives, as it has prompted many such companies to discontinue promising basic research projects—jeopardizing future scientific advances and job growth. By explicitly restoring eligibility for venture-backed companies, Congress and the SBA can ensure that the pool of SBIR grant seekers comprises the very best U.S. companies, which in turn will maximize the impact of every SBIR dollar.
- Third, Congress can encourage the Department of Energy to award more DOE grants to innovators. Venture-backed companies aren’t excluded by law from earning DOE grants and loans, but most get passed over in favor of large, multinational energy conglomerates. Rather than reinforcing the status quo, the DOE should redirect existing pools of grants and loans to clean-tech innovators with the potential to create entire new industries here in the U.S. These grants should focus on the future—not the past.

Again, I want to point out that these initiatives do not require additional government spending. Rather, these programs should be reexamined or reprioritized so that they help enhance the innovation pipeline and sources of ideas and companies. This requires careful analysis and rethinking of many government sponsored activities.

Technology Transfer: From Lab to Market

One of the first critical steps on the path from scientific breakthrough to marketplace is the transfer of an innovative technology from the laboratory where it was developed to the entrepreneur who will develop a commercial product from it and build a new company to market it.

Here again, the entrepreneur seeks a clear, transparent, and predictable process to help minimize uncertainty and mitigate risk. Most research institutions have a technology transfer apparatus in place and an office dedicated to managing it. Typically, this apparatus comprises three functions: record-keeping and compliance, patenting and licensing, and commercialization support. The first function is fairly self-explanatory. The second, patenting and licensing, involves managing the institution’s patent portfolio and prosecuting to completion its patents and license agreements. The third, commercialization support, aims to spin off innovative tech-

nologies into startup companies that can apply the technology to develop new commercial products and bring them to the marketplace. My firm has participated in scores of these transfers from universities from all over the United States.

The essence of a successful transfer from lab to market is about the entrepreneur who will commercialize the innovation. Some university transfers involve the graduate student or professor who made the research breakthrough, but this is rare. Much more often, the technology transfers to an entrepreneur with some business experience. This entrepreneur, like all the others described in this testimony, faces all the burdens and risks of starting a company, raising capital, attracting employees, and ultimately finding customers. Every time those entrepreneurs go elsewhere to start their companies, even if the invention was developed within the U.S., then this country loses a very special opportunity.

Growing New Venture Ecosystems

Throughout my testimony, I have described the crucial role that research institutions play in fostering innovation. They are also the key catalysts in building venture capital ecosystems like the ones in Silicon Valley, Boston's Route 128 Corridor, and the Research Triangle in North Carolina. That's because most successful venture capital hubs begin as communities of innovators.

These innovators are usually drawn together by a top-flight research university, government laboratory or academic community. An innovative company with venture-capital roots—like Dell, in Austin, Texas, or Medtronic, in Southeastern Minnesota, for example—can often draw talent to the community, too. These companies regularly spin out new ideas and companies from existing operations. They also provide a pool of management talent.

Often, these communities coalesce around a certain niche—like semiconductors at the birth of the Silicon Valley. Other examples include Tennessee with health care services and Orange County, California, with ophthalmology, as well as the biotech industry that thrives in the I-270 corridor in Congresswoman Edward's state of Maryland, and the energy and high-tech innovations that are coming from Congresswoman Biggert's home state of Illinois as a result of the partnership between Argonne National Lab, the university, and the local business community. Concentrating on these niches creates a virtuous circle that spurs research and innovation, draws more talent to the startup companies and the local universities, and attracts more capital to the area. All of this generates economic growth in the region.

These innovators become entrepreneurs when they try to build their ideas into successful businesses. This can only happen consistently within a region if certain conditions are present. As explained earlier, there must be a sound mechanism for transferring technological innovations from the research institutions to the entrepreneur who will guide them to market. An educated workforce with the skills to fill high-tech jobs is also important, as is a robust network of lawyers, accountants, and other business professionals to help with networking, intellectual property protection, securities and IPO registration compliance, and hiring issues. In addition, the region must have an infrastructure that can support growing companies. That means efficient local and regional transportation systems, affordable housing, quality schools, and vibrant cultural and social scenes.

Government and civic support is also essential. This starts with favorable tax policies, common-sense regulatory structures and encouragement of basic research. State and local initiatives that reward emerging growth companies through tax incentives also make a significant difference.

These are the ingredients that make for successful venture capital hubs like Silicon Valley. I want to emphasize that venture capital is just one participant in such ecosystems. We do not create them from scratch. States should understand that growing such an environment is a long-term endeavor that requires local leadership. However, I'm sure that those States that have succeeded will tell you that the economic benefits are worth the effort.

Conclusion

Entrepreneurs face many difficult hurdles in starting and building their companies. It is hard enough to identify an invention with product potential, then attract capital from a venture capitalist in order to build the invention into a great product, and then ultimately sell that product to a customer who will actually pay for it. Uncertainty regarding regulatory outcomes or a lack of transparency, along with sweeping financial regulation created from good intentions but adversely affecting the startup company ecosystem, have prevented more than one good company from growing into a large, industry-leading company. The legal obstacles for foreign-born

entrepreneurs to remain in America after being educated here have also hindered our economic growth. These are extra—and in some cases, costly—burdens that either reduce the probability of success for well-meaning entrepreneurs or drive them away entirely. While some of these issues fall beyond our control, others present immediate opportunities for action on the part of Congress and local communities. The policy measures outlined above are not extensive. On the contrary, they are inexpensive to implement and would have an enormous multiplier effect on economic activity. Thus, if we seize these opportunities to reduce uncertainty for entrepreneurs, we can ensure that innovation and the economic growth it generates will continue to thrive in the U.S. Working with entrepreneurs, I, as a venture capitalist, have “engineered” more than 50 companies in the last 23 years. There is no shortage of enthusiasm for entrepreneurship or invention in America. As I said, venture capital was professionalized here 50 years ago; it may ultimately be America’s greatest export. Therefore, we must do all we can to foster innovation with R&D support and keep the barriers to commercializing and investing in that innovation low. Most of all, we must ensure that America continues to be the destination of choice for anyone around the world with a great idea. I am confident that we can do so.

In closing, I want to personally thank you for the opportunity to discuss these important issues with you today. I am happy to answer any questions you may have about venture capital or the business of building companies from scratch. And, I wish to thank you for your service to our country in your capacity as Members of Congress.

Chairman QUAYLE. Thank you, Mr. Rothrock.

I now recognize our final witness, Mr. Dubin, for his testimony.

**STATEMENT OF MR. STEVE DUBIN,
FORMER CEO, MARTEK BIOSCIENCES,
AND SENIOR ADVISOR TO DSM NUTRITIONAL PRODUCTS**

Mr. DUBIN. Thank you, Chairman Quayle and Members of the Committee, for allowing me to talk about the Martek Biosciences appropriations story, and I also want to thank Congresswoman Edwards, who was kind enough to visit our facility some months ago in Columbia, Maryland, and learn more about us.

I have been affiliated with Martek since its founding in 1985, first as a venture capitalist that helped arrange Martek’s first round of financing and then as an employee for the last 19 years, ultimately serving as CEO from 2006 until last month.

Martek is headquartered in Columbia, Maryland, and our R&D facilities are there. We have a research office in Boulder, Colorado, manufacturing facilities in Winchester, Kentucky, and Kingstree, South Carolina, and a consumer products business in Hartford, Connecticut. We were founded by five visionary scientists in 1985, and from those first five employees grew to become the world’s leading producer of sustainably produced microbially sourced omega-3 and omega-6 fatty acids for human and animal health. Martek’s nutrients, which are important for infant development and brain and eye and heart health for adults, can be found in infant formula products, prenatal vitamins, supplements, and food and beverage products by some of the leading consumer products companies around the world.

So what started out as a five-person R&D company 26 years ago looking at algae and other microbes as potential sources of valuable products today has annual revenues of almost 500 million, employs over 600 people and also an additional 100 people at BSM’s nutritional production plant in Belvedere, New Jersey. DSM is one of the leading materials and life sciences companies in the world.

They have been our supplier of our omega-6 fatty acids and ultimately purchased Martek this past February.

In addition to our nutritional product portfolio, our technology platform has expanded over the years to include a partnership with BP for the development of new biofuels from microbial sources. We have a partnership with Dow AgroSciences to develop BHA out of seed oils, and also we are in the process of developing new vaccine technologies that hopefully will result in faster production of vaccines when needed at much lower costs.

It all sounds great, but it took a lot of factors and a combination of factors and great patience to enable Martek to become commercially successful. It took the combination of talented, hardworking people; outstanding technology; university, Federal, State Government support; and access to capital, over \$400 million over the years. That kind of support is needed even more today than what we got because capital is less patient than it was in 1985.

I remember when Martek started the company was just five scientists, great technology, and a dream. Martek took nine years to introduce its first significant product and 17 years to become profitable. It took early research contracts from NASA to help prove out some of our enabling technology and acceptance in the University of Maryland's Business Incubator to get the company's technology enough credibility to enable us to raise our first 1.5 million in venture capital. It took over 30 SBIR grants totaling over \$5 million to fund the early research that investors would not fund, and that validation of our technology enabled us to raise three additional rounds of venture capital.

I am 100 percent certain that if any one of those factors was missing—the NASA support, the acceptance by the University of Maryland to their Incubator, the SBIR grants, a long-term patient capital from our investors, and the founders and employees that worked so hard for so many years when oftentimes we were a paycheck or two away from shutting our doors—we wouldn't have survived. And those over 700 high-paying jobs would not exist; our health-promoting products would not exist to be benefitting society.

So government and university support of early-stage research is needed, I think, even more today than when we started. Investors are more short-term oriented, and I doubt we could have raised the first run of venture financing if we had to start over right now. In any case, early-stage research is rarely funded by venture or angel investors, and many early-stage life sciences companies' existence depends on government- and university-supported research. This is especially true now when the current economic dynamics of venture funds creates larger and larger funds that are less and less able to provide early-stage funding. Large funds cannot efficiently put small amounts of money to work and use it to return the money to investors within a 10-year lifecycle of a typical venture capital limited partnership. This is not good for early-stage companies that are seeking smaller initial rounds of financing, and that especially impacts life sciences companies that just take so many years to create an exit for investors.

So I believe more life sciences companies are in danger of running out of money today than I have seen in my 26 years in the business. The lack of early-stage funding will not only hurt employ-

ment in an important industry but will hurt us all down the road because important new discoveries will not be made, diseases will not be cured, jobs will not be created, and the financial spillover from these companies will not happen.

Therefore, government support for early-stage research is now more vital than ever so that many more Marteks can be created in the future. Thank you.

[The prepared statement of Mr. Dubin follows:]

PREPARED STATEMENT OF MR. STEVE DUBIN, FORMER CEO,
MARTEK BIOSCIENCES, AND SENIOR ADVISOR TO DSM NUTRITIONAL PRODUCTS

I would like to thank Honorable Ben Quayle, Chairman of the Subcommittee on Technology and Innovation, House Committee on Science, Space and Technology, Ranking Member Donna Edwards, and Members of the Committee, for holding this hearing today and for allowing me to share my perspective on promoting new business creation and growth in innovative sectors.

Introduction

My name is Steve Dubin, and I served as the CEO of Martek Biosciences, a biotech company based in Columbia, Maryland, from July 2006 until a few weeks ago. My involvement with Martek began in 1985 while I was serving as Vice President of Suburban Capital Corporation, the venture capital subsidiary of Suburban Bank (now part of Bank of America). It was in that capacity that I helped lead Martek's initial round of institutional venture financing in 1986. I joined Martek as an employee in 1992, initially as CFO and General Counsel, and went on to fill a variety of additional roles there, including Treasurer, Secretary, and Senior Vice President of Business Development. In 2003, I was appointed President of Martek, and in 2006 I assumed the role of CEO.

When I was first introduced to Martek, Martek was, by every definition, a start-up. It consisted of five talented founding Ph.D.s with a fantastic idea, and a foundation of technology to drive that idea forward—and a long, difficult road ahead. Today, Martek Biosciences Corporation (now DSM Nutritional Lipids) is a leader in the innovation, development, production, and sale of high-value products from microbial sources that promote health and wellness through nutrition. The company's technology platform consists of its core expertise, broad experience, and proprietary technology in areas such as microbial biology, algal genomics, fermentation, and downstream processing. This technology platform has resulted in Martek's development of a number of products, including the company's flagship product, *life'sDHA*®, a sustainable and vegetarian source of omega-3 DHA (docosahexaenoic acid) important for brain, heart and eye health throughout life for use in infant formula, pregnancy and nursing products, foods and beverages, dietary supplements and animal feeds. The company also produces *life'sARA*® (arachidonic acid), an omega-6 fatty acid, for use in infant formula and growing-up milks. Martek's *life'sDHA*®, along with *life'sARA*®, is found in 99 percent of U.S. infant formulas. Both fatty acids are also added to infant formulas sold in over 80 countries and, subsequently, have been consumed by more than 64 million babies worldwide. In addition, a range of supplements and functional foods containing *life'sDHA*® for older children and adults continues to hit the market both in the U.S. and abroad. Martek's subsidiary, Amerifit Brands, develops, markets and distributes branded consumer health and wellness products and holds leading brand positions in each of its three key product categories. Martek's technology platform has also made it a sought-after partner on a range of groundbreaking projects in process, including the development of microbially-derived biofuels, new, faster, and less expensive ways to make vaccines and the development of DHA-containing oilseeds.

Factors in Martek's Success

Finding private financing for early stage research was extremely difficult in Martek's early days, and is even more difficult today, but since Martek's inception, a range of government supported and funded programs—both at the state and federal level—have played a critical role in Martek's survival and growth. This support was leveraged to raise over \$400 million from the capital markets to enable Martek to reach its current state. Without programs like the Small Business Innovation Re-

search Grants, the University of Maryland Technology Advancement Program, and even NASA, I would not be standing here today to share our story of success.

NASA

Martek had its start in a NASA program of the early 1980s known as CELSS (Closed Environment Life Support System). Under NASA funding, Martin Marietta Laboratories, Inc., in Baltimore, Maryland, experimented with the use of microalgae as a food supply, a source of oxygen, and a catalyst for waste disposal on future human-crewed planetary missions. When Martin Marietta decided to divest its life sciences businesses, the scientists involved in this project negotiated with Martin Marietta to take what they had learned with them and start their own company. The result was Martek Biosciences, founded in 1985.

Soon after, Martek identified a strain of algae, *Cryptothecodinium cohnii*, that is a naturally high producer of docosahexaenoic acid (DHA), an omega-3 fatty acid that plays a key role in infant brain and eye development as well as in maintaining brain, eye, and heart health throughout life. Martek then developed and patented a sustainable method of deriving DHA-rich oil from the algae. Continuing its exploration of infant nutrition, Martek also developed a patented process for developing arachidonic acid, ARA, another fatty acid important to infant health, from *Mortierella alpina*, a fungus. These innovations led to Martek's first license agreement in 1992 for the use of Martek's proprietary blend of DHA and ARA in infant formula. In 1993, Martek went public after entering into similar license agreements with two additional leading infant formula companies. Today, nearly every infant formula product sold in the U.S. contains these ingredients, as well as infant nutrition products found in over 80 countries around the world, and millions of infants benefit from these products each year.

In 2009, Martek was inducted into the Space Foundation's Hall of Fame. The Space Foundation, in cooperation with NASA, honors organizations and individuals who transform technology originally developed for space exploration into products that help to improve the quality of life here on Earth. Martek is one of just a few dozen technology companies that have been inducted since the Hall of Fame was founded 20 years ago, and Martek's evolution from a NASA funded-project to a successful, independent company providing important, beneficial products to consumers worldwide is often heralded as the ideal example of practical innovation born from the Space Program.

Small Business Innovation Research Funding

In many ways, Martek is also an ideal example of how SBIR funding can be the foundation of success for early-stage companies. For the first eight years of our existence, SBIR grants were our lifeblood—Martek received more than 30 SBIR awards from DOD, DOE, HHS, USDA, and NSF totaling more than \$5 million.

This funding allowed us to more fully develop our platform of technology and, perhaps more importantly, provided a measure of validation of our technologies, allowing us to demonstrate our capabilities and secure additional venture capital funding and strategic partners. SBIR funding not only helped us to keep our doors open in the early years, it also provided the foundation of credibility necessary to convince investors that our company was a sound investment. Earlier this year, Martek was inducted into the inaugural Small Business Innovation Research (SBIR) Hall of Fame in recognition of its success in research, innovation and commercialization within the SBIR program.

Technology Advancement Program (TAP) and Maryland Industrial Partnerships (MIPs)

Martek is a graduate of a business incubator, the Technology Advancement Program at the University of Maryland at College Park, a program of the Maryland Technology Enterprise Institute (Mtech.)

Incubators typically offer office space at market or lower rates, along with shared conference and lab facilities, and offer business development and management programs to accelerate their startups' growth.

Martek came to the program with a number of notable characteristics, including a talented scientific team with demonstrated skills, a unique niche market, and the technology to drive forward within that niche.

Through the incubator, Martek accessed specialized facilities and equipment that Martek otherwise would not have been able to afford that served as a pilot development lab for its early products. Those facilities became a scale-up lab for much of Martek's early work, where company researchers could determine whether a num-

ber of individual cells they had grown in the lab were scalable to a larger market. Indeed, they were.

TAP provided much more than access and support. In fact, a primary reason Martek was funded in 1986 was because we had been accepted into TAP, which provided a notable third-party validation of the feasibility of our technology to be commercialized.

In addition to TAP, Martek leveraged Maryland Industrial Partnerships (MIPS) funding during the company's early stages to figure out how to scale-up its microbial processes through Mtech's Bioprocess Scale-Up Facility (BSF), which helps companies take bench-top or lab-produced products and prepare them for mass production.

Maryland's programs have served as best-practice models around the country. TAP was the first incubator in Maryland; there are more than 20 now. Many universities have replicated the programs within Maryland's portfolio; two other State research funding programs were based on MIPS.

This support for entrepreneurs has translated into concrete economic benefits for Maryland. In addition to the success of Martek, other TAP graduates such as Digene have continued to expand and add jobs in Maryland. The latest data from the Maryland Technology Development Corp indicates that Maryland's incubators have supported more than 14,000 jobs and generated more than \$104 million in State and local taxes.

Martek was an inaugural inductee to the Maryland Incubator Company "Hall of Fame," and we are often held up as a powerful example of the success that business incubators can produce through work with startups. It is very hard for early-stage companies to get off the ground. Martek certainly went through many struggles and near-death experiences over the years. Every day is a struggle when you are trying to get started. To have a support system like an incubator gives you a better chance for success. It is my hope that companies like Martek can serve as a positive example of success so that programs like TAP will continue to have support. If the resources that were available to Martek during our early years were available to entrepreneurs on a national level, I believe there would be many more success stories like ours.

NIH

In 2006, Martek's flagship product, DHA, was the subject of a research project funded by a \$10.5 million research grant from NIH.

Sponsored by the National Institute on Aging (NIA), one of the 27 Institutes and Centers of NIH, the study explored whether DHA supplementation slows the progression of cognitive and functional decline in patients with mild to moderate Alzheimer's disease. This study was funded by a NIA/NIH grant to the Alzheimer's Disease Cooperative Study (ADCS), a cooperative agreement between the NIA and the University of California San Diego that was founded to advance research in the development of drugs that might be useful for treating Alzheimer's, particularly those therapies that might be overlooked by industry. Approximately \$10.5 million of the ADCS grant was earmarked to fund the DHA study.

This funding was another important marker of credibility for Martek, and the study also provided important insights into the use of DHA to treat memory loss that may provide the foundation for future research and products.

Barriers to Success

For the past 27 years, I have been involved in the financing or management of early-stage companies, as a co-manager of two small early-stage venture capital (VC) funds, as a member of the management teams of two companies while they were raising VC (including Martek Biosciences), and as an individual angel investor. Unfortunately, the economic dynamics of today's venture funds have resulted in larger and larger funds that are less and less able to provide early-stage funding.

Large funds cannot efficiently put small amounts of money to work and usually need to return money to their investors within the 10-year life cycle typical of most VC limited partnerships. This process will not work for early-stage technology companies seeking smaller initial rounds of financing and is especially bad for life-science based companies that often take many years to create an exit event for their investors. At Martek Biosciences, we raised four rounds of venture capital between our founding in 1986 and 1992. We did not have an exit event until after we went public in late 1993. Because of our long product development life cycle, which is typical for life sciences firms, we did not become profitable until 2002—16 years after our first venture round.

In today's economic environment, it is not likely that a company could go public so long before profits are anticipated, so early-stage investing in most life-sciences companies is outside the exit timeframes of most VC firms. Right now, many science firms are in danger of running out of money more so than at any time in my years working in the industry. The lack of early-stage funding not negatively impacts employment and growth in an important industry sector, but also has other long-term negative effects—new discoveries will not be made, diseases will not be cured, jobs will not be created, and the financial spillover from these companies will not occur.

In my opinion, in today's environment, a company like Martek would have a much slimmer chance of survival. But if government can develop ways to help promote early-stage, long-term venture investing that would help fill the funding gap for early-stage research, particularly for science and non-IT companies that are in critical need of this kind of support, then we will see many more success stories like Martek in the future.

In Conclusion

Martek is a great example of how government-supported programs and funding can be a critical differentiator between the success and failure of early-stage companies. I, along with the entire Martek team, am personally aware of the ways in which programs that I have discussed in my testimony today can serve as lifeblood during critical times of a startup company's evolution. In 1985, Martek had a fantastic idea, an amazingly talented team, and the energy and drive to take the seed of an idea from inception to commercialization, resulting in the thriving business that Martek is today. Our made-in-the-USA products benefit millions of consumers every year and meet an important demand for healthy, sustainable nutritional ingredients. In addition, our technology has provided the foundation for other important projects including improved vaccine development and microbial biofuels. Our business today produces revenue in excess of \$470 million per year and supports more than 600 employees in Maryland, South Carolina, Colorado, Kentucky, and Connecticut, and more than 100 additional employees at DSM's Belvidere, New Jersey, manufacturing facility. Without the above-mentioned programs that were available to Martek, I am certain that the company and the jobs that support many families today would not exist.

We are now entering yet another phase of our evolution. Earlier this year, Martek announced that it had been acquired by DSM, a leading global life sciences and materials sciences company. The sale price was more than \$1 billion. In partnership with DSM, we expect to continue our significant growth, significantly increasing U.S. jobs and revenues.

Chairman QUAYLE. Thank you, Mr. Dubin. And I would like to thank all the witnesses for their testimony.

I want to remind Members of the Committee rules limit questioning to five minutes.

I will now at this point trade times with the gentleman from Texas because he has to leave, Mr. Smith for five minutes.

Mr. SMITH. Thank you, Mr. Chairman. And I do appreciate being recognized out of order. I have an obligation in now four minutes, so thank you for the time.

Mr. Lindsey, let me address my first question to you. In your testimony you mentioned the Patent and Trademark Office, the PTO, and referenced the need to alleviate their backlog. As I am sure you are aware, now if you apply for a patent, you have to wait an average of over three years. Recently, we passed and the President signed the Patent and—America Invents Act for the Patent and Trademark Office. I was wondering if you felt that the bill addressed some of your concerns or if there are other things that we needed to do to reduce that backlog?

Mr. LINDSEY. Yeah, I think on the particular issue of the backlog, our favored approach was one that was adopted in the legislation, which is using market incentives to clear the backlog but to be able to get faster expedited service through paying of higher fees. That has been balanced with a lower fee schedule for individual inven-

tors, and I think that is creditable as well. So I—there is a lot in that legislation. I think it is a mixed bag as far as overall impact on entrepreneurs, but on this particular point of clearing the backlog, it looks like the legislation is moving in the right direction.

Mr. SMITH. And obviously the PTO keeping the fees as well I am sure you support.

Mr. LINDSEY. Yes.

Mr. SMITH. Okay. Thank you, Mr. Lindsey.

Mr. ROTHROCK, let me go to you and reference your testimony where you talk about the unintended consequences of legislation and regulations and their adverse effect on the formation of capital going to innovative companies. Now, could you be more specific as to what, let us say, regulations create the hardships that you had mentioned and also what remedies you might propose?

Mr. ROTHROCK. In particular, Mr. Smith, Sarbanes-Oxley is a good example of that whereby the unintended consequences of that regulation making more transparent the financial reporting in large companies, that burden is all the way down to the smallest company trying to go public. So going public for a small private company is a very important event for a lot of reasons, but mostly it provides the capital which the company can grow to become very big. Most of the jobs created by venture-backed companies result after the IPO. So putting that burden on them on day one of being an IPO company slows down that process. And in fact many—we have survey data in the MBCA from many CEOs; they avoid going public and in fact it delays the whole process. And many good companies remain good and never become great.

Mr. SMITH. And the solution, therefore, is to lift some of those limitations.

Mr. ROTHROCK. Lift that. We actually have sort of a ramp—an onramp to becoming a larger company, yes.

Mr. SMITH. Okay. Thank you, Mr. Rothrock.

And Mr. Mann, in your testimony you talked about the existing government acquisition processes and procedures that have not kept up with technological innovation. Why do you think we have the problem and, again, what do you think the remedy should be?

Mr. MANN. Well, in my experience, traditionally, the acquisition model is one around developing custom solutions for the government and what that results in is a multiyear cycle just to get to the point of even letting an initial contract for that development to take place. At this point in time, technological innovation within the private sector is happening on an 18- to 12-month timescale, so by the time that initial contract goes out, you are already beginning the procurement process for an antiquated technology.

Mr. SMITH. Good answer. Thank you, Mr. Mann, very much.

Thank you, Mr. Chairman, again for the time. I yield back.

Chairman QUAYLE. Thank you, Mr. Smith.

I now recognize Ms. Edwards for five minutes.

Ms. EDWARDS. Thank you, Mr. Chairman.

And thank you to all of our witnesses. I want to start with Mr. Mann. I enjoyed your testimony and learning about your company and really congratulate you on your instincts and your success. And while your testimony seems to attribute the advent of your game-changing microsatellite technology to nongovernmental con-

sumer requirements, isn't it fair to say that the prior government investments in satellite technology laid the groundwork for the technical and economic feasibility of Skybox's microsattellites? And I would note that NASA in particular had been investing heavily in satellite research and technology since about 1960, long before the—you had—your company had this great idea, and so I wonder if you could actually speak to the role that investments—prior investments that NASA made, played in your ability to make a successful commercial venture.

Mr. MANN. Yes, certainly. So I don't actually have specific examples of investments that NASA made, but to Mr. Rothrock's point in his testimony, we absolutely relied on the foundation of fundamental research investment that accelerated the technology just to the point of people recognizing that this is even feasible. But then, when we actually wanted to, you know, hit the gas pedal and accelerate the pace of development, that is when it was time to turn to the private sector and focus on commercialization rather than sort of pie-in-the-sky feasibility.

Ms. EDWARDS. I guess I just want to point out that since 1960, over the course of the last half-century, NASA has made significant investments in imagery satellite technology that, you know, has enabled lots of folks to transfer that into the private sector. And so the point is that you just can't—I mean clearly you need that fundamental research.

But I think, Mr. Rothrock, if we could turn to you, I wonder if you could explain, then, how venture capitalists actually make investment decisions? Because I am guessing that venture capitalists wouldn't have just come up in 1960 and said oh, I think we need to invest in imaging technology for satellites. It really did take the government kind of doing that initially because venture capitalists wouldn't have been—I am just curious about the steps that you would go through before you made a decision to make that kind of investment.

Mr. ROTHROCK. Yes, the process of venture capital—there are two sides to it. We identify market opportunities where then we have sort of in the back of our minds from research and—reading and talking to entrepreneurs, lots of information—about technology. And then we would identify a business opportunity to take that technology from the laboratory and apply it to a particular market problem. That would be where we are the active creator of that company. More likely the case is that the entrepreneurs, whether they are a graduate student such as Andy Bechtolsheim who was a founder of Sun Microsystems who was a real hot hardware inventor, teamed up with Bill Joy at Berkley and put together a computer that was quite remarkable. And then they found Vinod Khosla and found some venture capital and off they went to make a great story.

So it sort of is on both sides, but really at the end of the day it is about building technology on top of scientific endeavors and innovations. You don't know where that is going to go and you keep building up. I daresay that Mr. Mann's company, Skybox, he has built that on the shoulders of great giants and great thinking that was this broad, and his company, like most venture capitalists like their companies to be very focused. Lack of focus is failure typi-

cally, so we tend to focus. That is what the private capital does. It focuses the attention of the entrepreneur on success.

Ms. EDWARDS. Thank you. And so if I could just turn to Mr. Dubin, and thank you so much for your testimony. And I was just blown away visiting Martek and learning about all that you do. I wonder if you—you talked about—in your testimony about leveraging the Maryland Industrial Partnerships funding during the company's early stage, and as I understand it, MIPs provided funding that was matched by private company for university-based research that helps companies develop new products. Can you tell us more about your experience and whether you believe that that is something that actually could be replicated?

Mr. DUBIN. In our early stages I mean we had no money and again we were very—doing pretty early-stage research again that venture capitalists didn't really totally want to fund all by themselves, so we were able to leverage all of these programs, I think, in a very effective way.

And the early MIPs grants, what that was for was to kind of help us learn how to grow these microorganisms in a controlled way to get the products we wanted to and University of Maryland, all of the equipment and a lot of expertise and together working with our scientists, you know, we figured out some of the basic early-stage ways of moving forward. And we used that technology to kind of leapfrog to some of the commercial applications.

So I think, you know, for the right circumstances where university infrastructure is in place and you can leverage the knowledge inside the university with some of the ideas from the company's side, it really—it worked great for us.

Ms. EDWARDS. Thank you, Mr. Chairman.

Chairman QUAYLE. Thank you, Ms. Edwards.

I now recognize myself for five minutes.

Mr. Lindsey, you talked about various tax incentives to allow startups to continue to innovate. There has been a lot of talk up here on Capitol Hill about fundamental tax reform which will get rid of many of the deductions while also lowering the rates. How do you feel about that in the context of it might be eliminating a lot of those deductions or incentives but allowing for a lower overall corporate tax rate?

Mr. LINDSEY. I think in the long term, the proper goal is fundamental tax reform with a wide base and low rates and as few exemptions as possible. Given the reality of our current byzantine tax structure and the formidable obstacles to getting to that truly clean kind of tax code, if we are going to have a dirty, messy tax code, then we should have some little, dirty, messy exclusions that benefit new businesses. But the long-term goal ought to be fundamental tax reform.

Chairman QUAYLE. Thank you.

And Mr. Rothrock, I want to talk—I want to ask about—in Arizona we have a thriving high-tech industry but we don't have a lot of VC funding that is going into Arizona, and this happens all across the country is that VCs seem to be mainly in certain geographic areas. How do VC firms plan or how do they go about getting outside of their geographic areas where they are located in finding the new companies in Arizona or elsewhere?

Mr. ROTHROCK. I think that largely sort of relies on the philosophy of the firm. My firm, Venrock, starting in New York City, that was not exactly the hotbed of a lot of technology in the early days or even presently, but we have always—my firm always has had the DNA to go out and look for deals and people wherever they are. And we have invested in many States from Florida to South Carolina, Kansas, Texas, Arizona, and other places. So we actually seek out those entrepreneurs in those regions. There are a lot of local venture capital—I don't want to say clubs but associations that host and invite people in from afar, but I think it really goes to the DNA of the firm. Some firms just simply don't want to climb on airplanes.

Chairman QUAYLE. In your testimony you were talking about VC-backed firms being involved in SBIR programs, and one of the things that we had testimony on that when we were going through the reauthorization of SBIR and one of the witnesses stated that, you know, VC firms act as a very good gatekeeper because they can actually see whether the technology will be able to be viable rather than a government agency trying to pick which ones. Do you think that is a correct assessment?

Mr. ROTHROCK. It is largely correct. I think venture capital—the process of venture capital is about the most efficient way to find the best ideas with scarce capital and scarce people. I think the SBIR program is very important because it is a leverage effect. It always takes longer and costs more money to build a company, and just like Mr. Dubin was talking here, that was a tremendous example of how an SBIR led to venture capital so the two worked together to build his company. So I think that is really essential. It is the program, not one or the other. It is mutual.

Chairman QUAYLE. Right. Okay, thank you.

And Mr. Mann, you talked about ITAR and kind of the unintended consequences that have come out of that, especially for your company. Mr. Lindsey had talked about a 10-year sunset for regulations. There are also various pieces of legislation that—one that I am working on also is that after 10 years you actually have to go back, reevaluate, do a cost-benefit analysis to make sure that it is actually doing what it is supposed to be doing and if it can be done in a way that is, you know, less burdensome on the private sector. How would something—like the sunset provisions that Mr. Lindsey was talking or other types of legislation so that we reevaluate various regulations after a 10-year cycle—how would that help you? Would it help you in terms of getting rid of some of that overly burdensome and also unintended consequences from legislation passed that nobody thought was going to happen?

Mr. MANN. I think the answer there is absolutely. You know, given the age of the ITAR, when it was initially conceived, international competitors were not in the same place when it comes to space technology. For example, obviously the ITAR covers much larger than space-based technologies. But I absolutely think with some kind of sunsetter or revisit on those regulations, we would have seen, at this point, international competition catching up and now eclipsing our own progress and hopefully made necessary change to the regulation to try to alleviate that problem.

Chairman QUAYLE. Okay. Thank you very much.

I now recognize Mr. Luján for five minutes.

Mr. LUJÁN. Mr. Mann, federally funded scientists could be a tremendous resource for small and startup businesses. I come from a State that has two of the three NNSA national laboratories with Los Alamos National Labs and Sandia National Labs, in addition to the Air Force Research Laboratory, Air Force Nuclear Weapons Center and Satellite Office, in addition to NASA with White Sands down in the southern part of the State; whether it can help with what material to use or how best to analyze a complex business problem, small businesses throughout the State have made good use of the program in New Mexico as well as some outside of New Mexico. Is there something that can be done on a federal level to facilitate federally funded scientists providing technical assistance to small businesses, taking into consideration this notion of the anticompetitive clause or things of that nature that exist with some of our national labs?

Mr. MANN. I certainly think there could be benefit to that kind of collaboration. I am slightly speechless because I haven't really given that significant thought in the past. I do know, for example, one thing that I have been in conversations about is making the facilities available and our national labs available to small businesses because we have—you know, the taxpayers have put substantial investment in building out these facilities that often go underutilized and small businesses are particularly the ones that don't have access to sufficient capital to build up those facilities themselves. So that I can certainly see as being something.

As far as more direct research collaboration, again, you know, in my testimony I address the idea of government not acting as a venture capitalist. That was, I realize now, a nuanced point in that venture capitalists take technologies that have been substantially validated and target them at markets. The government should be investing in technologies, bringing them up to that level of being ready for venture capitalists to move forward with, not picking the technologies that will actually be financial success.

Mr. LUJÁN. So just for clarification there, so almost a true partnership with what the government is doing with VC helping to get through that valley of death?

Mr. MANN. Yeah, exactly.

Mr. LUJÁN. Mr. Rothrock, same question. Any thoughts or perspectives associated with how VC looks at the benefits associated with getting more of our physicists, scientists, engineers more involved with business and with projects, research, or even helping as that technology comes out to a commercialized perspective?

Mr. ROTHROCK. One specific idea I have is I know a number of universities allow their professors—in fact some require it—to spend a day a week or some portion of their working time affiliated with commercial enterprises. It does two things: one, it makes them aware of what commercial enterprises are looking for and what is marketable and so forth; but it also brings a little bit of that market to the laboratory so the professor, when he is writing a grant or proposal to receive funding, he can sort of target it that way. That relationship is a very good one.

The other is about using the assets. We actually have a company that has now found its way to North Carolina as a result of finding

facilities that were available. Actually, they found equipment that was for sale and it was too hard to move it across the country, so the company relocated itself to the equipment rather than bringing the equipment to the company.

So those kinds of things and having that available, NASA was very good for awhile publishing NASA tech briefs which allowed entrepreneurs to thumb through what was current, what papers were published. That sort of—with the Internet and what—all the communications facilities, that sort of transfer of information is good.

You know, a research professor is a really good research professor, not necessarily a great entrepreneur. But facilitating those people getting in the same room and talking about things is essential.

Mr. LUJÁN. I appreciate that very much. And one of the questions that I will be submitting to our panel—and I appreciate all of you being here today—is last Friday, the President issued a memorandum to the heads of executive agencies directing them to improve the results of its technology transfer and commercialization activities, and I am going to be very curious from your vantage point what suggestions would you give to those agency heads and maybe to this committee so that way we can work on that collectively.

But Mr. Rothrock, I was intrigued by—in your testimony, first, America's dependence on foreign fossil fuels cannot continue at its current rate. Second, the nation that grows its economy with clean energy will lead the global economy of the 21st century and talking about ARPA-E specifically and the importance of the competitiveness of the country. Can you just talk about that a little bit more? I really appreciate that being in there.

Mr. ROTHROCK. Sure, happy to, sir. The—you know, the 20th century was built on the back of fossil fuel, and if you subscribe to the theory that we are going to run out of it, then we have to come up with something else. And the industry of energy is the largest industry on the planet, whether it is electricity or petroleum. And so transforming to that new industry, whatever form it is, whether it is solar, nuclear, wind, or just alternatives in general, is going to be essential. Otherwise, your existing society will not be able to function; it has to have energy. So whoever gets there first will probably—may dictate some standards, will certainly be further down the cost curves because commodities, it is all about cost in a commodity world of energy whether it is petroleum or electricity. So whoever gets there first, I think, will have a distinct advantage.

You know, in the example here is a semiconductor relationship. Intel found itself quite competitive with Japan back in the '70s with the DRAM business. Well, they said we will let Japan have that and we will go after the CPUs, which is the brains of all these microprocessors. And look at the results. DRAMs are clearly a commodity and they are bought everywhere for practically no margin and no profit, whereas Intel is a huge successful company. So the ability to pivot, as they say in today's language, to these new industries, getting the energy industry to recognize the alternatives, investing taxpayer dollars into these programs whether they are in

the universities or in the national labs and then bringing that out to the entrepreneurs, I think, is really, really essential. And who is there first probably wins.

Mr. LUJÁN. Thank you, Mr. Chairman. I appreciate the time and I hope that collectively we might be able to be supportive of programs like that going forward, see what we can do to make sure we ensure the competitiveness of the country.

Mr. ROTHROCK. Thank you.

Chairman QUAYLE. Thank you, Mr. Luján.

I now recognize Mrs. Biggert for five minutes.

Mrs. BIGGERT. Thank you, Mr. Chairman.

Thank you all for being here. This is a very important issue and I think you are very helpful to us.

My first question would be for Mr. Lindsey. In your testimony, you argue in favor of allowing university faculty members to choose their own technology licensing agents. Can you explain in more detail how the current system inhibits innovation, and how might a change in licensing rules affect universities that fund a portion of the faculty research?

Mr. LINDSEY. Sure. There is a huge asymmetry at present between the freedom allowed to academics in their research capacity and the freedom allowed to them in their commercialization capacity. So no professor has to go and get permission or go through a queue and get clearance before he or she collaborates with academics in other institutions on a research project or on writing a paper. They are free agents in their academic research lives. They are not free agents, however, in their commercialization lives because to take any kind of—to get any kind of licensing of new ideas that they develop in their research, they have to go through their own university technology licensing office.

Those licensing offices act effectively as venture capitalists, picking winners of all of the promising research ideas that are coming out of their university, focusing on particular ones, and devoting time and energy to helping those ideas get licensed. They aren't necessarily the best qualified people to be doing that job. There is always a backlog problem. They don't necessarily have the acumen to pick—to prioritize. They may be looking for home runs and leaving good singles and doubles moldering in a queue, and so as a result, we don't have competition amongst agents for helping academics commercialize their ideas.

What we propose is moving towards a free agency model where an academic who has developed some promising new research finding and sees commercial possibilities with it could go to a private agent, could go to other universities' technology licensing offices, and so forth. The best way for the Federal Government to encourage a move towards a free agency model would be to condition its research grants on allowing researchers freedom to choose their own agents.

Mrs. BIGGERT. Does this apply to the labs as well?

Mr. LINDSEY. It could, yes.

Mrs. BIGGERT. So are these current limitations, then, they are really due to the university—

Mr. LINDSEY. They are university-based, yes, they are.

Mrs. BIGGERT [continuing]. Not any federal policy?

Mr. LINDSEY. Yes.

Mrs. BIGGERT. Thank you.

And Mr. Rothrock, number one, you—as a venture capitalist and you are out and you decide to provide an innovative idea—money, do you ever—some of the things I have heard from some companies is that the venture capitalists come in and they actually take over the company and start running it and kind of the innovators kind of, you know, lose out. I mean, they feel like it is not their company anymore and it is taken over. Does that happen very often or is it—

Mr. ROTHROCK. I don't believe it happens very often. I have heard of some of those stories, too, but I think it is very rare.

Mrs. BIGGERT. Okay. And then you talk about ARPA-E and what are the—are there—have you had anything to do with ARPA-E as far as this venture capitalist or the companies that have gotten money from ARPA-E?

Mr. ROTHROCK. Yes, ma'am. In my firm, one company did receive ARPA-E funding, but it was after we and another venture firm had already invested \$1 million in the project and had proven that what we were working on had some merit. And then they applied for the ARPA-E grant and received it.

Mrs. BIGGERT. Have you done anything with the Office of Science in the Department of Energy?

Mr. ROTHROCK. Nothing specifically. I do know Dr. Koonin, but that is just through the business.

Mrs. BIGGERT. Um-hum. So you think that there is more innovation for ARPA-E?

Mr. ROTHROCK. Yes, ma'am, I do think there is a lot more innovation opportunity for ARPA-E, electric vehicles, all the places that are presently not receiving what I think is sufficient amount of R&D capital. I think ARPA-E should be focusing much like DARPA did.

Mrs. BIGGERT. Well, something like the SBIR, you know, phases in monies but ARPA-E is just one time that they would commit to a project?

Mr. ROTHROCK. That is my understanding but it is over multiple years, for example. So it would be an amount of money over a period of time.

Mrs. BIGGERT. All right. Thank you. I yield back.

Chairman QUAYLE. Thank you, Mrs. Biggert.

I now recognize Mr. Lipinski for five minutes.

Mr. LIPINSKI. Thank you, Chairman Quayle.

I would like to start by congratulating Ranking Member Edwards here for—congratulating her for stepping up to this position. I have enjoyed working with you on this Committee and our other committee in the past, and I know that—looking forward to your leadership here on the Subcommittee.

I firmly believe that along with education, the most important issue that our Committee can consider is how to turn our advantages in research and development into jobs and new businesses, and it is something that I have really focused on since I started serving in Congress and serving on this Committee.

I want to talk about getting to proof-of-concept programs and talking about I-Corps because when the SBIR/STTR reauthoriza-

tion bill was passed by this Committee in the spring, I offered an amendment that was adopted with bipartisan support to create a proof-of-concept center pilot program within the STTR program at NIH. The proof-of-concept centers that I want to create would share many of the goals and strategies seen in the I-Corps program that the NSF has since announced.

Both my initiative and their program were modeled after success at the Coulter Foundation, the European Research Council, and MIT's Deshpande Center. At its core, this is a simple idea—give researchers with an invention the tools they need to conceptualize and plan a new business. But it is a critical problem since academic researchers often don't know anything about developing and improving their small business idea—proving that it can work. I know that the Kauffman Foundation, along with Stanford Technology Ventures Program and MIT's Deshpande Center, has partnered with the NSF in creating I-Corps and I heard, as I was home on Monday mowing my lawn listening to NPR, I heard the story about I-Corps at Stanford.

So I would like to ask Mr. Lindsey about his involvement in and perspectives on his program. Can you explain how—first of all, how I-Corps is working and what role—what the role of each organization has and any thoughts on how this can be expanded or replicated, especially to reach schools and researchers who haven't historically had success in commercializing their innovations? Mr. Lindsey.

Mr. LINDSEY. Thank you for the question.

The Kauffman Foundation is a big and diverse place doing all kinds of wonderful things, including working on the I-Corps issue. That is not in my portfolio, so what I will do is talk to my colleagues who are involved to give you the most knowledgeable answer and get back to you.

Mr. LIPINSKI. Okay. And I know Mr. Mann had spoken about—you were at Stanford, correct? Were there courses that you took at Stanford that were helpful in terms of entrepreneurship?

Mr. MANN. Oh, absolutely. In fact the original business plan for Skybox was created within an STVP course. So Stanford absolutely has an educational pipeline designed to help innovators understand what they need to do and then, as I have previously mentioned, also show them the door with the perspective of if you want to commercialize it, take it outside the university.

Mr. LIPINSKI. You think this is something that can be done elsewhere? Is there something unique to—at Stanford with this location and its connections or how do—do you think this can be replicated?

Mr. MANN. I absolutely think it can be replicated. MIT has done a phenomenal job of building up a similar type of base. Stanford is currently in a bid to build the Stanford New York City campus, which would similarly create a center for innovation, but I don't think it is just limited to those schools. I think really any university that has really active research and development capabilities should be investigating ways to create educational opportunities that facilitate that kind of external transition.

Mr. LIPINSKI. Well, one other question before I run out of time or—maybe lead into a question I will put in for the record. I am

currently developing legislation to improve the Bayh-Dole Act. One of my goals is to make sure whenever possible that taxpayer-funded R&D turns into American-made products and American jobs, and so since my time is expiring, I will put that in for a QFR to ask about what can be done and what Congress can do to better incentivize domestic production of inventions that began with federal R&D investments because, as I said, I think that is one of the critical things we need to do here. As people are asking where are the jobs going to come from, what is the future of American jobs? I think the R&D that we are doing here, a lot of it is funded by the Federal Government can better be turned into American jobs.

With that, I will yield back.

Chairman QUAYLE. Thank you, Mr. Lipinski.

I now recognize the third member in a row from Illinois, Mr. Hultgren, for five minutes.

Mr. HULTGREN. Thank you very much. Thank you all for being here. I really appreciate it. I have a couple quick questions for you. First of all, as you I think are aware, for the last 30 months, 28 of those months we have had unemployment here in America above nine percent. I mean these are brutal times. I am absolutely convinced that a big part of getting this turned around again is getting innovation and entrepreneurship growing again.

One question I want to start with for each of you, if you could just give a brief answer on this, is really a question for us as policymakers, what our focus should be. And I know both of these things are important, but I am asking you which is more important. Is it more important for us to target policies designed to provide an immediate boost to our economy, or is it more important to have economic policies designed to create conditions for long-term economic growth? And if I can just get a thought. Again, I know you would say both, but which is more important?

Mr. LINDSEY. I would say that Congress doesn't have a lot of leverage or a lot of money right now to do short-term stimulus, so I think that is more in the hands of the Federal Reserve at this point than it is in the hands of Congress. So I think Congress' focus ought to be on the long-term growth issue.

Mr. MANN. I, too, agree that it should be focused on long term, especially with regard to the fact that venture capitalists are looking at longer time horizons for return on investment. They are looking for scenarios in which that kind of investment will generate return.

Mr. ROTHROCK. Yes, I would echo that. In fact, as a venture capitalist, I always like to say that entrepreneurs don't read the newspaper, they don't watch television. They are always optimistic about thinking very long-term and my style has to match that. So I am very much for that.

I would emphasize in your thinking about that to make it stable and constant over time and predictable.

Mr. HULTGREN. Thank you.

Mr. DUBIN. I agree for the entrepreneurial economy, longer term is better. For our industry, long term is all there is and I think—I don't think there is any magic bullet. It is a matter of creating an environment and a culture and a support system that attacks

the issue from many different angles and that—you can't do that overnight.

Mr. HULTGREN. I totally agree with you. Thank you. It got hot all of a sudden.

But any suggestions you have on this of how we can bring more certainty to this over the long term? I absolutely agree. You know, that is what we have got to be focused on, especially in these times of very low resources.

I do want to shift a little bit. And Mr. Mann, I appreciate your testimony. And really the experiences you had at Stanford that really led to the creation of your business, I wondered if each of you could just give me kind of a thought you might have of your current—the feel for current undergraduate and graduate students as how they are continuing to view opportunities for entrepreneurship. Do you see any recent trends in the way potential entrepreneurs view opportunities to create their own companies? And are there cost-effective ways that we can promote the benefits of entrepreneurship to undergraduate and graduate students?

Mr. MANN. So I haven't actually seen a significant change in the way—that may just be because Silicon Valley tends to be a bubble. Stanford is a bubble within a bubble and I have had my head in the sand for the last three years trying to build a company. But ultimately, there is always a subset of undergrad and graduate researchers who are more interested in taking what they invent and going out and commercializing it than they are in sort of the pure pursuit of academic research. And I don't think that is something that has been changing in any large way.

Mr. ROTHROCK. I would add that the sort of great man theory or great woman theory that—to the extent that important people that have an impact on an entrepreneurial ecosystem can be highlighted and emphasized I think makes people rise to the occasion. I think also a part—I participate as a mentor in a second-year program at the GSB at Stanford, team of people with ideas and I help them form it into a business plan. I think either formalizing or recognizing those kinds of programs may be—you don't need financial support but just acknowledging it and pushing it.

Mr. HULTGREN. Thank you. Let me jump in here. My time is winding down but one more question for Mr. Lindsey. I wonder if you could elaborate. In your statement you had said, "... as countries get richer, they become more dependent on homegrown innovation to keep the growth machine humming." I wonder to you what that means for the United States in particular?

Mr. LINDSEY. First of all, let me just go back to your question on the university side. One of the great strengths of our system is bringing brilliant kids from all over the world and educating them and then shoving them back to their own countries. So I think a vital way to cash in on the strength of our system is to staple green cards to diplomas for people with STEM degrees or particularly to give visas to people who actually have plans to start their own businesses. Those would be enormous gains.

Just to focus on one issue of how the sources of growth are changing in the United States and pushing more and more of the burden for keeping our economy growing onto innovation are demographic changes that haven't gotten a lot of notice but they are

hugely important. Over the whole course of the 20th century, we got a big tailwind from the growing participation of women in the labor force. So one of the easiest ways to get higher GDP per capita is just to get a higher and higher percentage of people making GDP, getting them out of the home and into the workplace.

But that has stopped, so women's labor force participation peaked in the late '90s, started trailing downward before the recession. Men's labor force participation has been going down gently for decades because of later entry into the workforce and because of early retirement, and so, as a result, our employment-to-population ratio is—even before the recession was lower—was going downward and as a result—according to McKinsey Global Institute research—labor force growth in the '70s contributed 2.0 percentage points to GDP growth—annual GDP growth. It is projected to contribute only 0.5 percent in the decade between 2010 and 2020. So that is a point and a half of GDP growth gone and we have got to make it up somewhere. According to McKinsey, we need an increase in productivity growth of 25 percent to just maintain historical growth rates.

We have had great difficulty over the years in matching old productivity growth rates, so that just, I think, illustrates that we are now facing a big headwind on the demographic front and the only way we can make it up is through innovation.

Mr. HULTGREN. My time has expired. I yield back. Thank you very much.

Chairman QUAYLE. Thank you, Mr. Hultgren.

I now recognize Mr. Cravaack for five minutes.

Mr. CRAVAACK. Not from Illinois so—hi. Thanks for being here today. I think this is really the crux of what we are seeing in colleges today. You know, some of the college students we have seen overseas, you know, they are crammed full of knowledge and they are encyclopedias basically, but what is different here in the United States is we are innovators, we are creators, we are—want to see what is on the next edge of the envelope. And that is what makes this country so great and that is what we need to keep on focusing on in the future.

Mr. Mann, I have a question for you. You know, stereotypical—you know, expect the next great thing to be from some college student that is skipping class in a garage somewhere, you know, developing, you know, something. And would you consider that the same? Would you consider that a stereotype that is what we are seeing today? Are they—you know, are they in the college system? Are they out of the college system? Are they just using their own innovation to get this done? What do you think?

Mr. MANN. I would definitely say that still exists today. I mean that is exactly my story. You know, we were at Stanford doing the research and ultimately left the university. You know, I dropped out of school in the long history of entrepreneurs chasing their vision because I believed we had the opportunity to fundamentally change the world.

Mr. CRAVAACK. Well, kudos to you. You know, one of the things I—in your company I was reading about your company as well. You had a little bit of trouble trying to get some venture capitalists, drop out from Stanford, you know, basically come and believe in us,

right? And here you are with this great idea, this fantastic idea that you know is going to work but yet you are finding trouble to get venture capital. How can we help young people like yourself to be able to get the capital that they need to follow that dream and ambition?

Mr. MANN. Well, again, the biggest thing came down—came back to the education piece. You know, ultimately for Skybox in the summer of 2009 we were trying to convince investors used to investing in Internet companies to invest in a satellite company. That was not a particularly easy task, so through the activities of the STVP programs we came to understand how to position an opportunity in a way that it was ultimately fundable, you know, and ultimately it meant finding the node and enabling the node to see that we were doing to the satellite industry the exact same thing that he and his computers at Sun did to the mainframe.

Mr. CRAVAACK. Mr. Rothrock, what do you think? You know, how do you see guys like Mr. Mann and how do you seek him out and say, wow, this guy has got a great idea. You know, how do we do this?

Mr. ROTHROCK. We see—the funnel of entrepreneurs that walk in our front door or give us a call or send us an email ranges from all walks of life, all corners of the country, educated, college degrees, dropouts, you name it. It comes in all forms and we don't necessarily hold that against them or for them as an advantage in some cases. So I think it is a little bit of a myth about—it is really about the person, the thinking. Einstein said imagination was more important than knowledge and we seek that. In the presentation, is it really creative? Have they thought through contingencies? How do they deal with the competitive question? We call it leg drive at my firm. Does this person really, you know, get up in the morning and before they have their shower they have already got three ideas in how they are going to win? You look for that spark, and that comes whether you have got a college education or not. That is a human characteristic.

Mr. CRAVAACK. Yeah, I understand that one.

Mr. LINDSEY, what do you think about all this from your perspective?

Mr. LINDSEY. I will just add that, of course, the college kid with a great idea is a part of the entrepreneurial reality but it isn't the only part. According to Kauffman Foundation research, the average entrepreneur or the average new business founder is 40 years old. He has been—he or she has been working her business and has a new idea and figures out that he can't get it done in his company and sets out on his own. So it takes all kinds.

Mr. CRAVAACK. Yeah, it does. I had the fortune to go to the Naval Academy and fortunately those guys are kind of locked in, but you know, some of the great ideas that I saw from some of the guys working through there made their way up through the ranks and so it is great to see. So I had the pleasure of rooming with an electrical engineer so—but anyway, well, thank you very much. I appreciate it.

And with that I will yield back, Mr. Chairman.

Chairman QUAYLE. Thank you, Mr. Cravaack.

And I would like to thank the witnesses for their valuable testimony and the Members for their questions. The Members of the Subcommittee may have additional questions for the witnesses, and we will ask you to respond to those in writing. The record will remain open for two weeks for additional comments and statements from Members.

The witnesses are excused. Thank you all for coming. This hearing is now adjourned.

[Whereupon, at 11:25 a.m., the Subcommittee was adjourned.]

Appendix

ANSWERS TO POST-HEARING QUESTIONS

ANSWERS TO POST-HEARING QUESTIONS

*Responses by Mr. Brink Lindsey,
Senior Scholar in Research and Policy,
Ewing Marion Kauffman Foundation
for Space-Based Positioning, Navigation, and Timing*

Questions Submitted by Subcommittee Chairman Ben Quayle

Q1. It often seems that the Federal Government promotes ever-higher regulatory standards among States. In the Startup Act, the Kauffman Foundation calls for an assessment of the legal environment toward businesses in different States and major cities. How would you recommend developing the criteria for this assessment?

A1. We recommend using criteria similar to those employed in the World Bank's "Doing Business" reports. For more information about the methodology used in those reports, see here: <http://www.doingbusiness.org/methodology>.

Q2. Your testimony detailed how changes in licensing rules might improve university technology transfer. Has Kauffman explored any other possible changes to the Bayh-Dole or Stevenson-Wydler Acts that might support more university or federal lab-generated innovation?

A2. We have explored options for changing the Bayh-Dole Act but have come to the conclusion that it is not necessary to amend the Act to encourage or mandate "free agency" for researchers or, alternatively, a 90-day right of first refusal by the technology transfer office at the researcher's own university. The appropriate incentives—namely, conditioning federal grants on the university's allowing greater freedom for its researchers—could be embodied in appropriations for science research. Furthermore, appropriations language could authorize or direct funding agencies to allocate up to 1% of science grant awards to commercialization education for the principal investigators, where relevant. In addition, in the age of Web 2.0, universities are not taking advantage of the technology available today for online licensing. Kauffman Foundation funded the development of infrastructure to allow online licensing, and currently only seven universities in the U.S. are using it in a very limited fashion. Incentives for universities to be evaluated based upon science that quickly moves to the market should be put in place and utilized as a criterion for federal funding.

Questions Submitted by Ranking Subcommittee Member Donna Edwards

Q1. Some have proposed creating public-private research consortia—consisting of small and large businesses, universities, and government entities—to work together on precompetitive research challenges that are driven by industry need. The successful Semiconductor Research Corporation initiative is an example of such a consortium. In your opinion, do you believe there is value to these sorts of industry-defined research collaborations, and should the Federal Government be doing more to encourage them?

A1. Whether Sematech was really that successful is open to dispute. In any event, given the shortage of federal dollars, funding additional consortia does not seem like an especially promising idea. It should be noted that the Kauffman Foundation was the seed funder of a large business/university collaborative model called the University Industry Demonstration Partnership. While this initiative has aided in collaborations, there have not been any outcomes focused on precompetitive research challenges.

Q2. In his testimony, Mr. Mann mentioned the courses available to him as a student at Stanford to help educate and foster entrepreneurship. While Stanford is undoubtedly a leader in this area, there are many universities throughout the country that do not currently offer this type of education or these opportunities to their students. Do you believe this sort of entrepreneurial education should be made available to students throughout the country? If so, in your opinion, what are the key components of a successful entrepreneurial education program? What barriers exist to instituting these sorts of programs throughout the country?

A2. Our experience has increasingly led us to the conclusion that entrepreneurship is best taught in real time, as students are actually undertaking a new business. Here, the Launchpad program, begun at the University of Miami and now being replicated at Wayne State and potentially other universities, shows great promise.

The key to this program is that it is run out of the university's career counseling office, which provides mentorship and networks for finding money, employees, and customers. No policy barriers exist here, and so any and all universities, and community colleges as well, are capable of starting Launchpad-type programs. There is no need for federal funding here, as alumni and local businesses are likely supporters. In addition, Kauffman FastTrac has provided education and peer networks for over 300,000 individuals across the U.S. with no federal funding. Furthermore, universities like Stanford are now offering their more popular courses on starting your own venture online for free. There are many avenues for education, none of which should require federal funding.

Question Submitted by Representative Randy Neugebauer

Q1. Have you observed any small startup businesses having difficulties obtaining loans or accessing capital? Have you observed any changes in banks' underwriting standards or compliance costs affecting startups' abilities to obtain loans?

A1. At present, there is only anecdotal evidence that banks have tightened underwriting standards for lending to all small business, including startups as well as existing enterprises. This is potentially important because Kauffman research shows that contrary to conventional wisdom, bank financing is quite important to startups. For the relevant Kauffman study, see here: http://www.kauffman.org/uploadedFiles/Capital_Structure_Decisions_New_Firms.pdf.

Questions Submitted by Representative Daniel Lipinski

Q1. Describe your experiences with federal R&D funding mechanisms, whether your companies do their manufacturing here in the U.S., and if there is anything Congress can do to better incentivize domestic production of inventions that began with federal R&D investments.

A1. The Kauffman Foundation is not a manufacturing company, so the first part of this question is not applicable. One possible way for Congress to incentivize more domestic production would be to redirect some existing education funding toward matching grants to states to support community college training programs for manufacturing jobs, since a major reason U.S. companies move production offshore is a shortage of qualified personnel here.

Q2. Please explain how the NSF Innovation Corps (I-Corps) program is working and the role of each of the participating organizations—NSF, Kauffman Foundation, the Stanford Technology Ventures Program, and MIT's Desphande Center. How will you decide if I-Corps is successful? Do you have any thoughts as to how it can be expanded or replicated, especially to better reach schools and researchers who haven't historically had success commercializing their innovations?

A2. The Kauffman Foundation published a report by Christine Gulbrandsen that was a five-year evaluation of both the Desphande and Von Liebig Centers—both university-based proof-of-concept centers intended to accelerate science to market. Kauffman and Desphande Foundation leadership have worked together over the last three years to aid universities in understanding and replicating these programs. To date the only actual replications are QB3 at UCSF and the Institute for Advancing Medical Innovation at the University of Kansas. Desphande and Kauffman leadership have also worked with the NSF leadership to determine the potential to scale this model in a virtual manner, an effort that resulted in the I-Corps. While it is too early to report the results of the I-Corps program, we should look to scale the program not only within NSF but also within NIH as we are able to use the University of Kansas and UCSF models as examples. The only true metric for success for these programs should be the increase in volume of licensed technology from the university to the marketplace. Again, it will be imperative that the university faculty engaged and funded by the program be supported through the process to assure that the entire university is incentivized to move science to market rapidly in support of the process. It is not necessary for any additional federal dollars to be allocated in support of this program.

Questions Submitted by Representative Ray Luján

Q1. Basic research is key to future innovation. But the direct products of basic research are publicly available, as it should be for the integrity of the scientific

process. This means that entrepreneurs and innovators all over the world have access to this basic resource of new knowledge from which new innovative businesses can develop. So how can we foster the transfer of technology from our labs and universities to our entrepreneurs and innovators?

- A1. Our top recommendation here is to encourage universities to allow their researchers “free agency” in commercializing their research—i.e., allow them to use any agent they want instead of having to rely, as at present, on their own university’s technology transfer office. Short of outright free agency, universities could be encouraged to reserve a 90-day right of first refusal for their TTOs with free agency after that period.
- Q2. *Recently, the President issued a memorandum to the heads of executive agencies directing them to improve the results from its technology transfer and commercialization activities. From your vantage point, what suggestions would you give to agency heads to accomplish this?*
- A2. Agencies should condition grant funding on universities’ implementing either free agency or a 90-day right of first refusal policy for their TTOs.
- Q3. *The technology transfer process is full of difficulties. One of the most difficult is the gap, or valley of death as it is called, where the federal agencies funding the basic research don’t want to fund the applied research and prototype development because they believe it to not be within their mission, and the private sector won’t fund the work because it is too risky with so many ways for the early stage good idea to turn out to not be a viable business. So how do we bridge this valley of death?*
- A3. Direct government funding as a way to bridge the valley of death is inadvisable, as all the recent problems with Solyndra make clear. The most constructive path for federal policy in this area is to exempt long-term (i.e., at least five years) investments in startups from capital gains taxation.
- Q4. *Cooperative Research and Development Agreements (CRADAs) are a common contracting mechanism for federal labs to partner with private entities to mature technologies to the point where private capital is willing to invest in the technology. If the government does not pay its portion of the CRADA work and requires the private entity to pay the entire cost, will this deter small businesses from entering into CRADAs with labs and thereby reduce the amount of technologies that are transferred to the private sector?*
- A4. We lack sufficient experience with CRADAs to respond to this question.
- Q5. *Federally funded scientists could be a tremendous resource for small and start-up businesses. In my State of New Mexico, we have two national laboratories and the State has a program to pay the time for personnel at these labs to provide technical assistance to small businesses. Whether it be help with what material to use or how best to analyze a complex business problem, small businesses throughout the State have made good use of this program. Is there something that could be done on a federal level to facilitate federally funded scientists providing technical assistance to small businesses?*
- A5. It is important to recognize that the majority of federal laboratories have contracted their management and these federal laboratory management contracts are not evaluated based upon advancing science in the lab to the marketplace or their collaborations with small or new businesses. If the government has expectations of commercial outcomes from the federal laboratories, it should review the management contracts and align incentives appropriately. Federal funding could come with a stipulation, at least in some cases, that technical assistance to small business is part of the scientist’s job description.
- Q6. *As Chair of the Congressional Hispanic Caucus’ Economy and Workforce Task Force, I recently held a roundtable with representatives from the technology industry to focus on fostering innovation and ensuring that young entrepreneurs and startup businesses have the resources they need to succeed. One participant from the computer manufacturing industry emphasized that his company sought to ensure that its supply chain was diversified by partnering with small business. We can help drive prosperity and jobs in the U.S. by using small business services. What do you perceive as the major challenges to partnering with large manufacturers?*
- A6. A large barrier is that many large companies do not know the quality of the services provided by smaller, newer companies. An Angie’s List kind of service for

smaller businesses would help. We are not aware of the existence of such a service, but if not it certainly seems like a great private sector opportunity. One of the key roles of the private sector-supported Startup America Partnership is the alignment of big companies with new businesses. While it is too early to evaluate the outcome of this project, data collected over the next year will provide insight into answering your question.

Q7. How can large companies better support and mentor small businesses in order to ensure that small businesses and startups feel supported in their fields and have opportunity to grow? How do we get large companies interested in mentoring startups? Can we show these companies that helping to grow small business is beneficial to them as well?

A7. The Startup America Partnership is encouraging large companies to offer precisely this kind of mentoring and support. In addition, the Kauffman Foundation has worked with or supported many mentoring organizations across the U.S., many of them having direct relationships with either a university (MIT Venture Mentor Service) or organizations like Young Presidents' Organization or Entrepreneurs' Organization.

*Responses by Mr. Julian Mann,
Co-Founder and Vice President,
Product Development and Research,
Skybox Imaging*

Questions Submitted by Subcommittee Chairman Ben Quayle

Q1. Do you have any recommendations on ways that you think would help a small company like yours utilize federal facilities, including national laboratories and other user facilities?

A1. First, there is a general lack of publicly available information regarding the types of facilities and infrastructure available at national laboratories and other similar facilities. A standard mechanism for searching for the available infrastructure at local facilities is a prerequisite for any general program that opens such facilities and infrastructure to public use.

Secondly, there needs to be a formal mechanism that establishes a relationship between the federal entity and the company. This process needs to be far less burdensome than traditional contract establishment.

Q2. I understand that Skybox is still a privately held company. What will factor into your decision-making process down the road when considering whether to go public? Would lower compliance costs and regulations factor into this decision?

A2. The decision to go public will be informed by a number of factors. Such factors include capital requirements for corporate growth, financial status of the business, and regulatory compliance burden. It is an unarguable fact that the regulatory burdens placed upon publically traded companies are most burdensome to rapidly growing companies that are looking to go public. A graduated approach to compliance that allows a company to adapt over time to the regulatory environment in which mature publically traded companies operate would certainly ease such burdens and improve the likelihood that privately held companies consider trading in the public market.

Questions Submitted by Ranking Subcommittee Member Donna Edwards

Q1. In your testimony, you discuss the challenges that small businesses have in conducting collaborative research with universities and large businesses. Do you view these challenges as insurmountable? Is there anything that can be done to help facilitate more engagement and collaboration among these various players? If so, what?

A1. I do believe that these challenges are predominantly insurmountable. The differences in mentality, operational tempo, and motivation make it extremely difficult for productive collaboration. This does not mean that universities and large companies do not play an important role in the overall innovation environment, however. Universities are an ideal ground for fundamental research to be conducted, before commercial viability for a given technology exists. Large companies, through small company acquisition, can significantly assist in the wide-scale adoption of new technologies by providing access to capital, sales and distribution networks, or integration with existing technologies. I believe that ensuring the health of these transfer mechanisms into and out of small technology companies is absolutely essential for the continued growth of the entrepreneurial technology sector. I also believe that a focus on collaborative research between fundamentally unaligned organizations is a misguided approach to fostering the desired sector growth.

Q2. Some have proposed creating public-private research consortia—consisting of small and large businesses, universities, and government entities—to work together on precompetitive research challenges that are driven by industry need. The successful Semiconductor Research Corporation initiative is an example of such a consortium. In your opinion, do you believe there is value to these sorts of industry-defined research collaborations and should the Federal Government be doing more to encourage them?

A2. I am not personally familiar with the work of the Semiconductor Research Corporation, so I cannot directly comment on their activity as a representative model for such public-private consortia. I believe that having forums for the public and private sector to communicate the areas in which technological innovation would be beneficial is not a bad idea. I do believe, however, that for such forums to be successful in their goal, they must strive to ensure that the line is drawn at identifying the problems that need solving, not the best solution. This is because large compa-

nies are notoriously bad at predicting the technologies that will ultimately solve the problems that exist. Rather than focus on how to improve large companies' or the Federal Government's abilities to develop these new technologies, we need to recognize that small entrepreneurial companies are best at generating new technologies. As the ultimate customer of these new technologies, government and large corporations have a deep understanding of the needs, but not the transformative solutions that will ultimately meet these needs. Any increase in the number or activity of such public-private consortia must keep this in mind if they are to operate successfully.

Q3. In your testimony, you mentioned the courses available to you as a student at Stanford to help educate and foster entrepreneurship. While Stanford is undoubtedly a leader in this area, there are many universities throughout the country that do not currently offer this type of education or these opportunities to their students. Do you believe this sort of entrepreneurial education should be made available to students throughout the country? If so, in your opinion, what are the key components of a successful entrepreneurial education program? What barriers exist to instituting these sorts of programs throughout the country?

A3. I absolutely believe that replicating this kind of entrepreneurial education throughout the country is certainly possible, and a number of such programs have been successfully implemented at universities across the country to date. I do believe that there are a few key requirements, however, that need to be considered. First, these programs cannot be created in isolation from a strong technological research base within the university. Entrepreneurial education on its own is not particularly useful without transformative technologies to focus on commercializing. Additionally, several of the programs that I have observed fail to transfer the entrepreneurial activity outside the university. With a desire to realize the upside of this technology, many university programs end up incubating the entrepreneurial activity far too long. Ultimately, to ensure the success of such programs, universities must provide not only the education about entrepreneurship, but also the resources and guidance to transfer the concepts outside the university when the true pursuit of a commercial venture commences.

Question Submitted by Representative Lamar Smith

Q1. At our hearing, you explained that existing government acquisition models have not kept up with the pace of technological innovation in the private sector. Would you say the challenge lies in internal acquisition rules, the culture at acquisition departments, or a combination of the two? How could the process be altered to allow for the government to move rapidly to adopt new technology?

A1. I believe that the challenge is certainly a combination of both antiquated acquisition rules and the culture within acquisition organizations, though both of these stem from a common problem. Traditional government acquisition has been designed around the idea that the government is at the forefront of technological development and is effectively designing custom solutions to meet heretofore-unmet needs. The reality today is that in a significant majority of cases, technology in the private sector has eclipsed the state of technology within the government.

The acquisition process required to use commercial technologies in novel ways to meet government needs is certainly different from that of a custom technology acquisition. This difference has been further exacerbated by the fact that the private sector has moved from traditional technology acquisition to service subscriptions. This is most clearly exemplified in modern software, where Software-As-A-Service (SAAS) models have effectively replaced traditional approaches to software delivery. The private sector has adapted to this change by realizing that there is significant benefit to such a service-oriented model. The customer does not bear the technological risk of either the development or the ongoing operations of the solution. Unlike traditional acquisitions, where an initial development budget is approved, with little thought to the ongoing operational costs, in service-oriented models the customer needs to express the value that a given service provides on some sort of repeated basis (i.e., monthly, annually, etc.). These models provide better quality of service to customers, incentivize service providers to continue improving the systems that they deliver, and provide a more reliable ongoing revenue stream on which businesses can develop.

Government acquisition is not designed to be able to acquire subscription services. These subscription models extend beyond the realm of just software as well; numerous companies are now providing Platform-As-A-Service (PAAS) or Infrastructure-As-A-Service (IAAS), providing the same type of quality of service and continuous

improvement benefits as SAAS. The “we must build it attitude” prevents asking the question “what is this worth to me?” This needs to be changed if government acquisition of new technologies has a chance of keeping up with the pace of technological innovation.

Questions Submitted by Representative Randy Neugebauer

Q1. I hear repeatedly from the small businesses in the 19th District of Texas that regulations and government intrusion are costing them valuable man hours of compliance and impacting their bottom line. Do you agree this is a problem? If yes, please provide an example of a regulation that you have witnessed impact a new business' ability to grow.

A1. I certainly agree that regulatory compliance has had a direct impact on Skybox's bottom line. One set of regulations in particular is the ITAR. I reference a part of my previous written testimony to further explain:

... As a satellite manufacturing company, virtually everything done by our engineering organization is governed under the ITAR. Even the most benign mechanical bracket can only be manufactured by an ITAR-certified machine shop. The vast majority of local machine shops are not ITAR certified, and have no interest in becoming certified due to the high cost, burdensome documentation requirements, and increased liability. As a result we have an artificially reduced supply market, which has resulted in our manufacturing costs being increased by a factor of 10. Furthermore, these machine shops are typically very busy, which means we have a lead time that is two to three times longer than if we were operating in a less regulated industry.

Perhaps even more concerning is the fact that the ITAR regulations have had the unintended consequence of actually decreasing domestic competitiveness in the aerospace industry. As a relative newcomer to the industry, I have not seen the progression of the regulations over the years. What I have seen, however, is that when it comes to low-cost, transformative, satellite technologies, international developers have significantly surpassed the state of domestically developed technologies. A number of our high-performance specialty components are obtained from international suppliers. Additionally, when we have approached these suppliers about the possibility of co-development or manufacturing support, they have declined due to the fact that their primary customer base is outside the United States. International developers are rejecting the idea of deeper collaboration with American companies due to the concern that they will not be able to export the resulting technology to their existing customers due to ITAR; this is a real problem for American innovation.

Q2. I also consistently hear from my constituents that regulatory uncertainty is making it more difficult for potential entrepreneurs to take the leap of faith and invest in starting a new business. Some of you alluded to this in your testimony. Could you please provide a specific example of this uncertainty, and explain how the Federal Government could act to relieve this uncertainty?

A2. Regulatory uncertainty has not really been a driving consideration in our business. While regulatory burden has certainly provided hardship, we have not really focused on how shifting regulations may or may not affect our business going forward. We really just focused on the development of our technology, the cultivation of our customer base, and the belief that if we did these two things successfully, we would be able to find ways of navigating any changing regulatory landscape that we encountered.

Q3. Have you observed any small startup businesses having difficulties obtaining loans or accessing capital? Have you observed any changes in banks' underwriting standards or compliance costs affecting startups' abilities to obtain loans?

A3. I do not have relevant experience from which to develop a response to this question.

Question Submitted by Representative Daniel Lipinski

Q1. Describe your experience with federal R&D funding mechanisms, whether your companies do their manufacturing here in the U.S., and if there is anything Congress can do to better incentivize domestic production of inventions that began with federal R&D investments.

A1. Prior to my experience with Skybox, I had been somewhat involved in SBIR funding processes for a few different federal agencies. Skybox has not had any formal relationship with federal R&D funding to date. Skybox does conduct all of our manufacturing domestically (due to ITAR regulations), and ultimately this has made us less competitive with international competitors because our costs are inflated. Ultimately I believe that trying to artificially incentivize domestic production will be of greater long-term detriment than benefit. We as a Nation need to focus on the areas of technology and innovation where we maintain a competitive edge on the global market, not use taxpayer dollars to create artificial incentives that continue to diminish our global position.

Questions Submitted by Representative Ben Ray Lujan

Q1. *Basic research is key to future innovation. But the direct products of basic research are publicly available, as it should be for the integrity of the scientific process. This means that entrepreneurs and innovators all over the world have access to this basic resource of new knowledge from which new innovative businesses can develop. So how can we foster the transfer of technology from our labs and universities to our entrepreneurs and innovators?*

A1. Ultimately, the knowledge conveyed through publicly available research is rarely sufficient to effectively commercialize the pertinent technology. Further, I believe that the concern that international innovators are going to take our entrepreneurial opportunity by cannibalizing our public research is misguided. The proportional amount of scientific innovation that the United States has been contributing to the global scientific community has been diminishing over the last 30 years. This is the real problem that we need to be addressing. As long as the United States continues to be a scientific powerhouse, we will continue to have a strong and growing technology entrepreneurship sector. If, instead, we continue to decline relative to the rest of the world, then our global position when it comes to entrepreneurship and innovation will certainly suffer.

Q2. *Recently, the President issued a memorandum to the heads of executive agencies directing them to improve the results from its technology transfer and commercialization activities. From your vantage point, what suggestions would you give to agency heads to accomplish this?*

A2. If executive agency heads want to increase the degree to which the technologies they develop are effectively commercialized, then they need to find ways of increasing the public's visibility into the technologies that they have within their portfolio. From my perspective, the greatest barrier to commercialization of this technology is that there is a lack of general knowledge into the technological developments that have been conducted by our federal agencies. Furthermore, those entrepreneurs that are best positioned to realize the full potential of these technologies in the commercial market are often some of the most removed from the activities going on within our federal research and development organizations.

Q3. *The technology transfer process is full of difficulties. One of the most difficult is the gap, or valley of death as it's called, where the federal agencies funding the basic research don't want to fund the applied research and prototype development because they believe it to not be within their mission, and the private sector won't fund the work because it is too risky with so many ways for the early stage good idea to turn out to not be a viable business. So how do we bridge this valley of death?*

A3. This so called "valley of death" is precisely the role that venture capital plays in spanning the gap between pure R&D funding and more traditional growth or debt capital sources. Ultimately, it is my experience that if the market potential of a technology is significant enough, then venture capital will gladly bear the technology risk associated with transitioning a technology from research to product. The issues that I have seen are that oftentimes innovators do a poor job of effectively determining and communicating the market potential for their technology. This is why I believe that an increase in entrepreneurial education in our Nation's leading research institutions is essential to seeing growth in the innovation sector.

Q4. *Cooperative research and Development Agreements (CRADAs) are a common contracting mechanism for federal labs to partner with private entities to mature technologies to the point where private capital is willing to invest in the technology. If the government does not pay its portion of the CRADA work and requires the private entity to pay the entire cost, will this deter small businesses*

from entering into CRADAs with labs and thereby reduce the amount of technologies that are transferred to the private sector?

A4. I have very little experience with CRADAs and consequently don't feel prepared to be able to answer this question effectively.

Q5. *Federally funded scientists could be a tremendous resource for small and start-up businesses. In my State of New Mexico, we have two national laboratories and the State has a program to pay the time for personnel at these labs to provide technical assistance to small businesses. Whether it be help with what material to use or how best to analyze a complex business problem, small businesses throughout the State have made good use of this program. Is there something that could be done on a federal level to facilitate federally funded scientists providing technical assistance to small businesses?*

A5. I can certainly see a program such as this being of some interest; I do not believe necessarily that it will accomplish the stated goal of the Committee in increasing the amount of technology entrepreneurship throughout the Nation. Ultimately, access to scientific talent has not been one of the major challenges that we have faced in the growth of Skybox. Furthermore, I have a number of professional contacts that are researchers in federal labs, and I am unsure that a structure like this would effectively motivate their support. While financial compensation for the time that they spend working with companies is certainly appreciated, many of these researchers that I have talked to believe that his or her time is the limited resource. The opportunity cost of working with a small company rather than working on proposals that can further his or her own research projects simply does not add up for these researchers. It is my belief that the financial resources that would be used for a program like this would be better spent directly funding novel research rather than through a construct such as this.

Q6. *As Chair of the Congressional Hispanic Caucus' Economy and Workforce Task Force, I recently held a roundtable with representatives from the technology industry to focus on fostering innovation and ensuring that young entrepreneurs and startup businesses have the resources they need to succeed. One participant from the computer manufacturing industry emphasized that his company sought to ensure that its supply chain was diversified by partnering with small business. We can help drive prosperity and jobs in the U.S. by using small business services. What do you perceive as the major challenges to partnering with large manufacturers?*

A6. At Skybox, we do not work with any large manufacturers. As a result, I cannot comment on the difficulty of partnering with large manufacturers.

Q7. *How can large companies better support and mentor small businesses in order to ensure that small businesses and startups feel supported in their fields and have opportunity to grow? How do we get large companies interested in mentoring startups? Can we show these companies that helping to grow small business is beneficial to them as well?*

A7. Large companies and startups do not work well together. Ultimately, when a startup is successful in a given field, it is typically detrimental to the large companies in that same field. On the other hand, it is beneficial to consumers, the economy, and the technological landscape at large. Furthermore, the ways in which large companies and startups operate is fundamentally different. If startups were to listen to the "recommendations" of large established companies, then transformative innovation would cease. As a Nation, we want innovators and their companies to continue to be the renegades within their respective industries if we are to continue to remain at the forefront of technological innovation.

Responses by Mr. Ray Rothrock, Partner, Venrock

Question Submitted by Subcommittee Chairman Ben Quayle

Q1. Do you believe the current budget environment offers an opportunity for smaller, innovative companies to compete for government contracts because acquisition officers will be increasingly looking for low-cost, high-efficiency options? How could acquisition officers be empowered by current systems to identify and pursue these options?

A1. The goal for government acquisitions, whether high tech or low, goods or services, should be to maximize value for the taxpayer's dollar. Even absent the critical budget environment of 2012, acquisition officers should always seek the highest return on government investment and procurement. I believe smaller, innovative companies can thrive in such an environment, given smaller startups' superior ability to be nimble, more responsive to individual customers' needs and lack of legacy cost burdens and overhead. Further, new small companies may have better products more suitable to current needs. Government can best help such small businesses by continuing to drive demand as it purchases its goods and services in the marketplace, encouraging private sector competition, holding vendors accountable and measuring value.

Questions Submitted by Representative Randy Neugebauer

Q1. I hear repeatedly from the small businesses in the 19th District of Texas that regulation and government intrusion are costing them valuable man hours of compliance and impacting their bottom line. Do you agree that this is a problem? If yes, please provide an example of a regulation that you have witnessed impact a new business' ability to grow.

A1. In the last decade or so, there has been a series of financial and accounting rules, regulation, and compliance mandates that while initially directed at larger companies, were disproportionately and mostly negatively impacting the bottom line of smaller companies; one might say an unintended consequence. One of the best examples of new compliance requirements that impact a small business's bottom line is compliance with Sarbanes-Oxley (SOX) 404B. There are a number of challenges that small venture-backed companies face in complying with SOX 404, but I will focus my response on just a few. First, the cost of compliance with this regulation forces young companies to expend scarce resources, people, time, and capital, earlier in the process in order to be prepared and the ability to go public or be acquired by larger public companies. This diversion of resources is having an adverse impact on innovation and economic growth since in a capital-constrained startup, precious capital is taken from the work of innovation and manufacturing. The end result of these SOX compliance challenges is that small businesses that once aspired to become public companies are now questioning the benefits of going public or even merging with a public company. This is not in the Nation's best interest, given that 90% of a company's growth and job creation comes after that company goes public.

Studies show that significant job creation occurs when a venture-backed company goes public. In the last decade, however, the market for venture-backed initial public offerings (IPOs) has suffered. From Sarbanes Oxley (SOX) to the Global Settlement for Reg FD, regulations intended for larger multinational corporations have raised burdensome obstacles and compliance costs for startups trying to enter the public markets. The venture industry strongly supports regulation that protects investors where necessary, but that regulatory approach must account for the unique challenges faced by young venture-backed companies and their investors. There are opportunities within existing regulations to tier compliance so as not to overburden emerging growth, pre-public and public companies at a time when they need support from the government, their auditors, and the markets. In addition, the venture capital industry supports regulatory and tax policies that seek to encourage small, emerging growth companies to go public on U.S. exchanges. Such policies promise to bolster the economic recovery, spur job growth, and maintain our global competitiveness.

I would direct your attention to a report that was recently presented to the Department of Treasury entitled, "Rebuilding the IPO On-Ramp." This report discusses many of the challenges faced by emerging growth companies and offers tangible solutions to those challenges. The report can be found on the NVCA Website, www.nvca.org.

Q2. I also consistently hear from my constituents that regulatory uncertainty is making it more difficult for potential entrepreneurs to take the leap of faith and invest in starting a new business. Some of you alluded to this in your testimony. Could you please provide a specific example of this uncertainty, and explain how the Federal Government could act to relieve this uncertainty?

A2. One of the most impactful things the Federal Government can do to help the bottom line for small businesses is to create a regulatory and tax policy environment with as much certainty and predictability as possible. Entrepreneurs and investors are willing to take risks if we have a sense of the “rules of the road” and that those rules will not be subject to abrupt changes or lapses. One of the best examples of this uncertainty is around tax credits that are often allowed to expire and then are reauthorized retroactively. This uncertainty makes it very difficult to strategically plan and budget growth for small businesses. It is hard to plan for the long term if changes substantial and fundamental changes occur in the short term.

Q3. Have you observed any small startup businesses having difficulties obtaining loans or accessing capital? Have you observed any changes in banks’ underwriting standards or compliance costs affecting startups’ abilities to obtain loans?

A3. Loans into venture capital startups become available when a company starts to produce revenues and cash flow. This cash flow is required to service the loan as equity capital and is far too expensive to be used for such uses. Generally, when startups are backed by strong venture firms, deals with commercial banks can be had, but at additional costs. Banks knowledgeable of the risks in startups and with the ability to complete due diligence have nonetheless pulled back from commercial loans to startups or added terms to the deals that basically increase the cost of debt to the company. These increased costs consume resources otherwise dedicated to innovation and other critical elements of the company and in general hamper growth as much as they contribute to it. Even further, banks are looking to the venture capital backers for guarantees, something they never asked for even three years ago. Personal guarantees are extraordinarily expensive but yet the banks are requiring it. It is sometimes easier to obtain equity capital rather than loan capital in the current environment.

Questions Submitted by Ranking Subcommittee Chairman Donna Edwards

Q1. Some have proposed creating public-private research consortia—consisting of small and large businesses, universities, and government entities—to work together on precompetitive research challenges that are driven by industry need. The successful Semiconductor Research Corporation initiative is an example of such an consortium. In your opinion, do you believe there is value to these sorts of industry-defined research collaborations and should the Federal Government be doing more to encourage them?

A1. Public-private partnerships or consortia have much to commend them and often receive lots of public support and outpouring of praise, but they are too often seen as a panacea or Holy Grail for federal research investments. In our experience, public-private consortia are constructive but hardly game changing. Private sector players rarely share their “best” proprietary technologies or deploy their most productive researchers in such collaborations, nor would we expect them to. I believe federal research initiatives should prioritize research outcomes over process inputs. Taxpayers benefit most when such research initiatives yield desired innovations leading to companies being formed, rather than collaboration without consequences of any economic meaning.

Q2. In his testimony, Mr. Mann mentioned the courses available to him as a student at Stanford to help educate and foster entrepreneurship. While Stanford is undoubtedly a leader in this area, there are many universities throughout the country that do not currently offer this type of education or these opportunities to their students. Do you believe this sort of entrepreneurial education should be made available to students throughout the country? If so, in your opinion, what are the key components of a successful entrepreneurial education program? What barriers exist to instituting these sorts of programs throughout the country?

A2. Entrepreneurship education is important, impactful, and in every business school in the country. The subject is “red hot” and ubiquitous, enjoying tremendous attention and scholarship. I am privileged to frequently guest lecture on topics including “what VCs look for,” “how to best position companies seeking funding,” and “growing businesses from concept to commerce.” In fact, educating entrepreneurs is

a core responsibility for all venture capitalists, as entrepreneurs are the lifeblood of the venture business, and the best VCs tend to be the best teachers, hand holders, and advisers. In general, all this activity is good if for nothing more than to provide alternatives and to make people seeking economic growth aware of this path.

The only obvious barriers to further proliferation of entrepreneurship education programs are high tuition rates, the inherent “busy-ness” of those best able to teach from experience, and the fact that entrepreneurship, like “innovation,” is a subjective and inexact science. For what it’s worth, in my experience, the entrepreneurship education that is most impactful occurs outside the classroom, in networks that connect real-time entrepreneurs with peers, veteran company builders, and funders. It occurs when people participate in entrepreneurial companies with fast growth and observe first hand the challenges, opportunities, and thrill of participating in one. Entrepreneurs are largely born, but there are many skills and lessons that can be shared in the classroom to lessen the failure rate.

Question Submitted by Representative Daniel Lipinski

Q1. Describe your experiences with federal R&D funding mechanisms, whether your companies do their manufacturing here in the U.S., and if there is anything Congress can do to better incentivize domestic production of inventions that began with federal R&D investments.

A1. The United States has led in the creation of the best and most successful and recognizable companies, and in some cases creating whole industries, in nearly every major industrial segment since World War II. United States R&D, public and private, has been the bedrock of those sectors—whether it is the aerospace industry, the telecommunications industry, the semiconductor industry, the personal computing industry, the biotechnology industry, the Internet, and now the clean energy sector. Federal Government support for early-stage R&D has been the key determinant that has led to inventions in all of these areas.

Different sectors and technologies require different tools to best incentivize domestic production of inventions that were incubated with federal R&D investments, but there are some actions that can be taken that will lead to improvements across all sectors.

First, high-tech companies that leverage federal R&D into commercial enterprises often require human capital that is skilled in science, mathematics, and engineering. Too often the U.S. workforce alone cannot fill those positions. Allowing high-skilled immigrants who perform jobs that cannot be filled by U.S. workers to remain in the country is a good first step. Foreign-born entrepreneurs contribute a great deal to the U.S. economy and should be allowed to remain in the U.S. after their schooling rather than going back to their home country to start up their new business there. The new Start-Up Visa Act, introduced by Reps. Lofgren and Polis, is an excellent piece of legislation that will go a long way toward creating jobs and keeping jobs here in the U.S. We can improve U.S. competitiveness and innovation when we embrace foreign-born entrepreneurs that want to create U.S. companies with manufacturing jobs. I don’t have statistics for the venture industry, but a full 40% of the entrepreneurs in my firm’s portfolio were foreign born.

The job creation potential in the clean energy sector is enormous. Energy is the largest market in the world, and the United States represents 25% of the world’s energy. The U.S. can and should take a leadership position in a worldwide clean energy technology marketplace, but it will take significant and sustained federal commitment to make this happen. Initial R&D innovation in technologies like hydro power (Hoover Dam), nuclear power (USS *Nautilus*), solar (NASA), and wind (DARPA) were derived out of our national labs and government-sponsored projects. The resulting industries represent the best means for leveraging this federal R&D into domestic manufacturing jobs. In the past, the U.S. has been an exporter of critical energy technologies. This can and should continue but requires sustained investment by the Federal Government.

The biggest challenge in getting to scale on emerging clean energy technologies is getting through the “valley of death”—that period of time and investment between a successful new energy product and first commercial deployment. The cost of commercial deployment in the capital-intensive energy sector is simply too high for, and the public equity markets do not have the risk appetite for, these projects either. Debt financing is the only way to bridge this gap. The federal balance sheet with financing allows for the highest possible chance of success. Congress should look at enacting a Clean Energy Deployment Administration (CEDA), similar to what Senators Bingaman and Murkowski have introduced. CEDA would provide a

government-backed lending authority for high-risk, capital-intensive, and first-of-a-kind manufacturing facilities. After the first or second facility is built and the risks are reduced, traditional lending will kick in as banks see and understand better the technology and benefits. Enacting CEDA would be the most important thing in the short run that Congress can do to incentivize domestic manufacturing.

Questions Submitted by Representative Ben Ray Lujan

Q1. Basic research is key to future innovation. But the direct products of basic research are publicly available, as it should be for the integrity of the scientific process. This means that entrepreneurs and innovators all over the world have access to this basic resource of new knowledge from which new innovative businesses can develop. So how can we foster the transfer of technology from our labs and universities to our entrepreneurs and innovators?

A1. The great technology companies of the late 20th Century were all started by teams of people—Intel, Apple, Microsoft, Google, Cisco, Genentech, Gilead, and on and on. In all cases, there were a technologist and a business person. A national lab or university laboratory naturally attracts the technologist who spends all their time on innovation. In my experiences, there are no natural business persons at a national lab. Coupling the technologist with a potential business entrepreneur is what is required. Professional researchers need access to the business side, and the business people need access to the researchers and their innovations. It cannot be forced or willed by policy.

I could see a series of conferences, e.g., adult science fairs, which expose both sides of the equation to each other. There they could learn to communicate with each other, explain their ideas, get other ideas, and take those to the lab or start the process of exiting the lab to a commercial setting. ARPA-E with its annual conference does an excellent job of bringing all the companies it has discovered (most are not ARPA-E investments) to one place for a week. Professional investors, engineers, managers, and many other walks of life all interact and the magic of startups continues as relationships are consummated.

Q2. Recently, the President issued a memorandum to the heads of executive agencies directing them to improve the results from its technology transfer and commercialization activities. From your vantage point, what suggestions would you give to agency heads to accomplish this?

A2. I applaud the President's directive to federal agency executives to improve technology transfer and commercialization activities. Incentives should be used to encourage those agency leaders in this regard. Maximizing on the Federal Government's "crown jewels" will be a boon to innovation and job creation in the near term. Each agency should assemble a commercialization team that includes a network of experienced entrepreneurial managers, investors (VCs), and researchers to share best practices and experience. The agencies should publish often and broadly on their work and projects. NASA Tech Briefs is one such publication that is circulated at my firm.

As described in #1 above, investors and entrepreneurs should have the ability to "walk the halls" of federal research institutions, meet and comingle with scientists, build relationships, and discuss ideas and opportunities with researchers. Steve Jobs is famous for having walked the halls of Xerox PARC and saw the mouse and windows that inspired the Macintosh computer. Doing all we can to build bridges between the federal researchers and the outside community will help the commercialization process and maximize the taxpayer investment.

Q3. The technology transfer process is full of difficulties. One of the most difficult is the gap, or valley of death, as it is called, where the federal agencies funding the basic research don't want to fund the applied research and prototype development because they believe it to not be within their mission, and the private sector won't fund the work because it is too risky with so many ways for the early stage good idea to turn out to not be a viable business. So how do we bridge this valley of death?

A3. Licensing challenges are critical to new company formation when taking from federally funded institutions. The license process must be streamlined and shortened to no more than 90 days. Standardization will help a lot in shortening the process and making it understandable for all. Small businesses are harmed by cumbersome, custom and lengthy licensing processing. Also, license agreements need exclusivity in order to attract private, outside investment.

Q4. Cooperative Research and Development Agreements (CRADAs) are a common contracting mechanism for federal labs to partner with private entities to mature technologies to the point where private capital is willing to invest in the technology. If the government does not pay its portion of the CRADA work and requires the private entity to pay the entire cost, will this deter small businesses from entering into CRADAs with labs and thereby reduce the amount of technologies that are transferred to the private sector?

A4. I have not had any experience with Cooperative Research and Development Agreements (CRADAs) so I am not well positioned to offer opinions on how that program will be impacted by changes to the federal payment portion.

Q5. Federally funded scientists could be a tremendous resource for small and start-up businesses. In my State of New Mexico, we have two national laboratories, and the State has a program to pay the time for personnel at these labs to provide technical assistance to small businesses. Whether it be help with what material to use or how best to analyze a complex business problem, small businesses throughout the State have made good use of this program. Is there something that could be done on a federal level to facilitate federally funded scientists providing technical assistance to small businesses?

A5. Getting federal scientists out of the labs and integrated into the private sector can potentially yield significant benefits. A small percentage of leading scientists is generally responsible for most of the significant breakthroughs that occur. So it makes good sense to focus entrepreneurial services, funding, and support on the top scientists with breakthrough ideas.

Top scientists should be given time, perhaps one day per week, to consult with startups. Leading universities offer this opportunity and it is beneficial to both sides. Lab scientists should be able to fully participate in entrepreneurial activities without fear of losing their federal benefits (i.e., pension, health insurance coverage) and without fear of conflict of interest. The standard of conflict of interest for scientists involved in entrepreneurial activity should be “actual conflict” as opposed to the “appearance of conflict” standard. The appearance standard allows program managers the ability to curtail entrepreneurial activities by pointing to unrealistic or imagined conflicts. In general, conflicts of interest exist at every layer of society. It is the lack of transparency of conflicts that causes trouble, not the transparency or admission of relationships or conflicts.

Q6. As Chair of the Congressional Hispanic Caucus' Economy and Workforce Task Force, I recently held a roundtable with representatives from the technology industry to focus on fostering innovation and ensuring that young entrepreneurs and startup businesses have the resources they need to succeed. One participant from the computer manufacturing industry emphasized that his company sought to ensure that its supply chain was diversified by partnering with small business. We can help drive prosperity and jobs in the U.S. by using small business services. What do you perceive as the major challenges to partnering with large manufacturers?

A6. Large manufacturers are essential to small startup companies as customers, suppliers, and sources of talent. Large manufacturers likewise recognize and appreciate the benefits of small and medium customers, suppliers, and targets for strategic acquisition. Last year, the Business Roundtable produced an analysis of the symbiotic relationship between small and large businesses in the United States, quantifying many of the mutual benefits: <http://businessroundtable.org/studies-and-reports/mutual-benefits-shared-growth-small-and-large-companies-working-together/>.

Venture capitalists do not generally see a market failure here for which government action is needed or warranted. Our competitive economy enables and encourages partnering driven by economics. Likewise the risks of unintended consequences are always high when policy makers attempt to influence market behaviors to assist individual classes of businesses. Small businesses tend to suffer along with big businesses when government limits access to capital, increases operation costs through regulation, or alters the cost-benefit equation to advance social policy goals. Public officials looking to help small businesses might best serve the marketplace through use of their bully pulpit, to highlight entrepreneurial role models and success stories.

Q7. How can large companies better support and mentor small businesses in order to ensure that small businesses and startups feel supported in their fields and have opportunity to grow? How do we get large companies interested in men-

toring startups? Can we show these companies that helping to grow small business is beneficial to them as well?

A7. Many large technology companies whose roots were entrepreneurial or were venture backed have their own venture programs in place. The NVCA encourages this and has an entire program supporting corporate venture capital. Large companies provide not just capital but often technical expertise that may be very hard to acquire for the startup, infrastructure in the case of labs or special equipment and, importantly, demand for the products produced by the smaller startups. The vast resources of, for example, an Intel, are truly unique and often sought by startups. Rarely do corporates invest with the assistance of pure venture capital groups. Invariably, when a corporation engages in the process of small company formation, there is an advocate within that company's senior management ranks. Corporations are driven by economics and results for their customers and shareholders. It would be helpful if federal policy were explicit in the treatment of certain tax policies, investment credits, and other accounting elements as they may be applied to company formation and startup company support.

*Responses by Mr. Steve Dubin, Former CEO, Martek Biosciences,
and Senior Advisor to DSM Nutritional Products*

Questions Submitted by Representative Neugebauer

Q1. I hear repeatedly from the small businesses in the 19th District of Texas that regulations and government intrusion are costing them valuable man hours of compliance and impacting their bottom line. Do you agree that this is a problem? If yes, please provide an example of a regulation that you have witnessed impact a new business' ability to grow.

A1. I do not think there is any one thing that creates the problem. I think it is the totality of federal, State, and local regulations that creates a sense of being overwhelmed when trying to start a new business. There are withholding issues, licensing and permitting requirements, health care issues, and overly complex taxation issues, among others. It is hard to start a one- or two-person business (which will hopefully grow to hire many employees) when you have so many issues to face.

Q2. I also consistently hear from my constituents that regulatory uncertainty is making it more difficult for potential entrepreneurs to take the leap of faith and invest in starting a new business. Some of you alluded to this in your testimony. Could you please provide a specific example of this uncertainty and explain how the Federal Government could act to relieve the uncertainty?

A2. Aside from the current tax and economic uncertainties, in DSM/Martek's nutrition field, for example, there are many uncertainties relating to health claims and regulatory procedures at the FDA that make it extremely costly for large companies, let alone small companies, to do business in the space. Why invest all of the time and money that goes into inventing a new nutritional product if the regulatory path is unclear and if a nutritional product will be held to unreasonable drug-type standards before you can say anything about your product? In addition, this uncertainty opens the door for plaintiff's attorneys to bring suits related to claims.

Q3. Have you observed any small startup businesses having difficulties obtaining loans or accessing capital? Have you observed any changes in banks' underwriting standards or compliance costs affecting startups' abilities to obtain loans?

A3. I have not dealt with bank debt in awhile, but equity capital is less abundant for long-term bioscience-related deals than I have seen in some time.

Questions Submitted by Representative Edwards

Q1. Some have proposed creating public-private research consortia—consisting of small and large businesses, universities, and government entities—to work together on precompetitive research challenges that are driven by industry need. The successful Semiconductor Research Corporation initiative is an example of such a consortium. In your opinion, do you believe there is value to these sorts of industry-defined research collaborations and should the Federal Government be doing more to encourage them?

A1. I think the concept of public-private research consortia is an excellent one. This is especially true where there is a big problem to be solved and the early work may be too risky or too complex to be performed by any one entity.

Q2. In his testimony, Mr. Mann mentioned the courses available to him as a student at Stanford to help educate and foster entrepreneurship. While Stanford is undoubtedly a leader in this area, there are many universities throughout the country that do not currently offer this type of education or these opportunities to their students. Do you believe this sort of entrepreneurial education should be made available to students throughout the country? If so, in your opinion, what are the key components of a successful entrepreneurial education program? What barriers exist to instituting these sorts of programs throughout the country?

A2. I am not an expert on this one, but I do know that more and more universities are emphasizing entrepreneurial education. The University of Maryland, for instance, is one such university. I think that the cultural aspects that foster entrepreneurs are as important as any specific curriculum. Such a culture can be fostered by such things as celebrating successes, rewarding professors that engage in entrepreneurial activities and bringing in notable entrepreneurs to speak to students.

Question Submitted by Representative Lipinski

Q1. Describe your experiences with federal R&D funding mechanisms, whether your companies do their manufacturing here in the U.S., and if there is anything Congress can do to better incentivize domestic production of inventions that began with federal R&D investments.

A1. My experience was excellent with the SBIR program. Martek would not have been successful without it. Most of Martek's production was done in the U.S., in Kentucky, South Carolina, and New Jersey.

Questions Submitted by Representative Luján

Q1. Basic research is key to future innovation. But the direct products of basic research are publicly available, as it should be for the integrity of the scientific process. This means that entrepreneurs and innovators all over the world have access to this basic resource of new knowledge from which new innovative businesses can develop. So how can we foster the transfer of technology from our labs and universities to our entrepreneurs and innovators?

A1. The fact that research is publically available may not always be a good thing. Companies will not invest in expensive commercialization efforts without being able to have intellectual property protection or other rights that protect their investments.

Q2. Recently, the President issued a memorandum to the heads of executive agencies directing them to improve the results from its technology transfer and commercialization activities. From your vantage point, what suggestions would you give to agency heads to accomplish this?

A2. The first step would be to incentivize government employees for their inventions. The second would be to publicize and catalogue any available technology. The third would be to have a licensing process that is fair to both sides and easy to use.

Q3. The technology transfer process is full of difficulties. One of the most difficult is the gap, or valley of death as it's called, where the federal agencies funding the basic research don't want to fund the applied research and prototype development because they believe it to not be within their mission, and the private sector won't fund the work because it is too risky with so many ways for the early stage good idea to turn out to not be a viable business. So how do we bridge this valley of death?

A3. I think this one is impossible to answer on a global basis. It is more of a case-by-case thing, but if the incentives are properly aligned, it believe that the risk can also be properly aligned.

Q4. Cooperative Research and Development Agreements (CRADAs) are a common contracting mechanism for federal labs to partner with private entities to mature technologies to the point where private capital is willing to invest in the technology. If the government does not pay its portion of the CRADA work and requires the private entity to pay the entire cost, will this deter small businesses from entering into CRADAs with labs and thereby reduce the amount of technologies that are transferred to the private sector?

A4. I believe that businesses will be skeptical if the government does not share in the costs.

Q5. Federally funded scientists could be a tremendous resource for small and start-up businesses. In my State of New Mexico, we have two national laboratories, and the State has a program to pay the time for personnel at these labs to provide technical assistance to small businesses. Whether it be help with what material to use or how best to analyze a complex business problem, small businesses throughout the State have made good use of this program. Is there something that could be done on a federal level to facilitate federally funded scientists providing technical assistance to small businesses?

A5. The New Mexico program sounds like a great one. Why not copy that on a national basis?

Q6. As Chair of the Congressional Hispanic Caucus' Economy and Workforce Task Force, I recently held a roundtable with representatives from the technology industry to focus on fostering innovation and ensuring that young entrepreneurs and startup businesses have the resources they need to succeed. One participant

from the computer manufacturing industry emphasized that his company sought to ensure that its supply chain was diversified by partnering with small business. We can help drive prosperity and jobs in the U.S. by using small business services. What do you perceive as the major challenges to partnering with large manufacturers?

A6. In my experience, there are two main problems. First is convincing large manufacturers that the smaller company is financially viable and stable enough to be relied upon, and second, it takes so much time for a large company to make a decision. Both are related to the larger companies' aversion to risk.

Q7. How can large companies better support and mentor small businesses in order to ensure that small businesses and startups feel supported in their fields and have opportunity to grow? How do we get large companies interested in mentoring startups? Can we show these companies that helping to grow small business is beneficial to them as well?

A7. I think everyone benefits when more small companies benefit. Larger companies look at the matter more narrowly most of the time, however. Most procurement departments are narrowly focused on cost and quality and generally do not take the bigger picture into account. I think it is a matter of raising the awareness at the top of companies that this is important to everyone and gaining an understanding of what larger companies require in order to be more responsive to smaller companies.

Appendix 2

ADDITIONAL MATERIAL FOR THE RECORD

REBUILDING THE IPO ON-RAMP:
PUTTING EMERGING COMPANIES AND THE JOB MARKET BACK ON THE ROAD TO
GROWTH

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

Presented to The U.S. Department of the Treasury

Table of Contents

| | | |
|-------|---|----|
| I. | Executive Summary..... | 1 |
| II. | Brief Background and Purpose | 4 |
| III. | Emerging Growth Companies Drive U.S. Job Creation | 5 |
| IV. | The IPO Market Decline | 6 |
| V. | Fewer IPOs: Less Job Growth..... | 7 |
| VI. | Regulatory and Market Roadblocks..... | 8 |
| | A. Impact on Supply of Emerging IPOs | 9 |
| | B. Changes to the IPO Channel..... | 13 |
| | C. Impact on Demand..... | 16 |
| VII. | Detailed Recommendations..... | 17 |
| | A. Recommendation #1: Regulatory "On-Ramp" | 19 |
| | B. Recommendation #2: Information Flow | 26 |
| | C. Recommendation #3: IPO Tax Incentive | 30 |
| | D. Recommendation #4: Industry Education..... | 31 |
| VIII. | Conclusion..... | 32 |
| IX. | Appendices..... | 33 |

Chart Index

| | | |
|----------|--|----|
| Chart A: | IPOs Finance Significant Job Creation | 1 |
| Chart B: | IPOs are Down...Particularly Smaller IPOs..... | 2 |
| Chart C: | Innovative Companies Create Jobs and Grow Quickly..... | 5 |
| Chart D: | IPOs are Down...Particularly Smaller IPOs..... | 6 |
| Chart E: | Shift from IPOs to M&A..... | 7 |
| Chart F: | IPOs and Regulatory/Market Changes | 8 |
| Chart G: | The Regulatory Cascade | 9 |
| Chart H: | The Costs of Going and Staying Public are High..... | 10 |
| Chart I: | Public Company CEOs: Most Significant IPO Challenges..... | 12 |
| Chart J: | Channel Focus: Trading Drives Revenue for Largest Investment Banks | 13 |
| Chart K: | Demand Exists: Emerging Company IPOs Deliver Returns to Investors..... | 16 |
| Chart L: | Public Company CEOs: Most Significant IPO Challenges..... | 25 |

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:

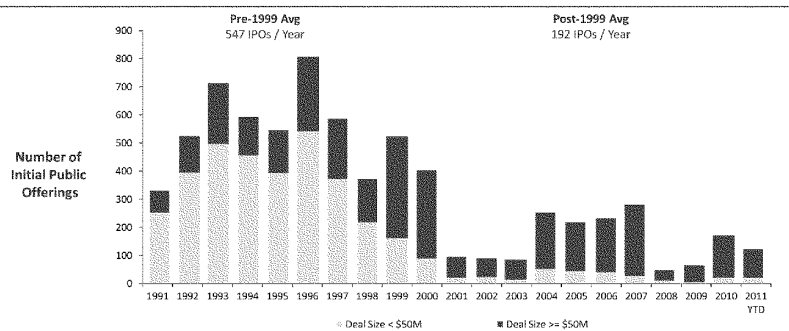
1. driven up costs for emerging growth companies looking to go public, thus reducing the supply of such companies,

⁽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



Sources: JMP Securities, Dealogic, Capital Markets Advisory Partners, Grant Thornton

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 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

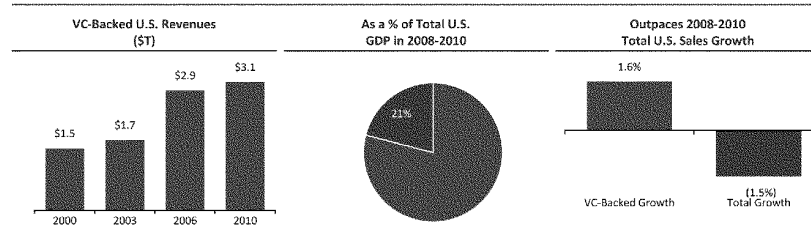
For most of the last century, America's most promising young companies have pursued IPOs to access the additional capital they need to hire new employees, develop their products and expand their businesses globally. Often the most significant step in a company's development, IPOs enabled these innovative, 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.

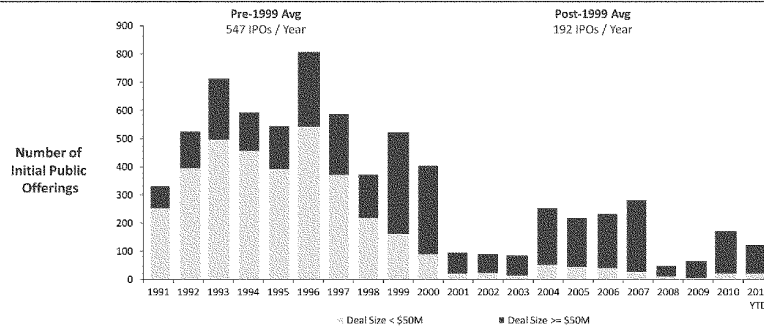
(3) Source: Ibid.

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



Sources: JMP Securities, Dealogic, Capital Markets Advisory Partners, Grant Thornton

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.

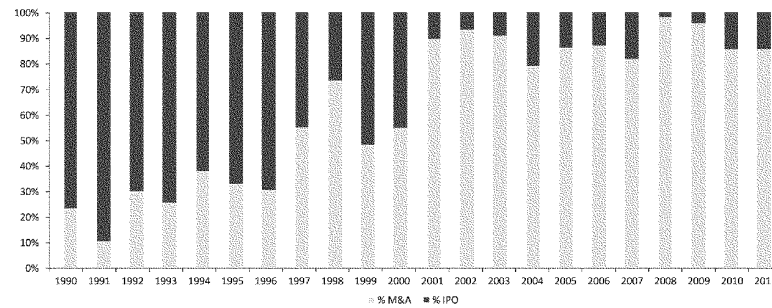
(2) Source: Thomson Reuters, National Venture Capital Association.

(3) Source: Ibid.

(4) Source: VentureOne data.

FEWER IPOs: LESS JOB GROWTH

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

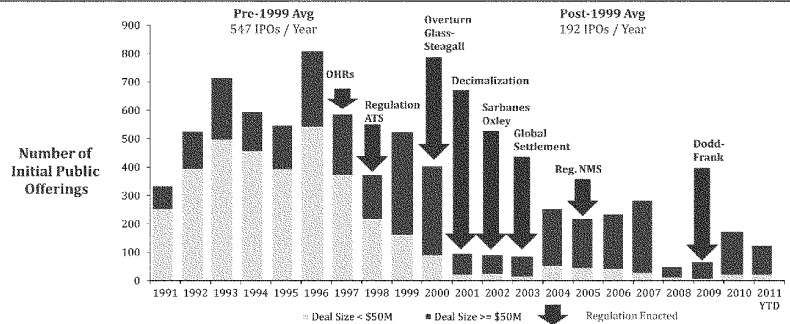
While the costs of the IPO market's decline to the U.S. economy are clear, its causes cannot be traced to one single event. Rather, a complex series of changes in the regulatory environment and related market practices, most of which were intended to solve problems unrelated to emerging growth company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



Sources: JMP Securities, Dealogic, Capital Markets Advisory Partners, Grant Thornton.

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**Costs Including SOX, Legal, Accounting**

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.

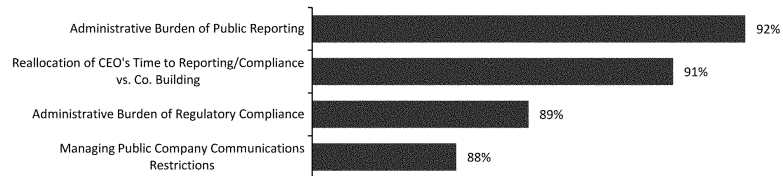
- 1.1 Create a new category of issuer, “emerging growth company,” that lasts up to five years and is transitional.
- 1.2 Define such companies by the following criteria:
 - 1.2.1 Annual revenue of less than \$1 billion
 - 1.2.2 Not recognized by the SEC as a “well-known seasoned issuer”
 - 1.2.3 Registered 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.

REGULATORY AND MARKET ROADBLOCKS

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.

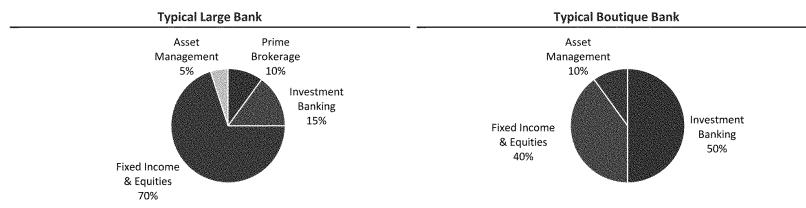
B. Changes to the IPO Channel

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)

DETAILED RECOMMENDATIONS

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.

A. Recommendation #1:**Provide an “On-Ramp” for emerging growth companies using existing principles of scaled regulation.**

Our first recommendation is to modify the current framework for IPO issuers and new reporting companies by expanding the system of scaled securities regulation for these emerging growth companies. Congress and the Securities and Exchange Commission (SEC) have had a history of scaling regulation for companies and transactions when warranted, as discussed in the 2006 Final Report of the Advisory Committee on Smaller Public Companies.⁽¹⁾

In fact, as a result of the 2006 Report and its recommendations, in 2007 the SEC adopted rules providing regulatory relief and simplification for Smaller Reporting Companies (SRCs) in the form of scaled disclosure, noting at the time that scaled disclosure would “promote capital formation for smaller reporting companies and improve their ability to compete with larger companies for capital” as well as reducing their compliance costs and, in turn, the associated “costs to raise capital”.⁽²⁾ The SEC again provided regulatory relief in a 2010 rule exempting smaller companies from the provisions of Sarbanes-Oxley Section 404(b), which requires an auditor attestation of a registrant’s internal control over financial reporting.⁽³⁾

Similar to these prior reforms, we believe that the modifications we propose for emerging growth companies are “necessary and appropriate in the public interest” and that the adoption of our proposals clearly would “promote efficiency, competition and capital formation”.⁽⁴⁾ While helpful for companies with market capitalizations of less than \$75 million, the existing small company regulations do not provide relief for most companies considering an IPO, including high-growth, venture-backed companies that generate significant job growth like Apple, Intel, Cisco and Genentech before them. These companies go public in order to finance their growth and typically raise between \$50 million and \$150 million dollars to do so. While still far smaller and with fewer resources than larger companies, they must adhere to the same rules that the very largest companies do and therefore bear compliance costs disproportionate to their size. Based on interviews with pre- and post-IPO companies, we would expect the On-Ramp scaling recommendations that follow to reduce internal and external compliance costs for such companies by 30 percent to 50 percent.

(1) See SEC Advisory Committee on Smaller Public Companies, *Final Report (2006) (“Advisory Committee Final Report”), Part II*, available at <http://www.sec.gov/info/smallbus/acspc.shtml>.

(2) See Release No. 33-8876 (Dec. 19, 2007) at 65 (simplifying the scaled disclosure system and expanding the number of companies that may use the scaled disclosure system available for Smaller Reporting Companies).

(3) See Release No. 33-9142 (Sept. 15, 2010); see also Section 989G of the Dodd-Frank Act (providing that non-accelerated filers are completely exempt from Section 404(b) of the Sarbanes-Oxley Act). In addition, all newly public companies, regardless of size, benefit from a phase-in period for Section 404(b) compliance. See Item 308 of Regulation S-K (providing relief for up to two years by permitting newly public companies to wait until their second annual report on Form 10-K to include management’s assessment of and the auditor’s attestation report on internal control over financial reporting). Separately, Section 404(a) of the Sarbanes-Oxley Act and related SEC rules require all other public companies to provide an annual management’s report on internal control over financial reporting.

(4) See Securities Act Section 2(b); Exchange Act Section 3(f); Investment Company Act Section 2(c).

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

To address the higher relative compliance burdens that emerging growth companies face, and consistent with the concept of scaling regulation, we recommend creating a new category of issuer — an “emerging growth company” — that will be permitted to benefit from a modified regulatory framework that would provide a transitional five year On-Ramp following the IPO.

1.2 Define an “emerging growth company” according to the following criteria:

- 1.2.1** Designation as an emerging growth company would begin on the effective date of the IPO registration statement of any non-reporting issuer with total annual gross revenue of less than \$1 billion as of the end of its most recently completed fiscal year.
 - 1.2.1.1** Consideration could be given to limiting emerging growth company status to those issuers that are listing on a national securities exchange.
- 1.2.2** Designation as an emerging growth company would cease on the due date of the first annual report on Form 10-K for the year in which the earliest of the following occurs:
 - 1.2.2.1** total annual gross revenue exceeds \$1 billion;
 - 1.2.2.2** the company satisfies the definition of a “well-known seasoned issuer”;⁽¹⁾ or
 - 1.2.2.3** the fifth anniversary of the effective date of the IPO registration statement.

The IPO Task Force believes that the temporary and limited nature of these regulations is important and consistent with other regulatory applications. An analysis of the companies that would have fallen under this regulation over the past five years shows that less than 15 percent of listed companies would be impacted at any one time.⁽²⁾ For this reason, we refer to this as a regulatory “On-Ramp.” We believe that the targeted and temporally limited nature of the proposed On-Ramp distinguishes our recommendation from prior proposals for reform and would affect only a small number of companies relative to total market capitalization. We also note that investor protection concerns are further ameliorated in light of the fact that, as indicated in a 10-year study by Audit Analytics released in May 2011, the incidence of restatement by small companies is proportional to their percentage of the public company population (approximately 60 percent in each case).⁽³⁾

We believe that the On-Ramp concept will facilitate the SEC’s consideration of the effects of new rulemakings upon efficiency, competition and capital formation⁽⁴⁾ and, in the interests of promoting capital formation, we recommend that the SEC use the On-Ramp as standing transition relief for any significant new rulemakings in the future.

(1) Securities Act Rule 405 defines a “well-known seasoned issuer” to include, in part, issuers that (i) are eligible for short-form registration on Form S-3 or Form F-3; (ii) have at least \$700 million of common equity held by non-affiliates as of a date within 60 days of filing a shelf registration statement, an annual report on Form 10-K or Form 20-F or a registration statement update amendment mandated by Section 10(a)(3) of the Securities Act; and (iii) do not fall within the definition of an “ineligible issuer” or “asset-backed issuer.”

(2) See Appendix D

(3) See Audit Analytics, “2010 Financial Restatements: A Ten Year Comparison” (May 2011) at 17.

(4) Cf. *Business Roundtable v. SEC* (Case No. 10-1305) (D.C. Cir. July 22, 2011).

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

We believe that the primary goals of most emerging growth companies that conduct an IPO are to secure capital to grow their businesses and pursue promising new products and innovations, thereby creating jobs and enhancing macroeconomic growth. Providing emerging growth companies with the ability to reduce regulatory compliance costs through scaled regulation and disclosure for a period of time after their IPOs would allow them to achieve those goals and build the resources to satisfy the additional regulatory burdens to which larger, more mature companies are accustomed. We believe this would help ameliorate the effects of regulations that have, over the course of the last decade, significantly and continuously increased the compliance burden associated with public company status and made IPOs more costly and difficult.⁽¹⁾ As the SEC correctly anticipated in 2003, rules relating to the implementation of Section 404 of the Sarbanes-Oxley Act were expected to “discourage some companies from seeking capital from the public markets” because those “rules increase the cost of being a public company.”⁽²⁾ We believe our On-Ramp recommendation would mitigate the effects of these increased costs and encourage emerging growth companies to seek capital from the public markets.

Moreover, we believe that disclosure and governance requirements would remain largely unaffected by our recommendations and that this would ensure adequate investor protection. For example, in connection with undertaking an IPO, all companies would continue to be subject to liability for material misstatements or omissions in the registration statement and prospectus. Further, all companies would remain subject to liability for material misstatements or omissions in their current and periodic reports filed with the SEC. We believe that the existing regulatory regime, as modified by our recommendations, would appropriately balance investor protection and the compliance burden on emerging growth companies.

The idea of an On-Ramp for newly-public companies is not new. The SEC already provides an accommodation for IPO companies in the area of internal control over financial reporting, delaying the management assessment and auditor’s attestation of internal control over financial reporting until the company’s second Form 10-K.⁽³⁾ This concept is also incorporated into Rule 10A-3 under the Exchange Act and self-regulatory organization (SRO) listing

(1) Release No. 33-7881 (adopting Regulation FD); Release No. 33-8048 (requiring additional disclosures regarding equity awards); Release No. 34-42266 (requiring specific disclosures regarding audit committees); Release No. 34-46421 (requiring accelerated reporting of insider beneficial ownership); Release No. 33-8124 (requiring officer certifications under Sarbanes-Oxley Section 302); Release Nos. 33-8128 & 33-8128A (requiring accelerated filing of periodic reports and disclosure regarding website access to such reports); Release No. 33-8176 (adopting disclosure requirements regarding non-GAAP financial measures); Release No. 34-47225 (restricting officer and director transfers of equity securities during pension fund blackout periods); Release Nos. 33-8177 & 33-8177A (requiring disclosure regarding code of ethics and audit committee financial experts); Release No. 33-8180 (requiring seven-year retention of audit work papers under Sarbanes-Oxley Section 802); Release No. 33-8182 (requiring disclosure regarding off-balance sheet arrangements); Release No. 33-8183 & 33-8183A (requiring audit committee pre-approval of audit and non-audit services, audit partner rotation, auditor reports to audit committees, enhanced disclosure regarding audit and non-audit fees and adopting additional requirements for auditor independence); Release No. 33-8185 (requiring attorneys to report evidence of a material violation of securities laws); Release No. 33-8220 (adopting heightened independent requirements for listed company audit committees); (Release No. 33-8230) (requiring electronic filing and website posting of reports under Exchange Act Section 16); Release No. 33-8238 (implementing Sarbanes-Oxley Section 404 requiring an annual management’s report and auditor attestation on internal control over financial reporting); Release No. 33-8340 (requiring disclosures regarding nominating committee functions and security-holder communications); Release No. 33-8350 (adopting guidance regarding management’s discussion and analysis of financial condition and results of operations); Release Nos. 33-8400 & 33-8400A (increasing the events reportable on Form 8-K and accelerating the reporting deadline); Release No. 33-8565 (interpreting Regulation M to prohibit certain conduct in connection with IPO allocations); Release No. 33-8644 (adopting accelerated deadlines for periodic reporting); Release Nos. 33-8732 & 33-8732A (adopting additional requirements for disclosures relating to executive compensation, including compensation discussion and analysis); Release No. 33-9002 and 33-9002A (requiring financial statement data in an interactive data format using XBRL technology); Release No. 33-9089 (requiring additional disclosures regarding corporate governance matters in proxy statements); Release No. 33-9106 (providing interpretive guidance regarding disclosure required in respect of climate change issues); Release Nos. 33-9136 & 33-9259 (adopting a implementation of Section 404 of the Sarbanes-Oxley Act were expected to “discourage some companies from seeking capital from the public markets” because those “rules increase the cost of being a public company.”

(2) Release No. 33-8238 (June 5, 2003) at text accompanying n.174 (adopting rules to implement Sarbanes-Oxley Section 404). At that time, the Commission estimated the annual costs of implementing Section 404(a) to be \$91,000 per company, excluding “the costs associated with the auditor’s attestation report, which many commenters have suggested might be substantial.” *Id.* In fact, a survey of large public companies complying with the new rules under Section 404 during the first year indicated that compliance cost an average of \$4.36 million and 27,000 hours. See Financial Executives International, FEI Special Survey on SOX 404 Implementation (March 2005).

(3) See Item 308 of Regulation S-K (providing relief for up to two years by permitting newly public companies to wait until their second annual report on Form 10-K to include management’s assessment of and the auditor’s attestation report on internal control over financial reporting).

standards with respect to audit committee composition, Board independence standards and other governance requirements. Moreover, the SEC previously recognized, when it adopted rules to implement Section 404 of the Sarbanes-Oxley Act, that the rules warranted a significant transition period to (a) alleviate “costs and burdens imposed on companies”; (b) give companies “additional time to develop best practices, long-term processes and efficiencies”; and (c) increase time to find “outside professionals that some companies may wish to retain” to facilitate their compliance efforts.⁽¹⁾ Similarly, given the substantial time and resources needed to provide the additional disclosure and meet the compliance requirements that apply to Exchange Act reporting companies, the On-Ramp would provide emerging growth companies with a transition period to allow them to fully implement those requirements. Our recommendation would extend and expand that On-Ramp until the emerging growth company has sufficient internally-generated resources to maintain growth and emerge into a mature public company.

During the On-Ramp period, any issuer that satisfies the definition of an emerging growth company could elect to participate in a system of scaled regulation that would extend to emerging growth companies select elements of the scaled disclosure requirements currently available to SRCs, as well as additional elements of scaled regulation:

1.3.1 Financial statement requirements:

1.3.1.1 The ability to satisfy financial statement requirements applicable to registration statements and annual reports by presenting two years of audited financial statements that comply with Article 8 of Regulation S-X.

1.3.1.2 Exemption from the requirement to present five fiscal years of selected financial data under Item 301 of Regulation S-K, subject to phase in described below.

1.3.1.3 Presentation of financial statements for additional fiscal years would be phased in incrementally over time:

- At IPO — 2 years audited balance sheets and statements of operations and cash flows, selected financials (a summary table of key financial indicators) for the same two years, (the same as scaled disclosure requirements for Smaller Reporting Companies);
- One year later — 3 years audited statements of operations and cash flows and 2 years balance sheets, selected financial data for the same 3 years;
- Two years later — same as above plus 4 years selected financial data; and
- Three years later — same as above plus 5 years selected financial data.

1.3.2 Selected aspects of scaled disclosure in registration statements and annual reports equivalent to requirements applicable to Smaller Reporting Companies for:

1.3.2.1 Management discussion and analysis (MD&A) requirements under Item 303 of Regulation S-K.

1.3.2.2 Executive compensation disclosure under Item 402 of Regulation S-K.

⁽¹⁾ Release No. 33-8238 (June 5, 2003) at text accompanying n.174.

DETAILED RECOMMENDATIONS

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- 1.3.3 Transition relief from SOX 404b, the outside auditor attestation of internal control over financial reporting under Item 308(b) of Regulation S-K to provide “additional time and defer costs for a newly public company, allowing it to focus on its assessment of internal control over financial reporting without the additional focus of the initial public offering.”⁽¹⁾
 - 1.3.4 Exemption from administratively burdensome requirements, both currently effective and pending, under the Dodd-Frank Act and related SEC rulemaking, such as:
 - 1.3.4.1 Say-on-pay, say-on-frequency and say-on-parachute votes under Section 951 of the Dodd-Frank Act.⁽²⁾
 - 1.3.4.2 Final disclosure requirements (when adopted) relating to conflict minerals.⁽³⁾
 - 1.3.4.3 Other substantive governance-related disclosure requirements (when adopted), such as pay-for-performance and CEO pay ratio.⁽⁴⁾
 - 1.3.5 We recommend that the FASB take steps to allow emerging growth companies to adopt new accounting standards using the same extended effective dates it allows for private companies.⁽⁵⁾

(1) Release No. 33-8760 (Dec. 15, 2006) at 47 (implementing a transitional period of up to two years) (citing Sections 12, 13, 15 and 23 of the Exchange Act as statutory authority for such relief). Under similar statutory authority, the SEC repeatedly exempted non-accelerated filers from compliance with Section 404(b) of the Sarbanes-Oxley Act for the cumulative period of approximately eight years between enactment of the Sarbanes-Oxley Act and the Dodd-Frank Act.

(2) The SEC has acknowledged the additional burdens that these requirements impose on smaller companies, which is why the SEC exempted smaller companies from the say-on-pay and frequency votes until annual meetings occurring on or after January 21, 2013. See Release No. 33-9178 (Apr. 4, 2011) (concluding that “it is appropriate to provide additional time before Smaller Reporting Companies are required to conduct the shareholder advisory votes on executive compensation and the frequency of say-on-pay votes” based upon “the potential burdens on Smaller Reporting Companies” associated with the requirements for those advisory votes).

(3) Release No. 34-63547 (proposing to require conflict minerals disclosure to implement Section 1502 of the Dodd-Frank Act by adding Item 4(a) of Form 10-K and Item 104 of Regulation S-K).

(4) Section 953 of the Dodd-Frank Act directs the SEC to adopt rules requiring public companies to provide additional detailed disclosures regarding executive compensation matters, including disclosure of (a) each public company’s executive compensation compared to the company’s financial performance; and (b) the median total compensation of all employees and the ratio of that amount compared to the CEO’s total compensation. As of August 2011, the SEC has indicated that it will issue proposed rules under Section 953 before 2012.

(5) Cf. Advisory Committee Final Report at V.P.2 (recommending a similar phase-in period).

The FASB, over the last several years, has a history of providing an extended period of time for private companies and smaller public companies to adopt new standards. This is particularly important for complex standards and those that, due to their nature, may require significant time to implement. Similar to the On-Ramp for scaled securities regulation, allowing emerging growth companies additional time to adopt new standards would allow them to implement the standards in a careful, thoughtful manner, while still enabling them to concentrate on the growth of the company.

- 1.3.6 The PCAOB, or alternatively the SEC, should exempt the auditors of emerging growth companies from the requirements of such auditing standards until the company completes the On-Ramp period. This would allow these companies to focus precious resources on growth, job creation and new product development.**

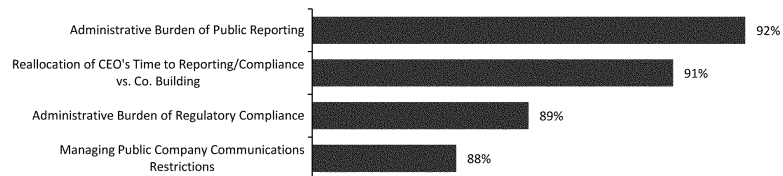
In implementing new auditing standards, the PCAOB should carefully consider the cost of implementation for emerging growth companies, and other appropriate categories of issuers.

In particular, the PCAOB should consider whether to require the standard in an audit of certain categories of registrants and, if required, whether additional time is necessary for the implementation of the auditing standard for such categories of registrants.

The PCAOB does not yet have a history of providing exemptions or additional time for a certain category(ies) of companies, similar to the FASB, for adoption of new auditing standards.

- Recent concept releases issued by the PCAOB, such as “Auditor Independence and Audit Firm Rotation” and “Possible Revisions to PCAOB Standards Related to Reports on Audited Financial Statements and Related Amendments to PCAOB Standards,” if ultimately adopted as auditing standards (depending on the final requirements of course), are likely to be very costly and time-consuming for SEC registrants and their auditors. This is particularly true for emerging growth and small companies who are impacted on a disproportionate basis as these costs represent a larger portion of their revenue and EBITDA and ultimately their market capitalization.
- We believe that mandatory auditor rotation will be extremely disruptive to public companies, will increase audit costs and may even result in reduced audit quality. Several of the PCAOB standards conclude that auditors may consider their experience in prior years’ audits of a client and modify or reduce current-year testing as appropriate, which is reasonable to believe occurs in the majority of recurring audits. However, in the first year of a new audit engagement, auditors will require additional time and expense to become familiar with the company. Also, with only four major firms, two situations are likely to occur: (1) many SEC registrants may be limited in the number of firms to choose from as independence issues will most certainly arise, which could reduce the quality of audits if the registrant has no choice but to select a firm that does not have the expertise or geographic reach required for the audit and (2) competition would be significant, which could distract auditors by requiring more frequent solicitation of new business. In addition, each of the Big 4 firms has developed specific regional and industry expertise, which expertise these firms will have less incentive to develop with mandatory rotation. Finally, it is unclear whether rotation will actually reduce the conflicts cited by the PCAOB.

DETAILED RECOMMENDATIONS

1.4 Apply scaled On-Ramp regulations only as long as a company qualifies as an emerging growth company.**Chart L: Public Company CEOs: Most Significant IPO Challenges**

Source: IPO Task Force August 2011 CEO Survey.

B. Recommendation #2:**Improve the availability and flow of information for investors before and after an IPO.**

Investment research coverage has declined dramatically in recent years as a result of economic and regulatory pressures that have reduced research budgets. Lack of research coverage adversely impacts trading volumes, company market capitalizations and the total mix of information available to market participants. In addition, existing restrictions on communications surrounding the offering process were designed for a pre-Internet era dependent upon paper-based communications between issuers and investors, and should be updated to reflect advances in technology and market expectations.⁽¹⁾

Recommendations**2.1 Improve the availability and flow of research coverage.**

Adopt policies to promote research and improve the flow of information available to investors. We recommend a greater role for research in the capital formation process, subject to protections such as specified codes of conduct and disclosure of conflicts of interest and disclosure, consistent with Section 17(b) of the Securities Act of 1933, of any consideration received for paid research. We support and endorse the recommendations of the SEC Advisory Committee on Smaller Public Companies (the "Advisory Committee")⁽²⁾ regarding policies to encourage research coverage of smaller public companies. Existing limitations are unnecessarily restrictive and unfairly favor institutional investors that have greater access to research analysts than retail investors.

2.2 Expand and clarify existing safe harbors.

Expand SEC safe harbors with respect to research reports (Securities Act Rules 137, 138 and 139) to (i) permit broker-dealers to initiate coverage and distribute research on IPO issuers without being deemed to have "offered" securities through the research reports and (ii) include "oral" (in addition to written) communications.⁽³⁾

Nearly a decade ago, structural reforms and increased disclosure requirements introduced substantial regulatory requirements for research reports, including Section 501 of the Sarbanes-Oxley Act, Regulation AC and the provisions of the Global Research Analyst Settlement. As a result, analyst research reports are comprehensively regulated and include disclosure to investors regarding potential conflicts of interest that research analysts may face.

(1) See SEC Release No. 33-8591 (Dec. 1, 2005), at 41-42 (noting that "the gun-jumping provisions of the Securities Act were enacted at a time when the means of communications were limited," recognizing that "capital markets, in the United States and around the world, have changed very significantly since those limitations were enacted," acknowledging that today's "communications technology, including the Internet, provides a powerful, versatile, and cost-effective medium to communicate quickly and broadly" and concluding that "the gun-jumping provisions of the Securities Act impose substantial and increasingly unworkable restrictions on many communications that would be beneficial to investors and markets and would be consistent with investor protection"); see also SEC Release 34-58288 (Aug. 7, 2008) (recognizing "the speed at which technological advances are developing" and indicating that the SEC will continue to revisit its prior guidance "to update and supplement it as appropriate" as new technologies produce new investor tools); SEC Release No. 34-55146 (Mar. 30, 2007) (observing that "approximately 87.8% of shares voted were voted electronically or telephonically during the 2006 proxy season" and that "approximately 80% of investors in the United States have access to the Internet in their homes").

(2) See Final Report of the Advisory Committee to the SEC (April 23, 2006) ("Advisory Committee Report"), Recommendation IV.P.4.

(3) Currently available safe harbors contain conditions that limit their availability in the IPO context. See Rule 138 (allowing an underwriter to publish or distribute research about a different security of the issuer, such as research about the nonconvertible debt of an issuer offering common stock, if (a) the issuer is Form S-3 or F-3 eligible (or is a foreign private issuer meeting certain specified criteria); and (b) the underwriter publishes or distributes reports on those types of securities in the regular course of its business); Rule 139 (allowing an underwriter to continue to publish or distribute research, but not to initiate coverage, (a) issuer-specific research on companies that are already public and eligible to use Form S-3 or F-3 (or that are foreign private issuers meeting certain specified criteria) if the underwriter publishes or distributes those reports in the regular course of its business; and (b) industry research for Exchange Act reporting companies if the underwriter publishes or distributes research in the regular course of its business and similar reports have included similar information about the issuer or its securities). In addition, although Rule 137 is available to broker-dealers that are not participating in a registered offering, Rule 137 (unlike Rules 138 and 139), does not provide a safe harbor from the research report being deemed an "offer" for purposes of Securities Act Section 2(a)(10) or 5(c). See Rule 137 (allowing a broker-dealer to publish or distribute research without becoming a statutory underwriter if the broker-dealer (a) is not a participant in a registered offering; (b) has not received compensation for participating in the securities distribution; and (c) publishes or distributes research in the regular course of its business).

The SEC adopted changes in 2005 that were intended as “measured amendments” making “incremental modifications” to Rules 137, 138 and 139, recognizing that “value of research reports in continuing to provide the market and investors with information about reporting issuers cannot be disputed.”⁽¹⁾ However, in practice, the existing rules do not allow research analysts to publish concurrently with an IPO.

We believe that further amendments are warranted to allow broker-dealers to initiate research coverage on IPO issuers, based upon the extensive and robust nature of substantive regulations currently in place, which we would leave unchanged, and based upon experience over the last six years following prior incremental modifications to these rules. Based on “enhancements to the environment for research imposed by recent statutory, regulatory, and enforcement developments,” as the SEC explained in 2005, “we believe it is appropriate to make measured revisions to the research rules that are consistent with investor protection but that will permit dissemination of research around the time of an offering under a broader range of circumstances.”⁽²⁾

2.3 Eliminate unnecessary research quiet periods.

- 2.3.1 Post-IPO: Eliminate the SEC’s effective 25-day post-IPO research quiet period and FINRA’s mandated post-IPO research quiet periods, as these restrictions do not benefit investors (particularly retail investors).⁽³⁾**

⁽¹⁾ Release No. 33-8591 (Dec. 1, 2005) at 156-57.

⁽²⁾ *Id.* at 156.

⁽³⁾ Rule 2711(f) of the Financial Industry Regulatory Authority (“FINRA”) prohibits member firms from publishing or distributing research reports, or permitting research analysts to make any public appearance about an issuer, for (i) 40 calendar days, in the case of managers and co-managers of the IPO, and (ii) 25 calendar days, in the case of other participating FINRA members.

- 2.3.2 Pre- and Post-Lock Up: Eliminate the FINRA-mandated research quiet period before and after the expiration, termination or waiver of an offering-related lock-up agreement.**⁽¹⁾ Limiting the amount of information available to investors during such periods does not improve their ability to make informed decisions. In each case above, we believe any potential conflicts of interest would be sufficiently addressed through (a) prominent disclosure clearly indicating that the research is prepared by an analyst associated with a participating underwriter or dealer; as well as through existing protections under (b) SEC Regulation AC certification requirements;⁽²⁾ (c) FINRA conduct and communications rules and (d) existing antifraud and anti-manipulative provisions.⁽³⁾
- 2.4 Eliminate unnecessary restrictions on analyst communication:** Although current SEC and FINRA restrictions implemented to prohibit investment banking revenues and considerations from influencing research analysts and the content of research reports are important and should remain, we believe, while an issuer is in registration, that:
- 2.4.1 Investment banking personnel should be permitted to assist in arranging calls between investors and research analysts so that research analysts can educate investors about an offering.** Today's process requiring a sales person (or other non-banking personnel) to set up these calls offers no meaningful investor protection. Whether the analyst chooses to engage in the communication, and what the analyst communicates to the investor, would still be at the analyst's own discretion and subject to applicable laws, rules and regulations.⁽⁴⁾
- 2.4.2 Research analysts should be permitted to participate in company management presentations with sales force personnel so that the issuer's management does not need to make separate and duplicative presentations to analysts at a time when senior management resources are limited.**⁽⁵⁾
- 2.5 Facilitate capital formation by expanding permissible communications between issuers and prospective investors and by providing for confidential IPO filings.**
- 2.5.1 Permit a broader range of pre-filing communications:** The SEC has recently recognized, in proposing amendments to Securities Act Rule 163, that additional accommodations are necessary to allow "well-known seasoned issuers," acting through underwriters, to "assess the level of investor interest in their securities before filing a registration statement."⁽⁶⁾
- 2.5.1.1 More broadly, we recommend allowing private companies to "test the waters" to gauge preliminary interest among prospective investors in advance of an initial filing of a registration**

(1) See FINRA Rule 2711(f)(4) (requiring a 15-day quiet period surrounding the expiration of an offering-related lock-up agreement).

(2) Regulation AC requires broker-dealer research analysts to (a) certify in their research reports that the views expressed in the report accurately reflect their personal views; (b) disclose whether the analyst received compensation or other payments in connection with the recommendations or views given in the report; and (c) provide similar certifications in connection with the analyst's public appearances. The SEC adopted these requirements "to promote the integrity of research reports and investor confidence in those reports." Release No. 33-8193 (Apr. 14, 2003).

(3) We note that FINRA had previously proposed (i) the reduction of the post-IPO research quiet period to 10 days for all IPO participants, and (ii) the complete elimination of the secondary offering and lock-up related research quiet periods. See FINRA Regulatory Notice 08-55 (October 2008) ("Notice 08-55"); see also SEC Release No. 34-55072 (Jan. 9, 2007) (in which then NASD and NYSE (now FINRA) proposed various rule changes to implement certain recommendations made in the December 2005 "Joint Report by NASD and the NYSE on the Operation and Effectiveness of the Research Analyst Conflict of Interest Rules"; the 2007 proposed rule changes included the reduction of the post-IPO research quiet period to 25 days, the elimination of the post-secondary offering research quiet period, and the elimination (as proposed by NASD) or reduction to 5 days (as proposed by NYSE) of the lock-up related research quiet period). Notice 08-55 effectively superseded the 2007 rule change proposals, but the proposals set forth in Notice 08-55 have not yet been adopted and it is likely that FINRA will submit a new rule proposal in this regard in the near future.

(4) See, e.g., Rule 2711(c)(7).

(5) FINRA Rule 2711 does not, by its express terms, prohibit "three way" meetings attended by company management, research analysts and internal sales personnel, although FINRA guidance issued in May 2005 states that the "rule expressly permits research analysts to educate investors and member personnel about a particular offering or other transaction, provided the communication occurs outside the presence of the company or investment banking department personnel. See FINRA (then NASD) Notice to Members 05-34.

(6) Release No. 33-9098 (Dec. 18, 2009) (proposing to amend Securities Act Rule 163 to allow underwriters, acting on behalf of "well-known seasoned issuers," to offer securities before filing a registration statement to gauge investor interest without requiring public disclosure of an intent to conduct an offering).

statement. Doing so would allow companies to remove a significant amount of uncertainty regarding the feasibility of a successful IPO.⁽¹⁾ This approach could be implemented in a balanced manner by adopting a new rule defining certain offering communications as outside the scope of an “offer” for purposes of Section 5 of the Securities Act but otherwise subject to the antifraud provisions of the federal securities laws.⁽²⁾

2.5.1.2 More specifically, we recommend expanding permissible communications before and after filing a registration statement provided prospective investors meet certain qualitative standards and purchasers receive a statutory prospectus prior to purchase. For example, road shows and other communications should be permitted before the filing of the registration statement becomes public, assuming that confidential filings are permitted as described above.

2.5.2 We recommend permitting pre-IPO road shows to investors deemed not to require registration-level protection, such as qualified institutional buyers and accredited investors, provided that each purchaser receives a statutory prospectus prior to the time of sale, consistent with Exchange Act Rule 15c2-8 and Securities Act Rule 159. This would facilitate initial meetings between investors and management and would allow investors to become better prepared to make investment decisions at the time of the IPO. The limited context of a formal road show presentation can make it more difficult for some investors to engage in a meaningful deliberative process, particularly for the type of long-term investors whose participation is most desirable to IPO issuers. Moreover, investors have repeatedly asked for more contact with management during the marketing process.

2.5.3 Permit confidential initial filing of IPO registration statements: Permit U.S. issuers to file initial registration statements confidentially, similar to foreign private issuers. The SEC Staff’s current practice permits non-reporting foreign private issuers to submit initial registration statements confidentially to the Staff, which “often reviews and screens draft submissions of foreign registrants on a non-public basis.”⁽³⁾ In contrast, U.S. issuers currently must file their initial registration statements publicly. Confidential submissions offer foreign private issuers a significant advantage by facilitating resolution of the often complex issues encountered during an initial SEC review. Permitting the confidential review of U.S. issuers’ initial registration statements would remove for U.S. issuers a significant impediment to the IPO process. Doing so would allow U.S. issuers to initiate a potential IPO process, even during turbulent and uncertain market conditions, without immediately disclosing competitively sensitive or otherwise confidential information. Investors would be protected by ensuring that any prospectus with pricing information be made publicly available to investors prior to the SEC declaring the registration statement effective.

(1) Securities Act Rule 254 was intended to allow an issuer employing the SEC’s “small issues” exemption in Regulation A to use a written statement to gauge investor receptiveness to a possible offering so that the issuer could “determine whether to incur the expense of proceeding with a public offering of its securities . . . or to follow some other capital-raising plan.” SEC Release No. 33-6924 (Mar. 11, 1992). In practice, however, Regulation A has had no meaningful impact on capital formation due to its very limited scope. We recommend expanding the “test the waters” concept so that IPO issuers could meaningfully and cost-effectively gauge investor receptiveness to an IPO and determine whether to incur the time, effort and expense of going public.

(2) Advisory Committee Report, Recommendation IV.P.5.at 79 n.159 (citing Linda Quinn, “Reforming the Securities Act of 1933: A Conceptual Framework,” 10 Insights 1, 25 (Jan. 1996)).

(3) See Division of Corporation Finance, “Current Issues and Rulemaking Projects: Quarterly Update” (Mar. 31, 2001), Part V., available at <http://www.sec.gov/divisions/corpfin/cfcrq032001.htm#secv>.

C. Recommendation #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.

Recent regulations and subsequent changes in related market practices have made it more difficult for long-term investors to gain access to emerging growth company stocks. From the issuer's perspective, it is especially critical for the IPO to attract such long-term investors at the initial allocation because that determines how much capital the company raises through the IPO.

Policymakers can reinforce demand for emerging growth stocks by lowering the capital gains rate for investors who purchase shares in an IPO and hold these shares for a minimum of two years. The capital gains tax rate has served as an effective tool for encouraging and rewarding long-term investing for decades, so this action would be wholly consistent with current practice.

D. Recommendation #4:

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

Regulations and their effects on related market practices have triggered a fundamental change in the structure of the U.S. capital markets. This new market structure has shifted the economics for large investment banks toward high-frequency, short-term trading of large-cap stocks based on volatility and changes in market price, and away from long-term investing in an emerging company's fundamental growth. The result is a radically different and much less hospitable environment for emerging growth IPOs. Some of the drivers of this shift – most notably electronic trading and decimalization – are permanent. Therefore, emerging growth companies looking to go public must develop a greater understanding of the new market's realities, understand how investment banks have shifted their business models to capitalize on these changes, and use this understanding to inform their IPO strategies – including the choice of an investment banking syndicate, the optimal mix of investors at IPO, and the most effective investor communications activities.

Nearly 90% of pre-IPO emerging growth companies surveyed expressed concern about the size and vibrancy of the small cap buyer universe.⁽¹⁾

The IPO Task Force believes that responsibility for aiding issuers in this effort rests not with policymakers, but rather with all participants in the small-company IPO ecosystem. Toward this end, the task force has developed a number of recommendations for issuers that address the most common areas where knowledge deficits exist – based on the task force's findings and input from its members and third-party advisors. While they do not require

action on the part of policymakers, the IPO Task Force has included these recommendations below to demonstrate the breadth and the depth of the challenge that emerging growth IPOs now face and the urgency with which the preceding recommendations must be treated.

4.1 Choice of balanced investment banking syndicate.

- 4.1.1 Conduct thorough research on potential investment banking partners.
- 4.1.2 Understand the interplay between boutique firms and the largest advisory firms.
- 4.1.3 Understand the implications of different investment banking syndicate structures and align incentives around performance.

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

- 4.2.1 Allocate shares of the initial public offering to a mix of short- and long-term investors.
- 4.2.2 Put at least one firm in a leadership position (sole or joint book runner) that will allocate stock to long-term holders of your shares versus traders.
- 4.2.3 Limit the number of investors to whom the IPO shares get allocated.

4.3 Improve practice of investor communication.

- 4.3.1 Conduct pre-IPO road shows and teach-ins with investors long before an IPO.
- 4.3.2 Provide frequent information to investors post-IPO. This should include attending investor conferences to maintain the relationships and build company exposure.

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

VIII. Conclusion

With the U.S. economic recovery stalled, unemployment entrenched at more than 9 percent and global competition ramping up, the time to revive the U.S. IPO market and to jumpstart job creation is now. The IPO Task Force believes that by pursuing the recommendations presented in this report, policymakers can re-energize U.S. job creation and economic growth by helping reconnect emerging companies with public capital – all while enabling the broadest range of investors to participate in the growth of those companies through a healthy and globally respected U.S. capital markets system.

These outcomes are not only consistent with the spirit and intent of the current regulatory regime, but also essential to preserving America's global economic primacy for decades to come. For this reason, the members of the IPO Task Force pledge their continued participation and support of this effort to put emerging companies, investors and the U.S. job market back on the path to growth.

"When I talk to entrepreneurs in emerging international markets today, most of them share a strong desire and stated goal: They want to grow their businesses into large public companies. In the U.S., I often hear the opposite from entrepreneurs – due to the costs, uncertainties and liabilities now involved with going public. They just don't think the rewards are worth it – and that's killing the capital formation cycle we've relied on for so long." Scott Cutler, Sr. Vice President, Global Corporate Group, NYSE Euronext.

IX. Appendices

Appendix A

About the IPO Task Force

Arising independently from working group conversations at the U.S. Treasury Department's Access to Capital Conference in March 2011, the IPO Task Force aims to illuminate the root causes of the U.S. IPO crisis and provide recommendations to policymakers for restoring access to the public markets for emerging, high-growth companies. It represents the entire emerging growth company ecosystem, including venture capitalists, experienced CEOs, public investors, securities lawyers, academicians and investment bankers. Upon completion of its activities, the IPO Task Force will report its findings and recommendations to the U.S. Department of the Treasury, as well as share this information with the Securities & Exchange Commission, Congress, the Small Business Administration, the Council on Jobs and Competitiveness, the National Advisory Council on Innovation and Entrepreneurship (NACIE), the Startup America Partnership, and the general public.

Members

We should note the members of the task force listed below participated as individuals and not as representatives of their organizations. Thus, their input for this report and the positions contained herein do not necessarily reflect the views or positions of the organizations for which they work or are affiliated.

Venture Capitalists:

- Kate Mitchell – Managing Director, Scale Venture Partners, Task Force Chairman
- Mark Gorenberg – Managing Director, Hummer Winblad Partners
- Tom Crotty – General Partner, Battery Ventures

Entrepreneurs

- Magid Abraham Ph.D. – President, CEO and Co-Founder, ComScore
- Josh James – former CEO, Omniture; CEO & Founder of Domo Technologies
- Desh Deshpande – former CEO and Co-Founder, Cascade Communications and Sycamore Networks; Chairman, Sparta Group; and Co-Chair of NACIE

Securities Attorneys

- Joel Trotter – Deputy Chair of the Corp. Dept., Latham & Watkins
- Steve Bochner – CEO and Member of the Board of Directors, Wilson, Sonsini, Goodrich & Rosati

Academicians/Accountants

- Bill Sahlman – Dimitri V. D'Arbeloff Chair, and Sr. Associate Dean for External Relations, Harvard School of Business
- Carol Stacey – Vice President, S.E.C. Institute
- Charles "Chuck" Robel – former Chairman, McAfee; private investor and retired head of PWC Tech Practice

Public Investors

- Karey Barker – Managing Director, Wasatch Advisors
-

- Henry Ellenbogen – Portfolio Manager, T. Rowe Price

Investment Bankers

- Paul Deninger – Sr. Managing Director, Evercore
 - Carter Mack – President and Founder, JMP Securities
 - Kevin McClelland – Managing Director, Head of Tech. Inv. Banking, JMP Securities
 - Brent Gledhill – Head, Global Corporate Finance; Member of Executive Committee, William Blair & Company
 - Brett Paschke – Managing Director, Head of Equity Capital Markets, Corp. Finance, Commitment Committee, William Blair & Company
-

Appendix B**Acknowledgments**

The IPO Task Force wishes to express its gratitude to the following individuals, whose input and expertise contributed to the preparation of this report. Please note that their appearance on this list does not imply endorsement of this report or its recommendations.

Chuck Newhall, General Partner, Co-Founder, NEA

Dixon Doll, Co-Founder & General Partner, DCM

Mark Heesen, President, NVCA

Duncan Neiderauer, CEO and Director, NYSE Euronext, Inc.

Scott Cutler, Senior Vice President, Global Corporate Group, NYSE Euronext, Inc.

David Weild, Capital Markets Advisor at Grant Thornton; Founder & Chairman of Capital Markets Advisory Partners; former Vice Chairman of NASDAQ

Ed Knight, Executive Vice President, General Counsel, Chief Regulatory Officer, NASDAQ

Bob McCooey, Senior Vice President, NASDAQ

Jeff Cardon, Portfolio Manager, CEO and Director, Wasatch Advisors

Frank Currie, Partner, Davis Polk

Lise Buyer, Founder, Class V Group

Tom Baruch, Founder & Partner Emeritus, CMEA and member of NACIE

Joseph A. Grundfest, Senior Faculty and W.A. Franke Professor of Law and Business; Arthur and Tom Rembe Rock Center for Corporate Governance, Stanford Law School, Former Commissioner of the S.E.C.

Bob Huret, Founding Partner, FTV Capital

David York, CEO & Managing Director, Top Tier Capital

Herb Wander, Partner, Corporate Practice, Katten Muchin Rosenman LLP

Robert Bartlett, Assistant Professor of Law, Berkeley Law

Greg Becker, President and CEO, Silicon Valley Bank

Various CEOs and institutional investors surveyed by the IPO Task Force

Appendix C**IPO Task Force August 2011 CEO Survey****Objective and Methodology**

In August of 2011, the IPO Task Force set out to gather the perspectives of pre-IPO and Post-IPO CEOs regarding their top concerns, largest hurdles, and the greatest benefits of going public. The purpose was to inform the task force's efforts to examine the causes of the decline of the U.S. IPO market and develop recommendations for restoring access to capital for emerging growth companies. The task force distributed the survey to pre- and post-IPO companies through the membership of the National Venture Capital Association (NVCA) and by NASDAQ (targeting listed companies that went public since 2006). Responses were collected anonymously during a three-week period in August 2011.

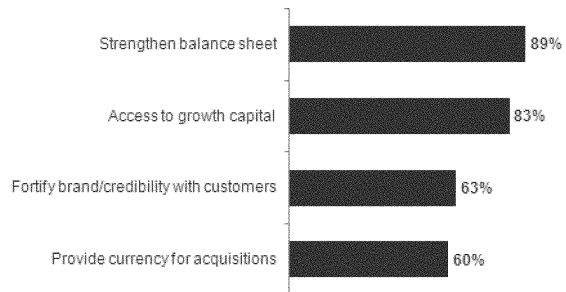
Post-IPO CEOs: Survey Respondents

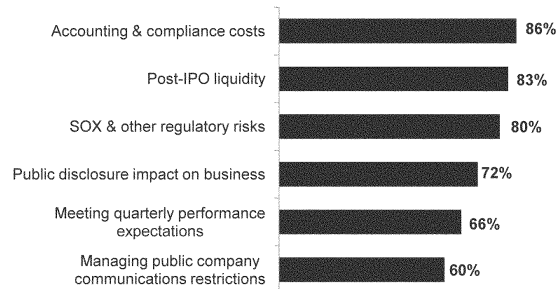
- 35 Public Company CEOs (IPO 2006 or later)
 - Industry Sector:
 - 57% IT
 - 29% Life Sciences
 - 9% Non-High Technology
 - Average Employment in 2011 = 828
 - ***Average job growth since IPO = 86%***
-

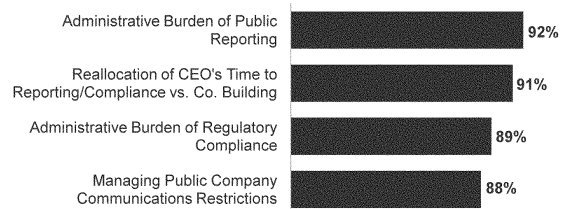
Public Company CEOs: IPOs Are Important But Increasingly Difficult

| | Agree | Neutral | Disagree |
|--|-------|---------|----------|
| Strong & Accessible IPO Market Is Important to U.S. Economy & Global Competitiveness | 100% | 0% | 0% |
| U.S. IPO Market Is Accessible for Small Companies | 23% | 11% | 66% |
| It Is Not as Attractive an Option to Go Public Today as It Was in 1995 | 86% | 3% | 12% |
| Going Public Was a Relatively Painless Experience | 17% | 14% | 69% |
| Going Public Has Been a Positive Event in My Company's History | 83% | 14% | 3% |

Why Post-IPO Companies Went Public

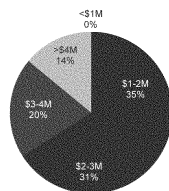


**Post-IPO CEO Survey :
Biggest Concerns About Going Public**

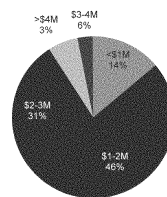
Public Company CEOs: Most Significant IPO Challenges

Post-IPO CEO Survey: Costs of Going and Staying Public Are High

Average Cost \$2.5M to Go Public



Annual Cost \$1.5M to Stay Public



Costs Including SOX, Legal, Accounting

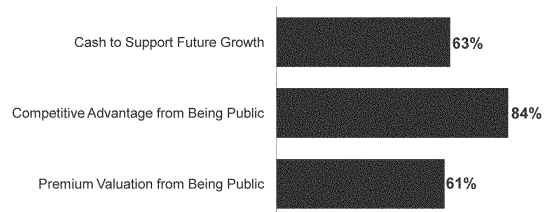
Source: IPO Task Force CEO Survey August 2011, of incremental costs of an IPO. Sample set consists of 35 CEOs of companies that went public since 2006. Consistent With Independent Review of Public Filings for 47 2011 IPO's Raising Less Than \$200M. (Avg. Cost of \$3M for IPO)

Pre-IPO CEOs: Survey Respondents

- 109 CEOs of venture-backed companies considering an IPO in the next 24 months.
- Average Employment: 168
- Industry Sector Breakdown:
 - 42% IT
 - 11% Cleantech
 - 42% Life Sciences
 - 1% Non-High Technology

Pre-IPO CEOs Target IPOs To Finance Growth

Motivation for Pre-IPO Companies

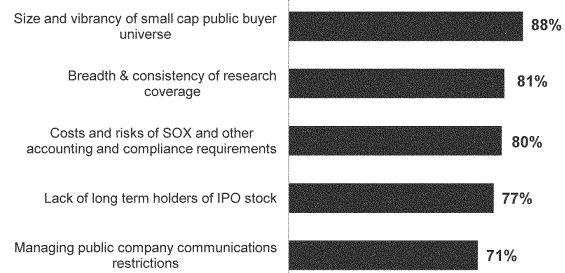


Source: IPO Task Force CEO Survey August 2011.

Pre-IPO CEO Sentiments Regarding U.S. IPO Market

| | Agree | Neutral | Disagree |
|---|-------|---------|----------|
| Strong & accessible small cap IPO market is critical to maintain U.S. competitiveness | 94% | 6% | 0% |
| Currently, the U.S. IPO market is easily accessible for small cap companies | 9% | 11% | 79% |
| It is not as attractive an option to go public today as it was in 1995 | 85% | 7% | 8% |

**Pre-IPO CEO Survey:
Concerns Regarding Implications of Going Public**



Appendix D

Size Of Cohort That Qualifies For Regulatory “On Ramp”

| For companies that went public in the previous 5 years | 6/30/2011 | 2010 | 2009 | 2008 | 2007 |
|--|-----------|-------|-------|-------|-------|
| <u>Number of Companies</u> | | | | | |
| Less than \$1B revenue and IPO less than \$700mm | 556 | 558 | 571 | 732 | 777 |
| as % of total public companies | 11% | 11% | 11% | 15% | 14% |
| <u>Total Market Capitalization at IPO</u> | | | | | |
| Less than \$1B revenue and IPO less than \$700mm | \$305 | \$268 | \$279 | \$338 | \$355 |
| as % of total market capitalization | 2% | 2% | 2% | 3% | 2% |

Sources: Dealogic, Capital IQ, World Federation of Exchanges

