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A Rose by Any Other Name:

How Labels Get in the Way of U.S. Innovation Policy

Mary J. Dent

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2011 is shaping up to be the year of innovation policy. Policymakers recognize that a real economic recovery will require real growth and correctly see the innovation sector as the most likely source for that growth.

Yet while policymakers have identified the right goal—and while our innovation sector needs Washington to change its approach—the policymaking process is not set up to tackle this challenge in a way that is likely to yield meaningful results.

This Article explores why Washington D.C.’s institutions are ill-equipped to think about innovation policy in a comprehensive way, using the Dodd-Frank Act as a lens though which to examine the issue. It also offers several specific steps we can take to align our vision of a sound, comprehensive, and effective national innovation policy with our decision-making structures.
If one listens to the rhetoric coming out of Washington, 2011 is shaping up to be the year of innovation policy.

Policymakers recognize that a real economic recovery will require real growth: growth in employment, growth in wages, and growth in GDP. As President Obama said in his 2011 State of the Union Address:

At stake right now is not who wins the next election—after all, we just had an election. At stake is whether new jobs and industries take root in this country, or somewhere else . . . .

In a single generation, revolutions in technology have transformed the way we live, work and do business . . . . Today, just about any company can set up shop, hire workers, and sell their products wherever there’s an internet connection . . . . Meanwhile, nations like China and India realized that with some changes of their own, they could compete in this new world . . . . So, yes, the world has changed. The competition for jobs is real. But this shouldn’t discourage us. It should challenge us . . . .

The future is ours to win. But to get there, we can’t just stand still . . . . We know what it takes to compete for the jobs and industries of our time. We need to out-innovate, out-educate, and out-build the rest of the world. We have to make America the best place on Earth to do business. We need to take responsibility for our deficit and reform our government. That’s how our people will prosper. That’s how we’ll win the future.6

Although their specific proposals differ, often dramatically, from the President’s, Republican congressional leaders echo the view that promoting small, growing businesses in order to restore a robust economy is an urgent domestic priority. As the Republican Party stated in its Pledge to America, “[a] plan to create jobs, end economic uncertainty, and make America more competitive must be the first and most urgent domestic priority of our government.”3

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I. THE CHALLENGE

Policymakers have identified the right goal. As discussed in the following Part, the innovation sector provides the best opportunity to create real economic growth, generate new jobs, make our economy more productive, ensure that American companies remain competitive in an increasingly global marketplace, provide growth to the larger corporations that account for the majority of U.S. employment, and improve the quality of life and health for all Americans.

In addition, they are correct that we have a problem that needs solving. As discussed in Part II (B), recent trends indicate that the United States is at risk of losing its preeminence in the global innovation sector. As countries such as Israel, India, and China and regions such as Europe work to stimulate their innovation sectors, some shifts are inevitable and even healthy. But we could face a more significant decline. It is one thing for the United States to cede a share of the global innovation economy as other economies grow stronger. It is quite another thing for the United States to become weaker and decline in more fundamental terms.

Yet while policymakers have recognized that the decline in the American economy requires a solution, it is far from clear that we are well-positioned to make the necessary changes.

Some of this is due to real constraints. In the end, innovation will come from the private sector, not from the government. Well-designed policies can stimulate private sector behavior. They can avoid setting up roadblocks that make it more difficult for entrepreneurs to succeed. But government cannot, in and of itself, create a robust innovation sector. In addition, the stark, unavoidable reality of the budget deficit will seriously constrain what the federal government and states like California can realistically do for the foreseeable future, at least in those areas that require funding.

But part of the problem is attributable to how we think and act. We lack a deep, broad national understanding of why promoting innovation should be a national priority. As a result, we fail to address innovation policies in a proactive, explicit, and effective way.  

4. From time to time, policymakers try to develop and act upon comprehensive innovation agendas. For example, in November 2005 Rep. Eshoo (D-CA) led the House Democratic Caucus in introducing an “Innovation Agenda,” and earlier this year Senators Klobuchar (D-WI) and Brown (R-MA) introduced the “Innovate America Act.” See Anna G. Eshoo, Silicon Valley Members Salute Passage of Key Innovation Bill (Aug. 2, 2007), http://eshoo.house.gov/index.php?option=comcontent&task=view&id=350&Itemid=169; Amy Klobuchar, Senators Amy Klobuchar, Scott Brown Introduce Bipartisan Legislation to Spur Innovation, Competitiveness (Jan. 31, 2011), http://klobuchar.senate.gov/newsreleases_detail.cfm?id=330702. There are also lawmakers in both houses, and on both sides of the aisle, who come together to work more generally on innovation issues. For example, Senator Hatch (R-UT) serves as Chairman of a fifteen member Senate Republican High Tech Taskforce, while Representatives Matsui (D-CA) and McCaul (R-TX) serve as Co-Chairs of the House Congressional High Tech Caucus. See Orrin Hatch, Hatch to Lead GOP High-Tech Task Force Again: Senator to be joined by 14 colleagues (Feb. 24, 2011), http://hatch.senate.gov/public/index.cfm/releases?
Before turning to why the Author believes we fail to approach innovation policy holistically, the Author would like to make clear that the Author’s observations are by necessity broad-brushed and reflect the Author’s views about the legislative and executive branches as institutions—not about individual policymakers or the more nuanced debates that take place within subsets of those institutions. There are members of the House, Senate, White House, and individual agencies who have a deep understanding and broad view of the innovation economy, and work vigorously to promote meaningful positive action. The Author works closely with these individuals and has deep respect for their leadership.

That said, there are at least three ways in which the ways we think about innovation policy cause the agenda to become fractured into a series of unconnected elements.

First, policies that affect the innovation sector are frequently adopted as part of broader packages that have nothing to do with innovation. In such cases, policymakers often fail to understand how their actions will affect the innovation sector. Dodd-Frank’s so-called “Volcker Rule” purported to be about eliminating high-risk, short-term trading activities by federally insured banks—not about innovation. But because it used broad language to achieve its stated purpose, it threatens to eliminate at least seven percent—and potentially much more—of the capital flowing to high growth start-ups.

Likewise, Congress has adopted a host of policies that purport to be about protecting ordinary investors from wrongs committed by the likes of Bernard Madoff, Enron and other bad actors. These policies range from Dodd-Frank’s revised rules for “accredited investors” to the Act’s corporate governance rules to Sarbanes-Oxley. None of these policies were explicitly discussed as part of an “anti-innovation” agenda, but all dampen the flow of capital to start-ups.

Similarly, debates over tax policies often get tied up in unproductive labels.
For example, the debate over how to tax carried interest earned by various types of investment funds tends to be based on an overly simplistic matching game—does carried interest look more like things we treat as ordinary income, or more like things we treat as capital gains?—or issues of “fairness”—is it “fair” to expect successful investors to contribute a greater share of their wealth? The better questions to ask would be: What types of socially beneficial activities create carried interest income? Can we effectively use the tax code to stimulate those activities? And is tax-advantaged treatment for these activities the best use of the limited tax expenditures we can afford to make?

Second, because the labels we use link one issue to other issues, they define the set of related issues that get considered together. For example, strong, negative views about proprietary trading and other activities engaged in by Wall Street banks generated the political force behind the Volcker Rule. Had the Volcker Rule instead been raised as part of a discussion over how to ensure an adequate supply of capital to fund high-growth start-ups, the Author believes it would have yielded a different outcome.

In fact, during the same two week period, the House passed the Volcker Rule, which threatens to reduce the flow of capital to start-ups, and passed legislation to put taxpayers in the role of venture capital investors in order to increase the amount of start-up capital. Yet the House did not link the two issues as part of a debate over capital formation for start-ups. Those who support a broad interpretation of the Volcker Rule did not ask what appears to be a fairly obvious question: if venture investing is too risky for banks, is it really a good risk for taxpayers? And with very few exceptions, members of Congress did not see financial services reform as part of an “innovation agenda.”

Similarly, our immigration policies have a dramatic, counter-productive effect on the innovation sector. For many years, people who were born abroad...
A Rose by Any Other Name: How Labels Get in the Way of U.S. Innovation Policy

came to this country to get an education, and many stayed to form new companies. Today, we send many of those entrepreneurs home, depriving the United States of their talent and depriving our economy of the employment their start-ups would have generated. At the same time, American immigration policies stimulate the creation of robust innovation communities in countries such as China, India, and Israel. Congress remains trapped in a stalemate, unwilling to confront the need for reform as an "innovation agenda" issue and instead insisting it is an "immigration" issue that can be addressed only as part of comprehensive immigration reform.

Finally, the labels we use define jurisdiction, whether among congressional committees or within the administration. For example, in Dodd-Frank Congress adopted new rules that may dramatically affect how effectively start-ups will be able to protect themselves against the risks they take when they sell products overseas. The Agricultural Committee, and not a committee with responsibility for innovation, considered and adopted these rules because they fell under the general rubric of swaps.

12. See Vivek Wadhwa, Foreign-Born Entrepreneurs: An Underestimated American Resource (2008), in KAUFFMAN THOUGHTBOOK (2009), available at http://www.kauffman.org/entrepreneurship/foreign-born-entrepreneurs.aspx. Mr. Wadhwa found that for fifty-two percent of Silicon Valley start-ups and approximately twenty-five percent of all start-ups nationwide founded between 1995 and 2005, the chief executive or lead technologist was foreign-born. In 2005, these companies generated $52 billion in revenue and employed 450,000 workers. Typically, the foreign-born founders or technologists did not come to the United States to start a company: 52% came to study, 40% came to work, 5.5% came for family reasons, and only 1.6% came to start companies. Id.

Mr. Wadhwa also found that foreign-born individuals contributed significantly to the American innovation sector in other ways. In 2006, foreign nationals residing in the United States were named as inventors or co-inventors in 25.6% of patent applications filed from the United States. They also contributed to a majority of some American companies' patent applications, including Qualcomm (72%), Merck (65%), GE (64%), and Cisco (60%). These numbers did not include immigrants who had become citizens at the time of filing. In addition, Mr. Wadhwa found that foreign-born entrepreneurs helped stimulate broad-based innovation across geographies. Rather than settling in well-established immigrant gateways, such as New York or Los Angeles, they moved to tech centers across the country and helped fuel their growth. Id.

Mr. Wadhwa also found that "as of September 30, 2006, 500,040 individuals in the main employment-based visa categories and an additional 555,044 family members were in line for permanent-resident status in the United States. Another 126,421—who already had job offers—were waiting abroad, a total of 1,181,505 educated and skilled professionals waiting to gain legal permanent-resident status." Id. at 188. This far exceeded the approximately 120,000 visas available for skilled immigrants, and was a particular problem for individuals from more populous countries. Id. at 188-189.

13. Indeed, one could argue that the net result of the current political climate is a comprehensive innovation policy promoting foreign innovation. Our immigration policies send highly educated, talented graduates of American universities to other countries. Our capital markets policies create incentives for promising companies to list on foreign markets; and our tax policies create incentives for American multinationals to invest abroad. All of these outcomes are the result of inaction, rather than action. But the net result of Congress' inability or unwillingness to act with a sense of urgency and on a bi-partisan basis on these three "innovation" issues will have real, long-term effects, by increasing the supply of talent and capital offshore and reducing it within the United States.

14. To the positive, Congress gave the Secretary of the Treasury authority to exempt foreign
Thus, labels are counter-productive because they distort how we think about issues and limit how effectively we solve problems. Unless we can think differently about innovation policies, it will be difficult or impossible to enact a sound, comprehensive innovation agenda.

II. WHY IT MATTERS

A. The Innovation Sector's Impact on the U.S. Economy

For years policymakers have emphasized the role small businesses play in job creation and economic activity. Recent research, however, has highlighted that the small business economy is divided into two different types of small businesses. Both are important, but only one is the source of net new job creation and economic growth.

First, there are “Main Street” small businesses. These are small businesses that intend to stay small even if they are successful. They are the dry cleaners, sandwich shops, hairdressers, and other businesses that make up what we colloquially refer to as Main Street America. These businesses are important to the health of our communities and are an important part of our overall economy, but are not the primary driver of job creation.

High-growth small businesses—businesses that aspire to grow large and become the future Ciscos, Intels, Googles, Facebooks, and Apples—are the principal force behind both gross and net new job creation. These companies tend to be in high tech sectors such as computer hardware, computer software/internet, cloud computing, life sciences, medical technology, and clean technology, and typically focus on developing disruptive technologies, service models, or business models.

While both groups are important, policymakers who wish to promote a high-growth innovation agenda should focus on the latter group.

The best proxy for the high-growth small business sector in the United

exchange swaps and forwards from the definition of “swap” under the Commodity Exchange Act. During the first half of 2011, the Secretary issued a proposed determination exempting these swaps and forwards, which is expected to become effective in the near future. See Determination of Foreign Exchange Swaps and Forwards, 76 Fed. Reg. 87, 25774 (May 5, 2011). That determination applies to the central clearing and exchange requirements that had constituted the largest concern to small users of foreign exchange products, and as a result addresses the majority of the concerns that growing technology companies will face in using FX swaps and forwards, although the new law will impose higher costs on these companies.

States is the relatively small group of start-up companies that receive backing from venture capital funds. Venture capital investors focus exclusively on finding and nurturing high-growth start-ups. They devote enormous resources to selecting the most promising ideas to back, often reviewing hundreds of business cases in order to select a small handful of companies in which to invest. Venture investors often have had successful careers as entrepreneurs, scientists, engineers, or doctors, and thus bring a deep set of skills to help the entrepreneurs they back. They not only provide the financial capital that high-growth technology companies require, but also play an active, hands-on role in those companies, typically sitting on a company’s board and working actively with management to develop the business strategy and build the management team. They also guide the company through subsequent financing rounds and help transform the business from concept to commercialization.  

There is ample data demonstrating that venture investing and venture-backed companies have a dramatic positive direct impact on the American economy.

First, venture capital investments yield outsized returns to the U.S. economy. Historically, venture capital investments have equaled roughly 0.1-0.2% of U.S. GDP. But as of 2008—the last year for which data has been made available—companies that were or had been venture-backed employed more than twelve million people and generated nearly $3 trillion in revenues. In other words, investments on the order of 0.1-0.2% of U.S. GDP yielded eleven percent of all U.S. private sector employment and the equivalent of

16. See Thomson Reuters, 2011 National Venture Capital Association Yearbook at 7 (March 2011) [hereinafter NVCA Yearbook 2011], available at http://www.nvca.org/index.php?option=com_content&view=article&id=257&Itemid=103; National Venture Capital Association & IHS Global Insight, Venture Impact: The Economic Importance of Venture-Capital Backed Companies to the U.S. Economy (5th Ed.) at 1, 3-5 (2009) [hereinafter Venture Impact], available at http://www.nvca.org/index.php?option=com_content&view=article&id=255&Itemid=103. In addition to venture capital investors, angel investors are an important source of capital and guidance for early stage innovative companies. Because there currently is only limited data available on angel investing, the Author focuses on the data for venture capital backed companies in this Article. As a policy matter, however, it is important over time to understand the role of angel investors and their contribution to innovation and high growth start-ups. To this end, in February of 2011, the Angel Capital Education Foundation (“ACEF”), Silicon Valley Bank and CB Insights announced that they will begin jointly producing a quarterly research report, titled the Halo Report, which will highlight angel investment activity and trends in the United States and Canada. The parties anticipate that the data will help investors and the startups they support, provide more transparency into angel investment activity, and provide information on the role angel investors play in promoting job creation and innovation. The parties have stated that they expect he first Halo Report will be available in the second half of 2011. See Angel Capital Education Foundation, Silicon Valley Bank and CB Insights Create Partnership to Produce Halo Report, SVB, Feb. 23, 2011, http://www.svb.com/News/Company-News/Angel-Capital-Education-Foundation-Silicon-Valley-Bank-and-CB-Insights-Creat-Partnership-To-Produce-Halo-Report/.  

twenty-one percent of U.S. GDP—or roughly a hundred-fold return on investment.\textsuperscript{19} Although venture investing is sometimes seen as a regional or coastal phenomenon, in fact venture-backed companies exist and create jobs and revenues across the country.\textsuperscript{20}

Second, venture-backed firms create jobs. Even in the current economy, with unemployment running just above nine percent,\textsuperscript{21} venture firms create thousands of new jobs. The website start-uphire.com lists jobs in venture-backed companies. As of May, 2011, there were postings by 496 venture funds listing more than 24,250 active job openings in venture-backed companies.\textsuperscript{22}

Third, venture-backed companies outperform the broader economy. Whether measured in terms of job creation or in terms of revenue growth, venture-backed companies outperformed the overall economy, as illustrated in the following charts.\textsuperscript{23}

\begin{table}
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Venture Backed Company Job Growth} & \textbf{Total U.S. Private Sector Job Growth} \\
\hline
2.00\% & 1.50\% \\
1.00\% & 0.50\% \\
0.10\% & \textit{0.00\%} \\
\hline
\end{tabular}
\end{table}

\begin{table}
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Venture Backed Company Revenue Growth} & \textbf{Total Revenue Growth} \\
\hline
6.00\% & 5.00\% \\
4.00\% & 3.00\% \\
2.00\% & 1.00\% \\
0.00\% & \textit{0.00\%} \\
\hline
\end{tabular}
\end{table}

Venture capital-backed businesses, moreover, have an impact far beyond the four corners of the sector.

First, venture investments create new, long-lasting companies and industries. The venture-backed innovation sector has created entire new industries from information technology, biotechnology, semiconductors and

\begin{itemize}
\item [19.] NVCA Yearbook 2011, supra note 16, at 1.
\item [20.] See Venture Impact, supra note 16, at 2, 7-9.
\item [21.] See Unemployment Rate, BUREAU OF LABOR STATISTICS, available at http://data.bls.gov/timeseries/LNS14000000 (last visited Aug. 9, 2011) (reporting a national unemployment rate of 8.8% as of March 2011).
\item [22.] See Venture Capital Portfolio Jobs, STARTUPHIRE.COM, http://www.startuphire.com/investors/portfoliojobs.php (last visited May 25, 2011). This number is indicative and based on the number of jobs listed by firm. Some listings by firm may overlap with listings by other firms.
\item [23.] Venture Impact, supra note 16, at 2 (showing job growth of 1.6\% for venture-backed companies versus 0.2\% for the broader private sector and revenue growth of 5.3\% for venture-backed companies versus 3.5\% for the broader private sector). In addition, according to a recent analysis of nearly eight hundred Silicon Valley Bank portfolio companies in the hardware and software sectors, during the fourth quarter of 2010, the technology sector delivered GDP growth of 3.1\% and for the full year 2010 the technology sector delivered 2.9\% GDP growth—both significantly above the 1.9\% GDP growth estimated by the World Bank. See SVB Analytics Insight, Q4 2010 Quarterly Trends Report, at 1 (2011), available at http://www.svb.com/svbanalytics/trendreport/.
\end{itemize}
online retailing to emerging industries such as clean technology, social media, and cloud computing. To give a sense for the long-lasting impact of the venture ecosystem on the American economy, as of 2008, eight out of ten people employed in the software development industry worked for a company with venture capital roots; seven out of ten people employed in the telecommunications and semiconductor industries worked for a company with venture capital roots; and more than half of the people employed in the networking and equipment and electronics/instrumentation industries worked for a company with venture capital roots. Venture-backed companies include a long list of household names—from Apple, Google, Facebook, Amazon, Cisco, Home Depot and Staples to Starbucks, eBay, Genentech, Amgen, Intel, Microsoft, and FedEx—that have transformed the way Americans live and work.

The health care sector is an example of the far-reaching effects venture-backed companies have on the American landscape. Experts agree that virtually the entire biotechnology industry and most of the significant breakthroughs in the medical devices industry would not exist without the support of the venture capital industry. Over the past twenty years, venture funds have invested tens of billions of dollars in thousands of companies with new ideas. This investment translates directly into jobs. As of 2006, nine formerly venture-backed companies alone employed more than 75,000 people and accounted for over $40 billion in revenues, while all venture-financed life science companies supported 493,800 jobs and generated $132 billion in revenues—or fifty-four percent of total life sciences employment and sixty percent of total life sciences revenue.

These companies, in turn, spur employment throughout the broader economy. The Milken Institute, for example, found in a 2004 study that every job created within biopharmaceuticals creates an additional 6.7 jobs in other


25. Venture Impact, supra note 16, at pages 1, 6-7, 9, 11; see also Patient Capital, supra note 24, at 2.


27. Id. at 3, 5-7.

28. Id. at 2-3, 7. In 2006, forty percent of total biotechnology industry employment was tied to companies that got their start with venture capital, and during the 2003-2006 period venture-backed biotech companies increased employment by 9.2% versus 4.3% across the biotech industry. Id. In the medical devices and equipment industry, venture-financed companies represented eighty-three percent of total industry employment in 2006. Id.
sectors. Equally important, venture-backed life science companies serve as the research and development pipeline for larger life sciences companies looking for innovation. Over the 2002-2007 period, mature healthcare companies acquired almost two hundred venture-backed life sciences companies for their innovations.

Finally, venture-backed innovations change the health care landscape for all Americans. The innovations that were developed and launched by a venture-backed life sciences companies during the past twenty years have positively affected more than one in three Americans (or one hundred million individuals).

Second, the venture-backed innovation sector plays an increasingly important role in driving growth for more mature American businesses across the broader American economy.

As developed economies slowed and corporate growth came to a near standstill during the 2008-2010 financial downturn, many larger companies focused primarily on maintaining their near-term bottom line performance through cost reductions and increased productivity. More recently, as capital markets and the broader economy have begun to stabilize, companies and their investors have re-emphasized long-term revenue growth. As a result, innovation has returned to the CEO’s agenda as a long-term growth driver.

In a closely linked development, SVB has seen a dramatic resurgence in corporate venture investing combined with a more expansive and more sophisticated underlying strategy for this investing. We estimate that just in the first two months of 2011, corporations committed more than $1 billion in new capital to venture investing.

Historically, corporate venture investing predominately came from firms with close ties to the technology sector. For the remainder of corporate America, “innovation” was not linked to venture investing. Rather, it tended to be internally focused and driven by research and development R&D; tended to yield evolutionary product improvements rather than revolutionary transformations; and tended to focus more on cost or outcome metrics, such as patents obtained, rather than “true” outcome metrics, such net new revenue generated.

29. Id. at 8 (citing Milken Institute, Biopharmaceutical Industry Contributions to State and U.S. Economies (October 2004)).
30. Id. at 2.
31. Id. at 4.
32. Id. at 5. For example, Magnetic Resonance Imaging (MRI) and ultrasound diagnostic imaging have virtually eliminated exploratory surgery for countless conditions. Id. at 4. Other venture-backed breakthroughs include implantable defibrillators, spinal implants, glucose self-monitoring devices for diabetes, and pulse oximetry. Id. See also id. at 10 (listing innovative treatment examples from venture backed medical start-ups in the areas of heart disease, cancer, stroke, respiratory disease, diabetes, and spinal injuries).
A Rose by Any Other Name: How Labels Get in the Way of U.S. Innovation Policy

More recently, a wide variety of corporations have set up corporate venturing arms or innovation centers. These corporations include (not exclusively, and in no particular order) firms such as BMW, Adidas, General Mills, Best Buy, Proctor & Gamble, Unilever, de Beers (the diamond conglomerate), Citi, Visa, AMD, EMC and Xstrata (the mineral and mining conglomerate). Others are joining forces to leverage complementary expertise. For example, earlier this year General Electric, a long-time active corporate investor in energy, joined with ConocoPhillips and power plant operator NRG Energy, neither of which historically had done any corporate venture investing, to form Energy Technology Ventures. This joint venture will deploy $300 million in venture investments in clean energy and fossil fuel technologies over the next four years.

In addition to investing at higher levels, these corporations are embracing a new model that employs a much greater focus on external innovation and a wider diversity of innovation models. These models go well beyond mergers and acquisitions to include joint ventures, licensing, supply chain relationships, and partnering. This new innovation agenda tends to be led by a high-level business executive (such as the CEO or a Chief Innovation Officer), is open to cannibalization and disruptions to the existing business, and is outcome-driven.

Five forces are driving corporations to establish venture groups or externally-focused innovation centers. First and foremost, corporations see venture investing as one of the most important tools available to help drive their growth. Start-ups are serving, in essence, as a robust, varied, and effective form of research and development. Second, corporations recognize the need to fill the funding gap in sectors that are relevant to their core business but in which traditional venture firms have either stopped investing or significantly scaled back their investments. By investing directly, these corporations can drive continued innovation in the areas critical to them. For example, AMD might invest in semiconductors, or Merck might invest in life sciences. Third,


35. Professor Henry Chesbrough, currently a visiting Assistant Professor at the Haas School of Business and Executive Director of the Center for Open Innovation, University of California, Berkeley, has done extensive research on how firms combine the use of external and internal sources of technologies and market these technologies through internal and external paths. See HENRY CHESBROUGH, OPEN INNOVATION: THE NEW IMPERATIVE FOR CREATING AND PROFITING FROM TECHNOLOGY (2003); HENRY CHESBROUGH ET AL., OPEN INNOVATION: RESEARCHING A NEW PARADIGM (Oxford, 2006); HENRY CHESBROUGH, OPEN SERVICES INNOVATION (2011).
corporations see venture investing as a way to identify potential merger and acquisition targets earlier in their development, with the ultimate aim of spending less on M&A acquisitions. Fourth, corporations recognize that the pace of new innovation and the rate of disruptive technology shifts is increasing, including in the areas of energy, transportation, social media, cloud computing, mobile communications and gaming. These corporations see venture investing as a way to stay abreast of the rapidly changing environment. Finally, large consumer-focused companies see an enormous shift in how consumers are interacting with brands and consuming media, and believe they need to move beyond traditional advertising media to stay abreast of these changes and to remain relevant to their customers.

Third, innovations driven by the venture-backed companies contribute to productivity growth, U.S. economic competitiveness, and Americans' quality of life. As discussed in a recent report issued by the Information Technology & Innovation Foundation, disruptive technological innovation has a second order effect which drives broader job growth in three ways. First, innovation gives American firms a “first mover” advantage which helps expand U.S. exports and employment. Second, disruptive innovation creates a “virtuous cycle” of expanding employment. As innovative new industries expand, they drive broad-based economic growth which, in turn, leads to additional job growth in supporting industries. Finally, disruptive innovation increases productivity, which leads to increased wages and lower prices, which in turn further expand economic activity and create jobs.36

Innovation, moreover, helps create highly productive and innovative industries that are most likely to drive real, broad based, sustainable economic growth.37 As the ITIF report stated:

[M]ore jobs alone, while a critical step for recovery, will not be enough to get America’s economy back onto the trajectory of the growth rates experienced in the 1990s. Instead, the economy will need to shift from low-skilled, low-wage jobs to higher-skilled and thus higher-wage jobs; and from our traditional industrial manufacturing makeup to a 21st century mix of employment in high-tech fields such as biotechnology, clean energy, information technology, nanotechnology, and advanced manufacturing. Innovation will be indispensable in helping us get there. Highly innovative economies are characterized by a diverse mix of high-paying, capital-intense, productive industries, while less dynamic economies tend to focus on a handful of commodity-driven industries that are low-wage and concentrated in lower portions of the value chain.

... The point is that it is not enough for the United States to just “create jobs, any jobs,” for if we are not concerned about the mix of jobs our economy is creating, the United States increasingly risks seeing its employment base shift towards a lower

37. Id.
A Rose by Any Other Name: How Labels Get in the Way of U.S. Innovation Policy

value-added, lower-wage composition.\textsuperscript{38}

Innovation also helps ensure that the economy has healthy underpinnings. As discussed above, venture-backed companies have contributed significantly to the quality and cost-effectiveness of our healthcare sector. Similarly, venture-backed companies are creating new ways to generate, store, distribute, and use energy.\textsuperscript{39} These innovations, if successful, will help the United States create long-term, stable, consistently priced supplies of energy—an important input to stable, long-term economic growth.\textsuperscript{40}

Finally, innovation plays a central role in improving Americans’ quality of life by expanding access to information, providing higher quality goods and services, improving health care quality and access, and fostering a more sustainable environment.\textsuperscript{41}

A handful of policymakers understand the critical nature of the innovation sector. Too many, however, tend to see the sector as a regional phenomenon centered in Silicon Valley and a handful of other locations or believe that venture capital investors are the primary or exclusive beneficiaries of the venture capital sector. This is, in part, a byproduct of our society’s interest in tech “superstar personalities” such as Steve Jobs, Mark Zuckerberg, Sergey Brin, Larry Page, and Bill Gates, and a tendency to fixate on a handful of massive financial success stories such as Google and Facebook. In reality, every American is touched—probably daily—by the innovation sector.

\textsuperscript{38} Id. at 2-3.

\textsuperscript{39} See, e.g., Venture Impact, supra note 16, at 12.

\textsuperscript{40} According to the U.S. Department of Energy, over the long term inflation (measured by the rate of change in the Consumer Price Index (CPI)) tracks movements in the world oil price due both to their direct impact (oil and other energy prices constitute a portion of the actual CPI) and their downstream impacts on other commodity prices. Dept. of Energy, U.S. Energy Information Administration, Energy Price Impacts on the U.S. Economy, http://www.eia.doc.gov/oiaf/economy/energy_price.html (last visited Aug. 9, 2011). Volatility in energy prices (particularly the world price for oil) is particularly harmful. As the DOE stated in a 2001 review of the impact of energy prices on the U.S. economy:

Looking from the 1970s forward, there are observable, and dramatic changes in GDP growth as the world oil price has undergone dramatic change. The price shocks of 1973-74, the late 1970s/early 1980s, and early 1990's were all followed by recessions, which have then been followed by a rebound in economic growth. The pressure of energy prices on aggregate prices in the economy created adjustment problems for the economy as a whole. \textit{Id}. While economies generally are less sensitive to oil shocks than they were a decade ago, the United States economy remains vulnerable to disruptions in the supply or pricing of oil. Recent events in the Middle East serve as a stark reminder that we must not ignore this risk and underscore the critical importance of innovation in the energy sector. \textit{See, e.g., The 2011 Oil Shock: More of a Threat to the World Economy Than Investors Seem to Think, THE ECONOMIST, Mar. 3, 2011, available at http://www.economist.com/node/18281774 (discussing global economic risks arising from the events in the Middle East and noting that “America’s economy is needlessly vulnerable, thanks to its addiction to oil (and light taxation of it”)\textsuperscript{41}.

\textsuperscript{41} See e.g., Innovation Policy on a Budget, supra note 36, at 3-4.
B. Disturbing Trends in the Vibrancy of the U.S. Innovation Sector

The United States remains a center of innovation, and the tech sector has begun to put the financial downturn behind it. For example, during the first quarter of 2011, thirty-six American venture capital funds raised more than $7 billion. This was a seventy-six percent increase by dollar commitments over the first quarter of 2010, the strongest quarter for American venture capital fundraising since the third quarter of 2008, and the best annual start for fundraising in the United States since 2001.42

“Deeper” statistics also provide some positive signs. For example, the number of patent registrations increased six percent nationally and nine percent in Silicon Valley during 2009, and the total number of science and engineering degrees conferred both in the United States and in Silicon Valley increased slightly in that year.43

Yet there are some deeply troubling signs on the horizon.

The United States has long considered itself to be a leader in innovation and economic competitiveness. But in a striking recent finding, the European-American Business Council and the Information Technology & Innovation Foundation found that the United States ranks sixth overall among the forty nations and regions studied in terms of innovation and competitiveness, showing that we are not the runaway leader in global competitiveness that some believe.44 In an even more troubling finding, the study found that every single one of the thirty-nine other countries and regions studied made more, faster improvements to their innovation capacity and international competitiveness over the past decade than the United States.45

One indicator of the health of the innovation sector is the level of initial public offerings (or IPOs) by American companies on U.S. stock exchanges. Calendar year 2009 represented one of the worst IPO markets in forty years.46 Given that the size of the American economy in real GDP terms was over three times what it was forty years ago, this was a “remarkable and frightening state
of affairs."\(^{47}\) In significant part, the dramatic downturn in American IPOs is a byproduct of a number of legal, policy, and market changes that have made it more difficult for companies to go public and increased meaningfully the size at which they can realistically contemplate a public offering.\(^{48}\)

While IPO activity increased in 2010,\(^{49}\) the activity was not robust. IPO activity remained below historical levels,\(^{50}\) and below the level that many would argue is needed to provide a meaningful source of growth capital to technology start-ups, particularly for capital-intensive start-ups in sectors such as clean energy.\(^{51}\) Companies typically are taking longer to reach the scale required to do a public offering, and more companies are "exiting" through mergers and acquisitions.\(^{52}\) Both of these trends affect individual companies,
their employees, and the United States' ability to innovate in affected sectors, and likely depress long term employment growth.53

In terms of global trends, during 2010 the United States raised just fifteen percent of global IPO proceeds, well below its past ten year average of twenty-eight percent.54 Even among U.S. listings, 54 of the 163 listings were cross-border listings. About 41 of those—or one in four of all American listings in 2010—were by Chinese companies.55 Leading American venture firm Sequoia Capital had 13 IPOs in 2010, more than any other venture firm, but 9 of the 13 were Chinese companies, and only 3 of the 13 were American companies.56

Another indicator of the health of the American innovation sector is the amount of capital flowing into start-ups, particularly very early stage start-ups. On this front, although there are some reasons for optimism, the data is still mixed.

Venture capital under management in the United States at the end of 2010 was down slightly from 2009 and down meaningfully (38%) from its peak a few years ago.57 Fundraising in 2010 was down 25% from 2009, which itself was down 38% from 2008, and was a mere 12% of the amount raised in 2000.58 In terms of investments, total 2010 venture capital investments were up public with a median IPO size of $135 million. In contrast, twenty years ago Wall Street commonly executed successful IPOs in the $10 million range. Market Structure is Causing the IPO Crisis, supra note 46, at 2, 3.

53. See Market Structure is Causing the IPO Crisis, supra note 46, at 3-4. The increase in the time to go public and the shift in exit mix between IPOs and M&A exits are both important from a public policy perspective. The longer times to exit and relatively lower multiples received in M&A transactions make it more daunting for entrepreneurs and venture investors to start companies and provide early stage funding. In addition, start-ups' most robust job creation occurs after an IPO. According to a 2009 analysis by HFS Global Insight, over ninety percent of the jobs created by venture-backed companies occur after they go public. NVCA Yearbook 2011, supra note 16, at 88; see also id. at 7 (showing pre- and post-IPO employment data for selected companies). Finally, these trends may lead some companies to over-invest in developing parts of their business that ultimately will be jettisoned. In order to maximize their value, many entrepreneurs and venture investors pursue a growth path that will allow them to “exit” through either an IPO or an M&A transaction. However, as time and scale need to go public have increased, the “optimal” path for a company seeking an M&A exit and one seeking an IPO exit have diverged. To successfully go public, companies must reach a scale—in terms of revenue as well as organizational depth—that provides an attractive deal size to underwriters and potential investors. In an optimal M&A transaction, in contrast, companies ideally would sell when they have developed their technology and business model to the point it is attractive to an acquirer, but before they have developed the sales and operational infrastructure required for a public company. In a sense, companies must “outgrow” their optimal M&A scale to preserve the option of going public. If they end up exiting through an M&A, these companies will have “wasted” investments in operational infrastructure that are not desired or needed by the acquiring company.


55. Id.

56. Scott Austin, Sequoia Capital Keeps the Chinese IPO Hits Coming, WALL ST. J., March 30, 2011 (citing data from Dow Jones VentureSource), available at blogs.wsj.com/venturecapital/2011/03/30/sequoia-capital-keeps-the-chinese-ipo-hits-coming/. The article reports that the next two firms with the most 2010 IPOs were China-focused investors Shenzhen Cowin Capital (with eight) and IDG Capital Partners (with six). The U.S. firm with the second most IPOs in 2010 was Kleiner Perkins Caufield & Byers, with five. Id.


58. Id. at 9-10, 19. New commitments to venture capital funds in the United States were $12.4
A Rose by Any Other Name: How Labels Get in the Way of U.S. Innovation Policy

20% from 2009 levels, at $22.0 billion, but down significantly from earlier years. The number of investments followed a similar pattern: up 12% in 2010, but still 18% below the 2007 post-tech bubble peak. Eight percent of the 2010 investments went into the earliest stage companies, generally referred to as "seed stage" investments. During the first quarter of 2011, the rise in fundraising and investment activity was a potentially promising sign that the worse is behind us. Venture funds raised more than $7 billion during the first quarter of 2011—the strongest annual fundraising start since 2001, and a 75% increase (by dollar commitments) over the first quarter of 2010. In terms investments, during 2010 venture capital firms funded more than one thousand new companies. Like fundraising, quarterly investment levels were up 5% in the first quarter of 2011 in terms of dollars, but down 11% in terms of the number of deals, as compared to the fourth quarter of 2010. Seed and early stage investments increased during the quarter, rising 11% to $1.9 billion, although the number of seed and early stage deals fell 14% from the prior quarter. At the same time, entrepreneurs continue to bemoan a lack of adequate capital, particularly in capital intensive sectors. Some commentators have argued that because American venture investing has become more conservative in recent years higher risk sectors are deprived the capital they need.
As with the trend in IPOs, trends in the global pattern of venture investing are also troubling. Venture investing historically has been a uniquely American phenomenon, and today roughly half of all venture firms are located in North America.67 But over the past decade both entrepreneurs and investors have shifted their focus and begun to build robust innovation sectors in markets around the globe.

In 2000, North American-focused funds raised seventy-five percent of the total capital raised by venture firms. By 2008, funds focused on Asia and the rest of the world were raising thirty-seven percent of the total.68 And this is probably just the beginning. A 2010 survey of investing professionals notes the following attitudes and expectations:

- Investing professionals expect the venture industry to contract in the United States and Europe. They expect the industry to grow in emerging markets, including China, India and Brazil, whether this growth is measured by the number of firms investing or by the number of dollars invested.69
- The institutions that invest in venture funds (typically, endowments, pension funds, and foundations) expect to shift larger allocations to emerging markets over the coming five years.70
- The respondents of the survey see a direct correlation between current trends in venture investing and the long term dominance of the United States in the technology sector.71
- Respondents also see an important and growing link between government policies and the strength of the venture and

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68. Id.
69. Deloitte and Touche LLP, 2010 Global Trends in Venture Capital: Outlook for the Future (July 28, 2010), available at http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/TMT_us_tmt/us_tmt_VC2010Global%20Trend_160910.pdf. A startling 92% of investment professionals expect the number of venture firms in the United States will decrease and 72% expect venture investments in the United States will decrease. In contrast, 99% of investment professionals expect the number of venture firms in China will increase significantly or moderately, while 98% make this prediction for Brazil and 86% make this prediction for India. 70% of all respondents expect dollars invested in China will increase significantly, 51% make this prediction for Brazil and 41% make this prediction for India. Equally startlingly, every respondent predicted that at worst investments in China and Brazil will increase at least moderately, and virtually all (91%) made this prediction for India. Id.
70. Id. at 14. Only fifteen percent of investors in the survey said they were more inclined to invest in the United States, while fifty-six percent said they were less inclined to do so. Id.
71. Id. at 12. While thirty-six percent thought the United States would remain a dominant force, forty-two percent saw this as only “somewhat likely” and ten percent saw it as unlikely. Id.
entrepreneurial sectors. 72 This highlights the role government policies are playing in shaping the future of innovation—for good, and for bad—and reinforces how important it is for American policymakers to become more proactive in how they approach innovation policy.

- Finally, academic data indicates that new business creation slowed during the financial crisis. Countries with more developed financial markets experienced larger contractions in new firm creation, most likely due to problems accessing capital. 73 On a more positive note, the data also suggest that government policies can effectively promote innovation. Specifically, one study argues that dynamic business creation occurs in countries that provide entrepreneurs with reduced red tape and a stable investment climate. The study further argues that regulatory policies and access to capital are among the handful of factors that most strongly influence the level of new business formation. 74

The above data illustrates two critically important points. First, an economy that can promote a thriving innovation sector can achieve very significant benefits in terms of economic vibrancy, job and GDP growth, international competitiveness, and technological leadership. Two, innovation will occur—the only question is where.

III. A THUMBNAIL SKETCH OF INNOVATION POLICY

There are five ingredients that together create a robust innovation sector. As a result, Congress and the administration should focus on these five areas to create a policy environment that promotes innovation.

The first ingredient is a culture of entrepreneurship. Historically, this has been one of the United States’ core strengths. Americans have the talent, energy, and spirit to think differently, to take risks, and to try even when the odds are daunting. Entrepreneurs and their investors strive for success, but also recognize that the freedom to fail is a necessary pre-condition to real risk taking. Our culture and our legal system accommodate this “freedom to fail.” In

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72. Id. at 16.
73. Klapper & Love, supra note 15, at 2-3, 20-22. While the study focuses specifically on debt (rather than equity), its conclusions about the impact on new business formation of sharp declines in available funding would appear to apply to both forms of capital. Id. at 20-21.
74. Id. Specific regulatory factors included starting costs (official fees and other costs of incorporating a business), number of procedures necessary to incorporate a business, time required to incorporate and start a business, political stability, government effectiveness, regulatory quality, rule of law, control of corruption, and corporate governance. Id. at 10-11.
addition, the United States historically has been characterized by a stable rule of law and a reasonable balance between free market forces and regulation, both of which underpin a culture of entrepreneurship.\footnote{Start-up Outlook 2011, supra note 66, highlights these strengths. More than seventy-five percent of the early stage executives who responded to the survey said that the United States’ focus on innovation is the reason why doing business in this country is so appealing. In all, forty percent or more of the respondents cited eight separate factors that make the United States appealing—including the quality of American employees, the culture, access to capital, work ethic, the quality of higher education, and the business/legal environment. In contrast, among companies considering operations outside the United States, only one factor was cited by forty percent or more of respondents as making non-United States countries appealing: the cost of doing business. Id. at 3.}

In this area, policymakers, like doctors, should abide by the rule, “First, do no harm.” We cannot let a new, risk-averse national mood sap the entrepreneurial, risk-taking culture at the heart of American innovation. We cannot become hostile to true wealth creation—wealth created through innovation, as opposed to wealth created through trading, by exploiting market failures, or through financial engineering. We cannot mire start-ups in a morass of rules and regulations. We cannot introduce so much uncertainty into our regulatory processes that entrepreneurs give up or move abroad before they start. And while we should develop policies that help people cope with a changing world, we should not prevent disruptive innovation from occurring.

The second ingredient for a robust innovation sector is talent. We need bright, educated people who are able to create and develop new ideas. For this, we need to rebuild our education system, focus greater attention on Science, Technology, Engineering, and Mathematics (STEM) education,\footnote{Policymakers and educators use the term “STEM” to refer to the fields of science, technology, engineering and mathematics. Student involvement and performance in the STEM fields is seen as a core underpinning of a robust economy that is globally competitive and capable of technological innovation. See, e.g., Katelyn Sabochik, Changing the Equation in STEM Education, WHITE HOUSE BLOG (Sept. 16, 2010, 6:03 PM), http://www.whitehouse.gov/blog/2010/09/16/changing-equation-stem-education.} and make sure that all Americans have a fair opportunity to become educated and to compete in the workplace. We also need to return to smart immigration policies that will reestablish the United States as the place to come for those who want to innovate and create new technologies, new companies, and new jobs.

The third ingredient for a robust innovation sector is a robust idea pipeline. We need to make sure we are investing in research and development, by enacting long-term, predictable tax policies and by funding government-sponsored research and development. We need to stand by proven models, like DARPA (the Defense Advanced Research Projects Agency), and embrace new models, like ARPA-E (the Advanced Research Projects Agency – Energy). We need to make sure that ideas generated in the lab do not get caught in a “valley of death” by rethinking the way we transform successful scientific research into commercially relevant opportunities. And we need to strengthen our legal system for protecting intellectual property so that it is reliable, predictable, able
A Rose by Any Other Name: How Labels Get in the Way of U.S. Innovation Policy

to keep pace with innovation, and able to appropriately protect property interests without stifling innovation.

The fourth ingredient for a robust innovation sector is adequate, appropriate risk capital. Here, as discussed, above, policymakers face real challenges. Although there is plenty of capital, there is a significant risk that not enough capital will flow into American start-ups. If this occurs, it will change the geography of innovation as investments shift overseas, as well as the nature of American innovation and technological leadership. American innovation may shift to more capital efficient sectors, such as software-as-a-service, and away from more capital intensive or uncertain sectors, such as renewable energy generation, medical devices, and bio-technology.

To promote the flow of capital, we need sound tax policies that give investors and entrepreneurs an incentive to dedicate the better part of a decade to building a company. We need these incentives to be structured in a way that also works for companies before they are profitable. We need to preserve banks’ role in providing capital to start-up companies by ensuring the Volcker Rule appropriately distinguishes venture capital from buyout and hedge funds. We need to adopt policies that promote strong, active American capital markets—such as adopting a streamlined regulatory framework for small, newly-public companies and avoiding new “one size fits all” rules for listed companies. This is a particularly important policy objective because approximately ninety percent of job creation within high growth start-ups occurs after companies go public.

77. NVCA Yearbook 2011, supra note 16, at 8.

78. The Clean Energy Deployment Administration is a proposed federal Administration. If created, it would help promote access to affordable financing to deploy clean energy technologies, the infrastructure needed to enable these new technologies, energy efficiency technologies, and related manufacturing facilities. Both the House and Senate have included CEDA proposals in legislation, but these bills have not been enacted into law. See, e.g., S. 1462, American Clean Energy Leadership Act of 2009 (ACELA), Title I, Subtitle A (111th Cong.); H.R. 2454, American Clean Energy and Security Act, Subtitle J (111th Cong.); Clean Energy Financing Act of 2011 (as passed by S. Energy & Natural Resources Committee). The Export-Import Bank of the United States is the United States' official export credit agency. It finances and insures foreign purchases of United States goods through loan, loan guarantee and insurance programs, creating and sustaining U.S. jobs by promoting the sales of U.S.
innovative companies at the cutting edge of innovation, and not just mature, stable, safe bets. And we need to make sure that the overall innovation sector is attractive by focusing on the other areas discussed in this Part

Finally, we need sound, predictable, competitive markets. In some sectors, this is more or less present. But in others, most notably, energy, there is a profound need to remove existing subsidies, regulations, and other market-distorting forces that tilt the playing field toward incumbents and away from innovative technologies and business models.

IV. INNOVATION POLICY THROUGH THE LENS OF DODD-FRANK

Dodd-Frank was not about innovation policy. That's both a blessing and a curse.

On its face, as its name makes clear, Dodd-Frank was all about Wall Street—specifically, about protecting consumers from the actual and perceived excesses and abuses on Wall Street, in the mortgage markets, and elsewhere that led to the collapse of the financial system. In the following Parts, the Author does not look at the law in this broader sense, and the Author’s comments should not be interpreted as a broad-based criticism of the Bill. Rather, the Author’s focus is on the largely unintended intersection between Dodd-Frank’s reforms and the innovation ecosystem.

A. Dodd-Frank: The “Good Parts”

In a few instances, as the Bill made its way through Congress, members recognized that particular provisions of the Bill could have a direct, negative impact on the innovation sector and responded to prevent these unintended consequences.

Most notably, Dodd-Frank amended the Investment Advisers Act of 1940 to eliminate the “private adviser exemption” from federal registration for most investment advisers with fewer than fifteen clients. At the same time, it added a new exemption from registration for investment advisers solely to venture capital funds. 79

This was an important clarification. Imposing the new registration requirement on venture funds, in the Author’s view, is unnecessary as a policy matter given the nature, risk profile, and existing regulations pertaining to venture investments. Moreover, such an imposition would have been counter-productive because the registration requirement would have been extremely burdensome, requiring even small funds to hire a compliance professional and devote considerable resources to regulatory filings. Congress wisely recognized

these facts and treated venture fund advisors differently under the Statute.\textsuperscript{80}

In a similar vein, Congress used Dodd-Frank to make permanent a policy that to date had somewhat reduced the impact of Sarbanes-Oxley on smaller public companies. Specifically, Dodd-Frank amended Section 404(b) of the Sarbanes-Oxley Act of 2002 to exempt non-accelerated filers (generally, public companies with a non-affiliated market capitalization of under $75 million or that have been registered for less than twelve months) from having their independent registered public accounting firm audit their internal control over financial reporting.\textsuperscript{81} Dodd-Frank also required the SEC to study how it could reduce the burden of this requirement for larger issuers—with a market capitalization between $75 million and $250 million—and to submit the study to Congress within nine months of the bill’s enactment.\textsuperscript{82}

Finally, Congress modified the bill to reduce (but not eliminate) the impact on start-ups. An earlier version of Dodd-Frank included a provision that would have required the SEC to review Regulation D filings. Regulation D exempts certain issuances of unregistered securities by companies to accredited investors—including angel investors, venture capitalists, and private equity funds—from the registration requirements of the Securities Act of 1933.\textsuperscript{83} Had this provision stayed in the bill, it would have made it more difficult for companies to raise capital through Regulation D offerings by subjecting these filings to SEC review.

However, the final version of Dodd-Frank Act retained some changes to Regulation D. The Act amended the definition of an “accredited investor” to exclude the value of an investor’s primary residence, and directed the SEC to review on a regular basis the “accredited investor” definition.\textsuperscript{84} Over time, these new rules likely will reduce the number of investors who qualify as accredited investors. As a result, they will shrink—to an as yet undetermined

\textsuperscript{80} The Securities and Exchange Commission is in the process of adopting final rules implementing this provision. Securities and Exchange Commission, Exemptions for Advisers to Venture Capital Funds, File No. S7-37-10, Release No. IA-3111 (2010), available at http://www.sec.gov/rules/proposed/2010/ia-3111.pdf. While the Commission has devoted a great deal of attention to this issue and has proposed rules that generally capture the distinction between venture capital and private equity funds, there is no “bright line” rule that clearly and cleanly distinguishes venture funds from all other funds in all cases. As a result, some venture funds likely will be required to register. In addition, over time other funds may elect to register in order to preserve their flexibility to make and manage investments without concern about whether activities may cross the regulatory line between funds that must register and funds that are exempt from registration.

\textsuperscript{81} Dodd-Frank Act, supra note 79, Title IX, Subtitle I.

\textsuperscript{82} Id.; see also id. § 989 (directing the Comptroller General to study the Act’s amendments to 404(b) and their impact on the exempt and non-exempt issuers in terms of the number of restatements, the cost of capital, and the confidence of investors in financial statement integrity).

\textsuperscript{83} Regulation D, 17 CFR § 230.501 et seq.

\textsuperscript{84} Dodd-Frank Act, supra note 79, § 4.4.
extent—the pool of capital that start-ups can access through Regulation D offerings.\textsuperscript{85}

**B. Dodd Frank: The “Not-So-Good Parts”**

In the instances noted above, Congress considered and responded to the intersection between the financial services sector and the start-up sector. In most cases, however, this did not occur. As a result, the bill fell somewhere between a missed opportunity and an affirmative negative blow.

Before turning to some specific examples that illustrate this point, the Author wants to note that, in most respects, the Author does not believe Congress meant Dodd-Frank to be an “anti-innovation” piece of legislation. To the contrary, the Author believes Dodd-Frank’s primary impact on the innovation sector is a byproduct of the fast movement of a bill which contained more than 2300 pages of new law, the politically charged environment when it was passed, and the dynamics the Author describes in this Article.\textsuperscript{86} Had issues been teed up as “innovation” issues, the Author believes Congress might have responded differently. But when they were combined into a far reaching bill that was—both optically and, in most cases, substantively—about Wall Street and major financial institutions, the impact on innovation became obscured and anti-innovation policies became law.

In another sense, however, Dodd-Frank was an overtly anti-innovation piece of legislation. Dodd-Frank was designed to remove risk from the system. But risk-taking is a fundamental part of innovation. To the extent policymakers try to shield the United States from downside risk, they will by definition reduce both downside risk and upside opportunity. Although that may be an acceptable tradeoff in some cases, it is a tradeoff with a very real price.

The Author also would like to note that the Author does not believe most of Dodd-Frank’s provisions will have significant, far reaching effects on

\textsuperscript{85} In addition to these specific provisions, in a handful of cases Dodd-Frank either included provisions attempting to protect small businesses, or directed the implementing agencies to consider the impact of various provisions on small businesses. See, e.g., id. Title IV (creating an exemption from registration for certain advisors to small business investment companies ), § 619 (allowing investments in small business investment companies ), Title VII (directing the federal banking agencies to take into account the potential impact on small business lending in setting effective dates for the swap push-out rule), § 1421 (directing the Comptroller General to study the effect of the Act on the availability and affordability of credit for small businesses).

innovation policy. (The one exception is the Volcker Rule. As discussed below, if not carefully implemented, this provision could meaningfully decrease the amount of capital flowing to startups.) The bill is, however, an excellent example of the Author's basic point about how innovation is viewed by policymakers. Policymakers are significantly more likely to adopt innovation policies within other policy agendas (or trap innovation policies within those agendas) than they are to focus on innovation as a critical national priority.

i. The Volcker Rule

Section 619 of Dodd-Frank, generally referred to as the "Volcker Rule," was designed to get banking entities out of activities that were seen as highly risky. The Volcker Rule prohibited banks from engaging in proprietary trading and investing in or sponsoring hedge funds and private equity funds, other than as specifically set forth in the Statute.87

The legislative history clearly shows that Congress did not intend for the Volcker Rule to artificially restrict the flow of capital to venture capital funds and start-up companies. As Chairman Dodd and Senator Boxer stated in a colloquy:

Mrs. BOXER: Mr. President, I wish to ask my good friend, the Senator from Connecticut and the chairman of the Banking Committee, to engage in a brief discussion relating to the final Volcker rule and the role of venture capital in creating jobs and growing companies.

I strongly support the Dodd-Frank Wall Street Reform and Consumer Protection Act, including a strong and effective Volcker rule, which is found in Section 619 of the legislation.

I know the chairman recognizes, as we all do, the crucial and unique role that venture capital plays in spurring innovation, creating jobs and growing companies. I also know the authors of this bill do not intend the Volcker rule to cut off sources of capital for America's technology start-ups, particularly in this difficult economy. Section 619 explicitly exempts small business investment companies from the rule, and because these companies often provide venture capital investment, I believe the intent of the rule is not to harm venture capital investment.

Is my understanding correct?

Mr. DODD: Mr. President, I thank my friend, the Senator from California, for her support and for all the work we have done together on this important issue. Her understanding is correct. The purpose of the Volcker Rule is to eliminate excessive risk taking activities by banks and their affiliates while at the same time preserving safe, sound investment activities that serve the public interest. It prohibits proprietary trading and limits bank investment in hedge funds and private equity funds for that reason. But properly conducted venture capital investment will not cause the harms at which the Volcker Rule is directed. In the event that properly

conducted venture capital investment is excessively restricted by the provisions of section 619, I would expect the appropriate Federal regulators to exempt it using their authority under section 619(d)(1)(J). 88

However, Congress failed to explicitly distinguish venture funds from private equity/buyout and hedge funds in the statute. The Bill included a general definition of hedge funds and private equity funds, which focused on the legal structure of these funds, 89 and gave the regulatory agencies discretion to refine this definition and to differentiate private equity and hedge funds from other types of funds. In addition, the Bill allowed the regulatory agencies to permit banking entities to sponsor and invest in funds where those activities would promote and protect the safety and soundness of banking entities and the financial stability of the United States. 90 Through these provisions, Congress allowed and even encouraged the regulatory agencies to treat venture capital funds differently from hedge funds and private equity and buyout funds under Dodd-Frank’s Volcker Rule. But the Bill did not require this outcome.

In comments before the Financial Stability Oversight Council, SVB, several members of Congress, venture capital investors, start-up CEOs, and others discussed the important differences between venture capital and private equity and hedge funds, and urged the Council not to sweep venture funds under the

88. 156 Cong. Rec. S5904-S5905 (July 15, 2010) (emphasis added); see also 156 Cong. Rec. E1295 (daily ed. July 13, 2010) (statement of Rep. Eshoo) (“The purpose of the Volcker Rule is to eliminate risk-taking activities by banks and their affiliates while at the same time preserving safe, sound investment activities that serve the public interest . . . . Venture capital funds do not pose the same risk to the health of the financial system [as private equity and hedge funds]. They promote the public interest by funding growing companies critical to spurring innovation, job creation, and economic competitiveness. The funds typically invest primarily or exclusively in private companies and are significantly smaller. I expect the regulators to use the broad authority in the Volcker Rule wisely and clarify that funds that invest in technology start-up companies, such as venture capital funds, are not captured under the Volcker Rule and fall outside the definition of "private equity funds. This clarification will ensure the Dodd-Frank . . . . Act does not stop venture capital from providing a critical source of capital for start-up technology companies.”); 156 Cong. Rec. S6242 (daily ed. July 26, 2010), available at http://www.gpo.gov/fdsys/pkg/CREC-2010-07-26/pdf/CREC-2010-07-26.pdf (statement of Sen. Brown) (“One other area of remaining uncertainty that has been left to the regulators is the treatment of bank investments in venture capital funds. Regulators should carefully consider whether banks that focus overwhelmingly on lending to and investing in start-up technology companies should be captured by one-size-fits-all restrictions under the Volcker rule. I believe they should not be. Venture capital investments help entrepreneurs get the financing they need to create new jobs. Unfairly restricting this type of capital formation is the last thing we should be doing in this economy.”); Letter from Rep. Spencer Bachus to Members of the Financial Services Oversight Council (Nov. 3, 2010) at 8, available at http://media.ft.com/cms/d983cfa6-e793-11df-8ade-00144f49a8a0.pdf (urging the FSOC and implementing Regulatory Agencies to avoid interpreting the Volcker Rule in an expansive, rigid way that would damage American competitiveness and job creation); Letter from Senator Mark R. Warner to Secretary Timothy Geithner and Members of the Financial Stability Oversight Council (January 5, 2011) (on file with author) (stressing that venture capital is not systemically risky and provides powerful benefits to the American economy, and urging regulators to use their discretion under the statute to ensure the Volcker Rule does not constrain the flow of venture capital to start-ups); Letter from Representative Gwen Moore to Secretary Geithner and Members of the Financial Stability Oversight Council (January 17, 2011) (on file with author) (urging the FSOC to ensure the Volcker Rule does not adversely affect venture capital funds ).

89. Dodd-Frank Act, supra note 79, § 619(h)(2).

A Rose by Any Other Name: How Labels Get in the Way of U.S. Innovation Policy

Volcker Rule.

In January 2011, the Financial Stability Oversight Council issued its Report and Recommendations on the Volcker Rule. The Council noted that "a number of commenters suggested that venture capital funds should be excluded from the Volcker Rule’s definition of hedge funds and private equity funds because the nature of venture capital funds is fundamentally different from such other funds and because they promote innovation." It stated its belief "that the issue raised by commenters in this respect is significant" and recommended that the regulatory agencies charged with implementing the Volcker Rule carefully evaluate the range of funds and other legal vehicles that fall within Volcker’s definition of private equity and hedge funds, and consider whether it is appropriate to narrow the statutory definition by rule in some cases.91

We remain hopeful that the regulatory agencies will act on the Council’s recommendation and adopt a workable set of final rules. In the meantime, however, this issue hangs over the innovation sector. In the almost one year since Dodd-Frank has been enacted, banks have had to adjust their activity in light of this continued uncertainty, and, at the time of writing, we are still at least several months away from any resolution.

Banks are an important source of capital for start-ups. Banks account for at least seven percent of the total capital invested in venture capital funds, and are the sixth largest investor class in the sector.92 To extrapolate from the data cited above on the 1:100 relationship between venture investing and United States GDP from venture-backed companies, assuming banks account for approximately $2 billion in annual venture investing (seven percent of roughly $30 billion), removing bank capital from the investment cycle could have a long-term negative effect on United States GDP of roughly $200 billion annually.93

Removing bank capital from the venture sector would exacerbate other trends in the venture sector and amplify existing challenges in ensuring adequate capital flows to start-ups. As discussed above, over the last several years the total amount raised by venture capital funds has declined


92. Preqin Special Report, supra note 67, at 9. We note that the seven-percent figure almost surely underestimate the amount of capital provided by entities subject to the Volcker Rule. The seven percent figure is taken from a study that distinguishes banks from other investors, such as insurers and asset managers. Many insurers and asset managers are likely to be treated as banking entities for purposes of the Volcker Rule since they are often affiliated with insured depository institutions.

93. See supra note 19.
significantly. In addition, because banks that invest in venture funds often manage funds on behalf of third parties, if they exit these investments additional capital will also likely stop flowing.

The Volcker Rule’s overhang comes at a time that start-ups are moving into capital intensive sectors, particularly clean energy and other clean technologies. Energy innovation takes enormous amounts of capital to develop entirely new ways of creating energy, in the case of bio-fuels; to build new manufacturing facilities, in the case of solar energy and electric vehicles; to build new infrastructure, in the case of smart grid and electric transportation systems; or to deploy alternative energy systems, in the case of wind, solar and storage. For the United States, it is critical that entrepreneurs get the capital they need. Alternative energy development and deployment is a national priority because it impacts national security, global competitiveness, economic growth and, in the view of many (myself included), climate change. Temporarily or permanently eliminating or restricting the source of nearly one-tenth of the capital needed to sustain and nurture clean energy companies thus flies in the face of sound innovation policy.

**ii. Corporate Governance “Reform”**

Dodd-Frank’s second most notable impact on high growth start-ups is in the area of corporate governance. In the name of reform Dodd-Frank adopted a host of provisions that will make it more complex to be a public company, and will make it more difficult to become a public company. As a result, the Act likely will exacerbate the trends in the Article discussed above, making it harder for companies to access public markets to obtain growth capital, increasing the probability that start-ups will “exit” through an M&A transaction rather than through an IPO, and increasing the size companies need to reach to go public. In addition, some of its provisions may actually increase risk to newly-public companies and their shareholders, as discussed below.94

As a broad overview, Dodd-Frank changed existing requirements for public companies of all sizes in at least nine different areas:

- **Proxy access** – Dodd-Frank gave the SEC authority to prescribe regulations that will require public companies to include shareholder director nominees in their proxy statements.

- **Independent Chairman** – Dodd-Frank required the SEC to adopt rules requiring public issuers to explain in their proxy statements why they have (or have not) separated the roles of chairman and chief executive officer.

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94. In some cases Dodd-Frank left open the possibility for somewhat different rules for smaller issuers. If the SEC and other regulators act on this authority, they may mitigate the negative effects of the new law.
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- **Say on Pay** — Dodd-Frank required that, at least once every three years, shareholders must have the opportunity to vote on a non-binding basis to approve the compensation provided to the top executive officers. In addition, shareholders must have the chance to vote at least once every six years on how often the company must hold the “say on pay” vote.

- **Golden Parachutes** — Dodd-Frank required companies seeking shareholder approval for an acquisition, merger, or certain other similar transactions to disclose so-called golden parachute payments and give shareholders the right to vote, albeit on a non-binding basis, on payments to be made to top executive officers. Companies were also required to disclose other agreements and understandings with top executive officers for transaction-related compensation.

- **Compensation Committee Independence** — Dodd-Frank required the SEC to issue rules that will require listed companies to have only independent directors on their compensation committees. In addition, Dodd-Frank added a number of independence-related factors compensation committees will have to consider before they select any consultant, legal counsel, or other advisor. Further, Dodd-Frank required companies to include disclosures in their proxies about consultants and their independence.

- **New Executive Compensation Disclosures** — Dodd-Frank adopted several new executive compensation disclosure requirements. The Act required disclosure in a company’s proxy statement the relationship between the executive compensation actually paid and the company’s financial performance, as well as the ratio of the annual total compensation paid to the chief executive officer and the median of the annual total compensation paid to all other employees. Unless Congress or the SEC adjusts the requirements, in order to calculate the second disclosure companies will have to perform a full SEC compensation calculation, for all forms of compensation, for all employees.

- **Clawbacks** — Dodd-Frank required the SEC to issue rules that will require listed companies to adopt and disclose so-called clawback policies. Companies will have to disclose their policy on incentive-based compensation and on how and when, in the event of an accounting restatement, they will recover from current and former executives incentive-based compensation, including stock options,
which were awarded during the prior three-year period. Dodd-Frank broadened the earlier Sarbanes-Oxley clawback rules, which only applied to the CEO and CFO and only required recovery if the restatement was the result of misconduct.

- **Hedging Disclosures** – Dodd-Frank directed the SEC to require companies to disclose in their proxies whether any employee or any board member may purchase financial instruments to hedge against or offset the risk of a decline in the value of company stock owned by the individual.

- **Broker Discretionary Voting** – Dodd-Frank banned broker discretionary voting on director elections, executive compensation proposals, and other significant matters as determined by the SEC.  

How will these changes affect smaller, newly public companies, and companies looking to go public?

First, these new requirements will increase, yet again, the cost and complexity of being a public company. For example, companies with a larger employee base, which rely more heavily on part time, seasonal or temporary workers, or which have more complicated pay vehicles may have to spend meaningful amounts of time and energy calculating the ratio of CEO pay to the pay of all other employees. Companies will have to devote more legal fees, internal management time, and board time to draft and review the many new disclosures and develop clawback, hedging, and other policies.

Individually, these requirements may have certain logic. But the cumulative effect of the new regulations—on top of very extensive existing regulations—will materially impact when and whether companies can turn to public markets to access growth capital. As one commentator said in a somewhat different context, we face a “crisis of creeping complexity” as regulatory requirements steadily accumulate over the years until eventually they break the proverbial camel’s back.

Perhaps more importantly, these requirements will require time and focus from management and boards at a time when execution is vitally important to both the company and to its new shareholders. Newly public companies are at a pivotal point in their evolution. Rather than letting these companies focus on their businesses, the new law will force companies to focus on SEC rulemakings and compliance with a wider, more complex array of disclosure rules and regulatory requirements.

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95. Dodd-Frank Act, supra note 79, Title IX.

Finally, and most importantly, the independence provisions could force smaller, newly public companies to move more quickly than they otherwise would—and should—to add new board members. This requirement could slow down a company’s ability to navigate and respond to its environment and interfere with internal board dynamics, and will dictate the roles that pre-public non-independent board members can play in the company’s governance, whether or not those roles reflect the best governance structure for the company.

iii. The Durbin Amendment

One of Dodd-Frank’s most contentious provisions was the so-called Durbin Amendment, which requires the Federal Reserve to begin regulating the rates for debit cards. Specifically, it instructs the Federal Reserve to issue regulations governing the interchange transaction fees that an issuer may receive or charge for debit card transactions at levels that are “reasonable and proportional” to the cost incurred by the issuer for the transaction. While the Federal Reserve may consider fraud prevention costs, it is not authorized to consider all costs incurred by an issuer in setting debit card fees.

If this provision goes forward without modification and is applied to both consumer and business debit card programs, it may dramatically change the payments system in the United States in a way that is not helpful to start-ups. Debit cards provide users with a more efficient and convenient way to make payments. Among many benefits, debit card transactions are fast, paperless, do not require a cumbersome back-end clearing process, and generally guarantee payment upon authorization. As a result, they are very attractive to businesses, especially smaller businesses that lack sophisticated payments departments.

Yet the Durbin Amendment throws the future of debit cards into question. At a minimum, many banks predict that absent a regulatory or statutory change banks will increase fees or eliminate rewards programs for debit card customers. Some predict that the Durbin amendment could have broader effects, causing banks to reduce the scale, flexibility, or availability of their

97. Dodd-Frank Act, supra note 79, Title X, § 1075.
98. Id.
99. The Durbin Amendment amended the Electronic Fund Transfer Act (“EFTA”), 15 U.S.C. § 1601. Because EFTA is a consumer protection law, and because the Durbin Amendment was in the consumer title of Dodd-Frank, it appears that it should apply solely to consumer debit transactions. It is too early to tell, however, whether the law will be applied in this manner and, if it is, whether as a practical matter the markets will create different payment structures for consumer and business transactions.
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debit card offerings. And most believe that the Durbin amendment will stifle product innovation in the banking sector by introducing a significant, new regulatory risk on bank products.100

More broadly, rate regulation for debit cards could shift the competitive landscape across banks, giving larger banks a competitive advantage against smaller banks due to economies of scale.

iv. The Consumer Financial Protection Bureau

If the Durbin Amendment is Dodd-Frank’s most contentious provision, the Consumer Financial Protection Bureau is its most significant and uncertain long-term change to the American regulatory landscape.

One can make a very strong case that inadequate regulation—in particular, conduct that occurred within the essentially unregulated mortgage origination industry—was one of the primary causes of the financial downturn. In that sense, some types of increased regulation and increased consumer protections are sound policy developments.

But it is very difficult to tell whether the Consumer Bureau will be an effective vehicle for making those changes. It has a broad mandate and an organizational and funding structure that will make it highly independent from congressional oversight.101 If, in the name of protecting consumers, the Bureau migrates into commercial banking issues affecting small businesses, if it adopts duplicative or contradictory regulatory requirements from its peer agencies charged with protecting bank safety and soundness, or if it employs rigid requirements and rules, it could have a counter-productive effect on the cost and availability of financial services for high growth businesses.

100. While a majority of the Senate recognized the potentially serious problems created by the Durbin amendment and voted to defer its effective date in order to study its potential effects, proponents of the “stop and study” proposal failed to get the sixty votes needed under Senate rules to pass the legislation. As a result, it now appears the Durbin amendment will go into effect as set forth in the statute. See, e.g., Joe Adler, Durbin Defeats Tester Effort to Delay Fee Cap, AM. BANKER, June 9, 2011, http://www.americanbanker.com/issues/76110/durbin-tester-interchange-1038616-I.html.

101. Title X of the Dodd-Frank Act gives the Consumer Bureau broad authority to regulate consumer financial products provided by banks and non-bank financial institutions, including credit cards, mortgages, student loans, and payday loans, as well as a number of activities beyond pure financial services. Dodd-Frank Act, supra note 79, Title X, Section B. In addition, it has the authority to prevent “unfair, deceptive or abusive acts or practices” in the consumer financial products market. Id., Title X, Section C. Its structure will give it wide latitude and significant autonomy. While the Bureau is established within the Federal Reserve System, it will be treated as an independent bureau and will have the status of an executive agency. The Director of the Bureau will be appointed to a five year term by the President, subject to confirmation by the Senate, and can only be removed by the President for cause. The Bureau will be funded by transfers from the combined earnings of the Federal Reserve System, and its funding is not subject to Congressional Review. While the Bureau will exist within the Federal Reserve, the Federal Reserve may not intervene in a proceeding before the Bureau, take action with regard to Bureau personnel, or merge or consolidate the Bureau, and the Bureau’s rules and orders are not subject to review or approval by the Federal Reserve.
v. Broader Financial Services Reform

While we are still in the relatively early days of Dodd-Frank’s implementation, it is virtually certain that the legislation and other regulatory trends will increase banks’ regulatory and compliance costs, decrease their revenues, increase the amount of regulatory capital they must hold, and, at least for the foreseeable future, significantly increase regulatory risk and uncertainty. In all four ways, the Dodd-Frank Act will tend to reduce the sector’s profitability and attractiveness to investors.

In addition, it is unclear what effect the repeal of Regulation Q will have on banks’ deposit gathering, their cost of funds, and the resulting availability and cost of credit.

These factors will play out only over time, but could have the long term effect of reducing the amount of credit available to start-ups, increasing the cost of credit, or reducing the number of institutions willing and able to lend to this sector. As the Chairman and CEO of SpiritBank said in recent testimony before the House Subcommittee on Financial Institutions and Consumer Credit, “regulatory costs and second-guessing by bank examiners... combined with hundreds of new regulations expected from the Dodd-Frank Act... are slowly but surely strangling traditional banks, handicapping their ability to meet the credit needs of their communities.”

V. The Opportunity

Despite all this Article has discussed, there is reason for optimism.

Entrepreneurs continue to believe the United States has enormous, powerful strength as an innovation leader. In SVB’s 2011 Start-up Outlook survey of 375 executives from high-technology start-ups, for example, only three percent of the respondents said they would recommend their peers look outside the United States to establish a company. Start-up executives painted a compelling picture of what makes the United States attractive. More than 75% of the surveyed executives said the United States’ focus on innovation makes doing business here appealing. 63% pointed to the U.S. economy, stating that the United States is attractive because it keeps their companies close to customers and their supply chain. Between 45% and 62% noted four more factors


103. Start-up Outlook 2011, supra note 66, at 22.
associated with people and culture: the quality of American employees, our culture, our work ethic, and the quality of our higher education. And between 42% and 54% pointed to aspects associated with the United States' business and entrepreneurial environment, including access to capital and the American business and legal environment. These are powerful strengths because they are hard to replicate.¹⁰⁴

In all, 45% or more of respondents pointed to eight separate reasons why the United States is appealing to start-up businesses. In contrast, respondents considering overseas locations cited only one reason why moving abroad is appealing: the cost of doing business.¹⁰⁵

The secret, then, is to unleash American entrepreneurs' energy by adopting policies that are proactive, comprehensive, and forward looking. In many cases, it is a question of doing a better job of getting out of the way. In a few, it is a question of adopting affirmative policies that strengthen our business and legal environment, our talent pool, and our pipeline of ideas, eliminate impediments to the smooth flow of capital, and create sound, predictable, competitive markets.

The Author believes there are five key elements we need to implement:

One, the technology sector and policymakers need to come together to make the case for entrepreneurship and innovation. Those who understand the broad-reaching impact the innovation sector has on all Americans must help others understand why preserving and promoting innovation must be a national priority. And we must work together to ensure that a pro-innovation agenda will, in fact, benefit the country as a whole.

Two, we must create a sense of urgency. As discussed above, our policies are driving innovation abroad and stymieing those who want to build companies here. In a somewhat shocking finding, Silicon Valley Bank's 2011 Start-up Outlook survey found that the American regulatory and political environment is the third greatest challenge for start-ups in general, and the single greatest challenge for life sciences start-ups.¹⁰⁶ If start-ups are more worried about regulations than about core business issues (competition, hiring talented employees, solving scientific and engineering challenges, etc.), we are doing something wrong.

Three, policymakers must take a long term view and create an environment that is conducive to long-term innovation. The innovation sector can live with a wide range of outcomes, but it cannot thrive in an environment characterized

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¹⁰⁵. *Id.* at 23-24.

¹⁰⁶. *Id.* at 16-19.
by uncertainty.

Four, business and political leaders need to help us move beyond fear. The events of the last few years have understandably left Americans yearning for certainty and uncomfortable with risk. But there is a critical difference between eliminating unfair and inappropriate risk taking and eliminating risk. Our political leaders need to be very careful to recognize and act on this distinction. We need to restore a regulatory, political, and business environment that embraces the right kinds of risk, uncertainty, and disruptive change. Risk taking lets the phoenix rise from the ashes. It lies at the core of our past success as an innovation leader and the heart of the concerns start-up executives cited about the future.107

Finally, members of Congress and the Administration need to find better ways to consider and act on pro-innovation policies across structural and bureaucratic lines. This is a significant challenge and will require real, institutional leadership on a bi-partisan basis.

Acting on these recommendations will not be easy. But with leadership, we can unleash another wave of growth and technological innovation. We can fuel for another generation the kind of transformative change from which we have benefitted for the last thirty years. And that would be a very worthwhile accomplishment.

107. Id. at 18-19, 23 (almost eight in ten start-up executives say the United States’ entrepreneurial mindset makes the United States an attractive place to start a business, but more than three in ten overall—and about one in two in the life sciences and cleantech sectors—say the overall regulatory environment discourages risk taking and is a major challenge to their future growth).