

U.S. Senate Committee on Small Business

Forum

On

Encouraging and Expanding Entrepreneurship: Examining the Federal Role

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Testimony

By

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Note: The views expressed are those of the author and do not necessarily reflect the views of the Office of Advocacy, the U.S. Small Business Administration or the Administration.

Thank you, Chairman Bond and Ranking Member Kerry, and members of the Committee, for convening this important forum and for inviting me to participate. I am pleased to provide the views of a Silicon Valley entrepreneur and venture capitalist who has had the privilege of working in the Office of Advocacy these past six years on many

of our national technology and entrepreneurship issues. It has been a pleasure to work with your committee and your very able staff to address legislation to improve the climate for high-tech entrepreneurs.

I was asked to provide some comments today on programs in the U.S. that have worked well, those that had problematic elements, and the differences between the U.S. and foreign entrepreneurship climates. The major basis for my conclusions was the fortunate experience of growing up professionally in the early years of Silicon Valley. I graduated from Stanford with a BSEE (Bachelor of Science, Electrical Engineering) in 1958. I was exposed to the unique permeability of the Stanford/industry climate as an undergraduate when we were expected to address real-world local industry problems as part of our class work. The best students were invited to work on Hewlett-Packard assignments; the rest of the class had to work on more mundane tasks.

After graduation, I worked in two local Silicon Valley companies before starting my company in 1968. All during my professional life in the Valley, my Stanford professors were working with us to help us solve particularly difficult technical challenges. It wasn't until I sold my company successfully in 1978 and moved to San Diego that I really understood my extreme good fortune of having been part of the Silicon Valley experiment. There is not a shred of doubt in my mind that I could not have started my company and successfully grown it anywhere else in the United States; and certainly not anywhere else in the world. Silicon Valley was, and still is, the best environment for mentoring entrepreneurs, networking them with investors and service providers, and providing an infrastructure for building companies. In my opinion, that is why the National Venture Capital Association annual reports continue to show that Silicon Valley receives almost one-third of all VC investments in the United States—31 percent in 2000. The dollars flow where the probability of success is high. I do not for a minute believe that 31 percent of the technical talent of the U.S. resides in Silicon Valley. I grew up there and know my peers—they are no brighter than entrepreneurs in the rest of the country, or the world—they just have a uniquely supportive climate.

What do I believe we can learn from Silicon Valley as you address the Federal Role for Encouraging and Expanding Entrepreneurship? First, the Federal Government did play a role a long time ago to help nurture some of the success of the Valley. The Cold War brought funding to Stanford (and Stanford Research Institute) in the 1950s and 1960s that resulted in many technically challenging classified projects that utilized the best of our professors, graduate students and even some under-grads. These academics worked closely with the local industry and the Federal intelligence communities to bring the best possible products to our defense forces as quickly as possible. The environment in the Valley was identical to that of the MIT-Radiation Laboratories of World War II, according to those older leaders who experienced both. Thus, the Boston Route-128 phenomenon and the Silicon Valley experience both have a genesis in the Federal R&D funding channeled through the universities.

However, similar funding was provided to other universities in the U.S. (and around the world), and Route-128 and Silicon Valley environments weren't created there. From my

personal experience, as well as studying the analyses of good researchers, my conclusion is that the unique environments created in these two sites were the result of university leaders who encouraged the close linkages between their faculty and the local industries—mostly small businesses at that time.<sup>1</sup>

There is something equally important to the Silicon Valley experiment to discuss with you today—the absence of any Federal policies focused on this region. From my personal knowledge of Silicon Valley in the early days, the industry leaders (Bill Hewlett and Dave Packard, especially) felt that the region had to “bootstrap” our own climate to support us since Washington didn’t know we existed (except for the intelligence community). That is why they started the Western Electronic Manufacturer’s Association (WEMA) in Palo Alto, California, which later transitioned into the American Electronics Association (AEA). Our venture capital climate started with successful entrepreneurs who disliked retirement. Our local California-headquartered banks (Bank of America, Crocker, and Wells Fargo) provided other wealthy investors. The 3000 Sand Hill Road phenomenon grew up because local investors preferred to invest in local entrepreneurs, and initially, the Eastern VCs didn’t believe in the western upstart companies.

A more recent example of the creation of a very robust high-tech environment is the San Diego, California, experience of the past ten years. The Office of Advocacy sponsored a research project to document the role of the University of California, San Diego, in the development of high-tech clusters. This report, entitled *Developing High-Technology Communities: San Diego*, April 2000, is available from the Office of Advocacy.<sup>2</sup> It demonstrates clearly that the key ingredient for bringing success to this region was the leadership of a visionary—Chancellor Richard C. Atkinson, now President of the U.C. System. It was also a bootstrap experience, now reaping the harvest of large Federal R&D funding and venture capital investments. This report has been well received by other regions in the U.S. and other countries that are interested in what local efforts can accomplish. It is a remarkable story and I encourage review by your committee and staffs.

There always has been a robust U.S. entrepreneurial climate for technology companies from the earliest days of our nation. We’ve always had the strongest patent laws in the world to protect the inventor during the early concept to commercialization phase. Those advocates who wish to make our patent law harmonize with those of other countries run into violent objections from the experienced inventors who truly understand these issues.<sup>3</sup>

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<sup>1</sup> More information on this topic and the role of Dr. Frederick Emmons Terman of Stanford as the “Father of Silicon Valley” is provided in a white paper by the author entitled *A New View of Government, University and Industry Partnerships*, 2000, Office of Advocacy.

<sup>2</sup> See <http://www.sba.gov/advo/research/rs198tot.pdf>

<sup>3</sup> More information on this topic can be obtained from the testimony provided by the author before the Subcommittee on Energy and Environment of the House Committee on Science on May 2, 1996. See <http://www.sba.gov/advo/laws/testimony/0596test.html>.

We also have relatively lenient bankruptcy laws compared to those of most other nations. In the U.S. the failure of an entrepreneur is primarily acknowledged as a tough learning experience—both to the entrepreneur and the investors. In many other countries, this same experience is viewed as an indelible mark that forever identifies the entrepreneur as a failure. In some cultures, it can provide a permanent blemish on the family name. In most countries the personal impact of failure can result in financial ruin for the entrepreneur for the rest of his/her career. And, according to a respected Japanese academic studying the differences between the U.S. and Japanese entrepreneurial climates, failure in that country is so devastating to the entrepreneur that the only solution to many of them is a very large life insurance policy.

During my career in Silicon Valley I've had the pleasure of hosting a number of delegations from the Parliaments and Ministries from England, Sweden and Japan who wished to learn how our unique climate was created. Without exception, their focus was on the risk of entrepreneurship—not on the reward. The penalties for failure were so devastating in their countries that they could not envision why an entrepreneur would risk starting a company.

A new experience gained during my tenure at the Office of Advocacy was the difficulty many good entrepreneurial start-ups have in obtaining equity capital—if they are not in Silicon Valley. This issue was first brought to our attention by the delegates to the 1995 White House Conference for Small Businesses.<sup>4</sup> The success of the VC industry has brought in so much capital that the average fund is now over \$150 million. With that size of fund, the VCs can't make small investments. And, the securities rules for private, individual accredited investors (angels) were so onerous that it was difficult for entrepreneurs to find angels without violating securities laws in most states. The Office of Advocacy implemented the ACE-Net program to streamline this process.<sup>5</sup> We are pleased to report that 40 states have adopted streamlined procedures using the ACE-Net system to simplify entrepreneur and angel interaction on both an intrastate and interstate basis. We applaud the accomplishments of Congress in streamlining some important securities laws as a part of the National Securities Markets Improvement Act of 1996.

Access to equity capital is a particularly difficult problem for women and minority entrepreneurs. While the data is limited, we have determined that less than three percent of venture capital goes to women-owned businesses. At the angel investment level, there are very few women angel groups in the U.S. Yet, women and minorities are starting more companies than white males. We don't have many answers to the dilemma, but we are working to support more local mentoring groups and women- and minority angel and venture capital groups through the ACE-Net network.

Many state programs have been developed to improve the access to local venture capital. Many of them are associated with ACE-Net and provide mentoring and guidance for

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<sup>4</sup> See *The Process and Analysis Behind ACE-Net*, published by the Office of Advocacy at <https://ace-net.sr.unh.edu/pub/wel/sba-rpt.htm>

<sup>5</sup> See <http://www.ace-net.org>

small companies interested in learning how to access equity capital. A good list of the best programs in the U.S. is on the ACE-Net web site at:

<https://ace-net.sr.unh.edu/pub/car1.htm?TYPE=wel>

Another organization working successfully in this area is the National Association of Seed and Venture Funds at <http://www.nasvf.org>

I also wish to applaud the recent re-authorization of the SBIR (Small Business Innovation Research) program by Congress last year. This is arguably the most successful Federal R&D program—in the world! It is helping to bring small businesses talents to address our national research needs, and is also providing very high-risk capital to fund leading edge research. The Federal and State Technology Partnership (FAST) and Mentoring programs included in your SBIR re-authorization bill last year will provide improved linkages at the local level to support entrepreneurship and commercialization.

The Board on Science, Technology, and Economic Policy, of the National Research Council, Washington, DC, issued their report “SBIR—An Assessment of the Department of Defense Fast Track Initiative” on November 17, 2000. It may be obtained from the National Academy Press, Washington, DC (1-800-624-6242) and is listed as ISBN Number 0-309-06929-7. The report lists the following key findings of the SBIR program:

- It is contributing to the DoD overall research and development goals.
- It provides a powerful demonstration effect for other researchers.
- It provides lasting knowledge generation.
- It generates a positive social rate of return (84 percent for SBIR research projects, versus 25 percent for non-SBIR research projects).

The STTR (Small Business Technology Transfer) program is before you this year and we support re-authorization of this program. We would be pleased to work with you to determine if there are methodologies to improve and streamline the linkages between the universities and small businesses on this program. We’ve seen some very productive standardized licensing agreements between the private sector and the universities that we believe might form the basis for a streamlined STTR procedure.

From the Silicon Valley, Route-128 and San Diego experiences that I’m presenting today I draw your attention to the following issues that I believe are important to the process:

- **First—do no harm!** Much of the entrepreneurial success in Silicon Valley and Route-128 was due to the absence of governmental controls and oversight. As we consider policy changes we request that a serious look be conducted of the unintended consequences of good intentions. A case in point was some recent discussion on how to reduce small-cap fraud that was originating in New York state. One idea was to raise the net worth limit for accredited investor from \$1 million to \$3 million, under the view that this would limit the investor pool to more sophisticated individuals. However, this would have drastically reduced the number of angel investors in all states that could be reached by budding entrepreneurs. Luckily, wiser

heads prevailed and because the real issue was problematic securities laws in New York, the decision was to limit securities sales from New York companies to New York residents.

- **Improve university and small business commercial linkages.** Federal R&D funding to universities usually doesn't result in automatic linkages to industry—Silicon Valley, Route-128 and San Diego are not the norm, they are unique and are the result of strong academic leaders. Public policy that encourages these linkages, particularly to small businesses, results in robust local entrepreneurial climates, high commercialization rates of federal R&D, and high taxpayer payback.
- **Continue to encourage small business participation in Federal R&D programs.** The SBIR and STTR programs are highly successful and have the highest commercialization rate of all Federal R&D program. Encouraging other Federal R&D programs to include small businesses will pay high dividends to our taxpayers.
- **Entrepreneurial failure is to be expected.** Venture capitalists know this full well and it is the burden they bear to be able to participate in the rewards of the successful companies. The experienced VCs will tell you that they are very happy if two out of ten investments are winners. If three out of ten are winners the VCs have no trouble attracting significantly larger rounds for their next fund.
- **Our bankruptcy laws should not be changed significantly.** We don't want to cause strong barriers to entrepreneurship. Investors from Europe, the Middle East, and Asia, send their venture capital funds to U.S. VC firms to invest in our entrepreneurs. They don't spend significant portions of their VC investments in their own countries with strict bankruptcy laws.
- **Our patent laws should continue to protect the small inventor during the crucial early stages of commercialization.** Attempts to liberalize our early disclosure constraints on patent applications should be discouraged.
- **Securities regulations should permit improved entrepreneur and angel access.** Local angel (accredited) investors are absolutely vital to the process of creating high-tech start-ups. Balancing the needs for investor protection and capital formation are important. The seasoned angels are careful to understand that these are high-risk investments and limit their investments in these companies to a small percentage of their portfolio.

I'd like to add some support for your interest in the topic of today's forum. The Office of Advocacy is charged with gathering the economic research on the small business sector of our economy. A recent focus has been on the impact of technology on job creation and improved productivity of traditional industries. Attached is a copy of an internal working paper to address some of the issues facing us in the regulatory process for the New Economy. We would be pleased to discuss any of these items in more detail at your convenience.

Thank you very much for your invitation to participate in this forum. I would be pleased to answer any questions.

## THE NEW ECONOMY

### An Office of Advocacy Working Paper<sup>6</sup>

#### The Emergence of The New Economy as The Dominant Sector of the U.S. GDP

The decade of the 1990s has seen the rapid growth of the high-technology sector on all fronts:

- Internet—dot com companies from B2C to B2B to portals to personal home pages
- Wireless telecommunications—with digital clarity, Internet and global links
- Personal computers—with scanners, camera, color printers and wireless links
- Shrink-wrap software—from office suites to games to specialized business tools
- Installed computers—from servers to networked business systems to supercomputers
- Embedded microprocessors and computers—from automobiles to home appliances to PDAs with wireless capability to intelligent factory robots
- Satellite communication—from TV dishes to global instant telecommunications
- Biotech—from genetic mapping to new life-saving products
- Medical devices—from non-invasive diabetes monitors to life-saving implants
- Materials—from “smart skins” for aircraft to improved fire-proof home insulation
- Environmental—from improved emission control systems to “brownfield” mitigation bacteria.
- Energy—from biomass co-generation plants to automated windmill generators to smarter, energy-efficient appliances
- Entertainment—from personal and networked computer/Internet games to CD-ROMs to DVDs to 3-D vision systems to streaming video Internet programs to 400 channels of TV to digital video cameras and editing systems for consumers.

As impressive as these new technologies are to the users, to the economists they provide a major shift in our economy. Many economists credit the high-tech sector with

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<sup>6</sup> The views expressed are those of the author, Terry E. Bibbens, Entrepreneur in Residence, Office of Advocacy, and do not necessarily represent the views of the Office of Advocacy, the U.S. Small Business Administration or the Administration.



significant improvements in productivity which are permeating all industries and which are supporting the longest sustained economic growth period in our nation's history.

Certainly, in their own industry sectors, the high-tech businesses have created remarkable growth, as shown by the following:

- The growth of the high-tech industries has outstripped the traditional industries in the U.S. economy. In 1999, the U.S. electronics, computer and software industries employed 5.0 million workers, compared to 2.6 million in the automobile and related industries (manufacturing, distribution and marketing, after-market, repair and services sectors, and rental), and 1.0 million in the chemicals industry. The high-tech industries grew from 3.77 million employees in 1993 to 4.99 million employees in 1999, with most of this growth (1.13 million employees) in the services areas (IT and software and computer-related services).<sup>7</sup>
- In the information technology area the growth of new, small companies providing software services and products has been explosive in the past decade. In 1997, there were 231,000 establishments in the new high-tech (computer programming, data processing and other computer-related services industries). This is more than three times greater than the Census Bureau's reported number of these establishments in 1994. These firms employed 2.2 million people and their addition to the GDP was \$306.8 billion. This industry is dominated by small firms, with the average employment less than five. Eighty percent of these firms had less than \$2 million in annual revenue.<sup>8</sup>
- The growth of the Information Technology sector has been remarkable in the recent past. In 1992, Information Technology employment represented just 2.92 percent of total U.S. employment, but accounted for 5.54 percent of total employment growth between 1992 and 1996. In recent years, this growth has been even higher, with the IT industries accounting for 11.57 percent of total employment growth between 1995 and 1996. In 1992, the IT sector employment was 39,095, and this grew to 518,525 in 1996, with all but 144,810 of that employment coming from small businesses.<sup>9</sup>
- The biotech industry grew from 79,000 employees in 1993 to 153,000 employees in 1999, with revenue increasing from \$8.1 billion to \$18.6 billion respectively.<sup>10</sup>

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<sup>7</sup> *Cyberstates, 4.0: U.S. High-Tech Employment, Appendix A.1*, 2000. AeA, 601 Pennsylvania Avenue, North Building, Suite 600, Washington, DC. 20004

<sup>8</sup> *The New High-Tech Entrepreneurs*, page 4, 1998. Nathan Associates, Inc., 2101 Wilson Blvd, Suite 1200, Arlington, VA 22210.

<sup>9</sup> *Establishment Employment Change and Survival, 1992-1996, with Special Focus on Information Technology Industries*, Table 1(a), page 6, February 2000. Final Report prepared by Dr. Richard J. Boden, Jr., for the Office of Advocacy, U.S. Small Business Administration, Washington, DC 20416.

<sup>10</sup> *Annual Biotechnology Industry Reports, 1993-1999*. Ernst & Young, LLP, New York.

- In some regions of the country, the growth of the high-tech sectors dominated the traditional sectors. For example, in San Diego, the payroll of the high-tech (electronics, computers, wireless communications, Internet, biotech and life-sciences) industries grew from \$4.9 billion to \$8.6 billion over the period of 1990 to 1998 (a growth of \$3.7 billion), whereas the traditionally dominate visitor, agricultural and health services industries grew by only \$419 million, while the defense sector shrank by \$662 million.<sup>11</sup> Similar growth has been observed in New York, Silicon Valley, the Route 128 area of Boston, Austin, Texas, and other high-tech regions.

### **The Contribution of Small Businesses to the Technology Growth.**

A major shift occurred in the past two decades—small businesses became the dominant employer of high-tech innovators. The small business share of scientists and engineers has steadily increased as large businesses have downsized and reduced their investments in corporate research laboratories. The most recent data from the National Science Foundation shows that small businesses now employ more degreed scientists and engineers than large businesses, and more than the universities and federal labs combined.<sup>12</sup> The 1995 employment data is shown in Table 1.

**Table 1. Employment of degreed scientists and engineers in U.S.**

<b><u>Organization</u></b>	<b><u>Percent Degreed Scientists and Engineers</u></b>
<b>Small Businesses (&lt; 500)</b>	<b>36 percent</b>
<b>Large Businesses (&gt;500)</b>	<b>32 percent</b>
<b>Academic Institutions</b>	<b>18 percent</b>
<b>Government Laboratories</b>	<b>14 percent</b>

This shift of research talent from large businesses and federal laboratories has been a result of at least two factors: 1) the downsizing of large firms to remain competitive in the global market, and 2) the entrepreneurial nature of the small innovative firms with focused research programs, stock option incentives to researchers, and availability of venture capital.<sup>13</sup>

<sup>11</sup> *Developing High-Technology Communities: San Diego*, April 2000. Report by Innovation Associates, Inc., under contract to the Office of Advocacy, U.S. Small Business Administration, Washington, DC 20416.

<sup>12</sup> From NSF Internet web site at <http://srsstats.sbe.nsf.gov/>.

<sup>13</sup> *A New View Of Government, University and Industry Partnerships*, Page 9, 2000. Office of Advocacy, U.S. Small Business Administration, Washington, DC 20416.

Small businesses have always been major contributors to the innovation process since the founding of our country. The entrepreneurial spirit, coupled with strong patent laws, have made the U.S. the envy of the world in our ability to bring innovation to the marketplace. A 1995 report by the National Academy of Engineering provided valuable insights into the marketplace breakthroughs brought about by small companies. The report states:

“The principal economic function of small entrepreneurial high-tech companies is to probe, explore, and sometimes develop the frontiers of the U.S. economy—products, services, technologies, markets—in search of unrecognized and otherwise ignored opportunities for economic growth and development.”<sup>14</sup>

This report focused on the “chaos” created in the marketplace by new companies. History has shown us that large companies with entrenched market positions tend to resist major market changes (from Western Union bypassing the telephone, to the introduction of the personal computers by small startups). Small companies bring new products and services to the “early adopters” in markets, and test the market potential for innovations. Generally, these new innovations are subsequently brought to the mass markets by the larger companies, through acquisition of the small companies, licensing of the technologies, and/or further research and development of the products.

Past research from the Office of Advocacy documents the innovation productivity of small business is high as reported by the Office of Economic Research, Office of Advocacy, U.S. Small Business in the *1994 President’s Report on the State of Small Business*, Chapter 3, Innovation by Small Firms:<sup>15</sup>

- Small firms produce 55 percent of innovations. Small firms produce twice as many product innovations per employee as large firms, including the employees of firms that do not innovate. This is also true of significant innovations.
- Small firms obtain more patents per sales dollar, even though large firms are more likely to patent a discovery, implying that small firms have more discoveries.
- Large firms receive 26 percent of their research and development dollars from the federal government and are more dependent on federal R&D dollars than small firms, which receive only 11 percent of their R&D funds from the federal government.
- A federal R&D dollar to a small firm is more than four times as likely to be used for basic research as a federal R&D dollar to a large firm.

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<sup>14</sup> *Risk and Innovation: The Role and Importance of Small High-tech Companies in the U.S. Economy*, page 39, 1995. National Academy of Engineering Press, Washington, DC.

<sup>15</sup> For more details, see the Office of Advocacy’s Internet home page at: <http://www.sba.gov/ADVO/stats/fact1.html>

- The rate of return on R&D expenditures is 26 percent for both small and large firms, but only 14 percent for firms not involved with a university. The estimated rates of return on total R&D for firms with a university relationship are 30 percent for large firms and 44 percent for small firms.
- Among the important innovations by U.S. small firms in the 20<sup>th</sup> century are the airplane, audio tape recorder, double-knit fabric, fiber optic examining equipment, heart valve, optical scanner, pacemaker, personal computer, soft contact lenses, the zipper, and digital wireless communication.

*Research on the New Economy.* Finally, Advocacy has implemented a number of economic research programs to supplement the meager information available on the New Economy companies. These include new methodologies in the measurement of changes in emerging technology sectors even before they are identified in the NAICS system. One such research project identified the issues in analyzing emerging technology sectors by studying the changes in trade membership directories.<sup>16</sup> Another study looked at the regional characteristics of a recent successful high-tech cluster in San Diego, CA.<sup>17</sup> The Office of Advocacy also studied the characteristics of small, high-tech firms to better understand the nature of these businesses.<sup>18</sup> The patterns of foreign patent filing by small companies was studied to determine the importance of this global protection to the high-tech sector.<sup>19</sup> Using the new BITS files developed for the Office of Advocacy, the longitudinal analysis of small high-tech firms in the rural communities was studied.<sup>20</sup>

The staff of the Office of Economic Research for the Office of Advocacy has prepared analyses on the impact of the New Economy. Advocacy's research estimates that 85 percent of small firms will be conducting business over the Internet by the year 2002.<sup>21</sup> Business-to-business e-commerce, while still a small aspect of this new economy, is growing rapidly; some project a compound annual growth rate of 41 percent over the next five years. It is unclear which small business sectors will benefit most from these trends—and which will face new challenges. Other studies on the New Economy can be viewed on the Advocacy web site at <http://www.sba.gov/advo/>.

<sup>16</sup> See *Measuring Contribution of Small Business to Industry Job Growth by Data in Business Association Directories*, April 30, 1999. See <http://www.sba.gov/advo/research/rs191tot.pdf>.

<sup>17</sup> *Developing High-Technology Communities: San Diego*, April 2000. Report by Innovation Associates, Inc., under contract to the Office of Advocacy, U.S. Small Business Administration, Washington, DC 20416. See <http://www.sba.gov/advo/research/rs198tot.pdf>.

<sup>18</sup> *A Survey of High Technology Firms*, February, 1999, by Cordes, Hertzfeld and Vonortas, The George Washington University, for the Office of Advocacy, Washington, DC. See <http://www.sba.gov/advo/research/rs189tot.pdf>.

<sup>19</sup> *Foreign Patenting Behavior in Small and Large Firms*, 1996, by Mary Ellen Moguee and Associates for the Office of Advocacy, Washington, DC. See <http://www.sba.gov/advo/research/rs167.html>.

<sup>20</sup> *Information Technology, Firm Size, and Rural Economic Growth*, July 1999, by Jed Kelko, Harvard University, for the Office of Advocacy. See <http://www.sba.gov/advo/research/rs201tot.pdf>.

<sup>21</sup> *Small Business Expansions in Electronic Commerce*, June 2000, Victoria Williams, Office of Advocacy. See [http://www.sba.gov/advo/stats/e\\_comm2.pdf](http://www.sba.gov/advo/stats/e_comm2.pdf).

## **Future Challenges for the Office of Advocacy in the New Economy.**

The only certainty about the New Economy is that it will bring change. And that change will involve new and unforeseen regulatory issues in a variety of federal agencies. Further, most of those regulations will impact small businesses and the ability of small high-tech businesses to bring these new innovations to the marketplace. The related certainty is that small, high-tech companies do not have adequate representation in Washington to ensure that their voice is heard on issues of importance to them. It is therefore, incumbent upon the future of the Office of Advocacy to anticipate that the requirement for technological competence will grow. The Office of Advocacy has often been the early warning system to alert the small, high-tech companies that new legislation and/or regulations are on the horizon.

The public policy issues are numerous and thorny. Significant debate has already started on some of them:

- Taxation of goods and services sold over the Internet
- Privacy issues on large, sophisticated databases
- Fraud and identity theft
- Patent and general intellectual property reform
- Copyright and trademark protection—especially on the Internet
- Internet new top-level domain-name registration
- Encryption controls and export
- Exportation of e-commerce goods and services
- Unsolicited e-mail
- Network integrity and security
- Internet infrastructure issues in rural and central urban regions
- Internet gambling
- Uniformity of law—local, state, federal and international
- The digital divide
- Education—K through 12 and continuing adult education and job training
- Privacy and insurance issues for genetic testing
- Streamlined insurance reimbursement for new medical products and services
- Extended patent life for medical products that involve long clinical trials
- Regulatory impacts on new medical and environmental technologies
- Improvements in the NAICS system to capture economic data on New Economy industries earlier in the process

Even the most expert cannot predict where the new economy will take us. The road is strewn with potholes, as well as opportunities for small business. It is fair to conclude that “New Economy” issues will preoccupy the Office of Advocacy for some time to come.