The U.S.-Japan Innovation and Entrepreneurship Council

REPORT TO LEADERS

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Introduction: The U.S. – Japan Innovation and Entrepreneurship Council

The U.S.-Japan Innovation and Entrepreneurship Council was formed in 2011 by the Department of State of the United States of America and the Ministry of Economy, Trade and Industry of Japan under the umbrella of the U.S.-Japan Dialogue on Innovation, Entrepreneurship, and Job Creation. By promoting cooperation among representatives of government agencies and the business, venture capital and scientific communities of the United States and Japan, the purpose of the Council is to help cultivate a bilateral ecosystem of innovation and entrepreneurship. Among the Council's primary objectives is to develop recommendations concerning policy options and prevailing practice in the field of innovation and entrepreneurial activities, including those involved in U.S.-Japan cooperation. To that end, the members of the Council have elaborated and submitted this Report to Leaders.

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U.S.-Japan Council on Innovation and Entrepreneurship
REPORT TO LEADERS

Executive Summary

Introduction. Young, high growth companies are essential drivers of economic growth and prosperity in mature economies such as Japan and the United States in the twenty-first century. Such companies contribute substantially to job creation and dissemination of technology, enjoy higher worker productivity than established firms, are able to engage more readily in international trade, and foster innovation as they mature. Entrepreneurs play a critical role in catalyzing the emergence of these successful young companies. They think big from the outset and build their companies around sales into new markets, use of new business models, or delivery of an innovative product or service. More than simply creating new firms, this process has driven the emergence of entire new sectors. The object of government policy thus should be to establish the conditions conducive to the creation of strong, fast-growing new companies.

Section 1. When initiating a new business enterprise or seeking to commercialize a technology, development of the technology alone is not enough to ensure success; entrepreneurs from the outset must focus on finding a market for their product or service. To do this effectively, they must typically offer a product or service which did not exist before or which is profoundly superior to that of existing competitors. Ventures with the greatest potential for success are founded on a solution that is truly disruptive either technologically or marketwise. Such new technologies may be sourced from universities, laboratories, or larger companies, but regardless of source, the successful "spinout" of technology is among the most difficult challenges entrepreneurs must overcome. Ultimately, it will depend on whether they can secure paying customers for the new product or service. Sales to corporate customers represent an important potential source of revenue, but large corporations tend to be very conservative in making purchases from new firms. Governments therefore have a key role to play here, both through procurement set-aside programs to buy goods and services directly from start-up companies and through use of large, technology-intensive projects to generate advanced technology and the creation of new firms.

- Policy Option: Direct government procurement orders toward high-growth firms through set-aside programs.
- Policy Option: Use investment in large, public, technology-intensive projects to encourage commercialization of new technologies and creation of new high-growth firms.

Section 2. The business environment conducive to emergence and growth of entrepreneurial ventures is often compared to an ecosystem because its many elements work in combination with each other. These elements can be variously described, but certain common themes stand out which should guide policymakers seeking to promote development of local ecosystems. A well-developed network of service companies, including law firms, accountants, and financial supporters and advisers, is required. A second key to success is a high-quality work force facilitated by mobility of talented labor among companies and a business climate that rewards risk-taking and does not punish failure. Here the significance of "pull" entrepreneurs – founders with strong educational backgrounds, deep career experience, and extensive social networks – is noteworthy. Entrepreneurship education focused on business basics, project management, and leadership/team building is another essential ecosystem component, as is the building of social networks among entrepreneurs. Finally, policymakers must bear in mind that cradles of innovation such as Silicon Valley cannot simply be re-created elsewhere. A more successful approach is to leverage existing conditions and resources while connecting across borders to thriving ecosystems in other countries or regions.

- Policy Option: Reduce the risks, disadvantages, and inconveniences of moving from one organization to a new enterprise to encourage greater mobility of talent.
- Policy Option: Build and maintain relationships with other centers of innovation through cross-border exchanges.
- Policy Option: Build support networks – such as venture capitalists, lawyers, and accountants – needed to create a sustainable entrepreneurial environment.

Section 3. Obtaining the needed financing to grow a new business is a crucial test for an entrepreneur. Despite this challenge, the present entrepreneurial environment offers more potential sources of venture financing than ever before. Traditional venture capitalists were joined by many new players in the decade after 2000, including high-net worth individual "angel"

investors, private equity firms, and corporate venture funds. At the same time, the amount of capital required on average to launch a new firm has declined. Despite the proliferation of funding sources, however, governments can still play a useful policy role in encouraging venture financing through various means: setting up tax incentives, particularly for "angel" investors; loosening regulations that may discourage university endowments or large pension funds from venture investments; creating research programs aimed at development and commercialization of new technology in which small businesses are encouraged to participate; and establishing government-backed venture funds themselves, preferably with self-liquidation timelines.

- Policy Option: To facilitate U.S. firms' obtaining funding in Japan, and to facilitate Japanese firms' obtaining funding in the U.S., permit company registration with English language documents in Japan and Japanese documents in the U.S.
- Policy Option: Facilitate cross-border participation of venture companies in programs administered by governments, such as the U.S. Government's Small Business Innovation Research (SBIR) program.
- Policy Option: Establish funding mechanisms at Japanese research universities to bridge the gap between research and commercial application.
- Policy Option: Implement new angel investor tax incentive schemes and enhance existing schemes. Raise public awareness of the availability of such schemes.

Section 4. In general, start-up companies can exit the venture stage by merger with or acquisition by another business (e.g., M&A), listing on a stock exchange with an initial public offering (IPO), or by going out of business. A healthy, functioning ecosystem will allow for all these possibilities. In the United States, exit via IPO has declined while exit via M&A has gained in importance; in Japan, IPOs predominate while M&As remain relatively rare. Government policy should facilitate all three options, with perhaps greatest attention to encouraging an active and efficient M&A environment, including through wider use of preferred stock. Given the inevitability that some ventures will fail, policy must also incorporate ways of lowering the cost of failure by, for instance, allowing legal discharge of company debts through bankruptcy without burdening founders with continued personal liability. This allows both human and financial resources to be freed up from unproductive pursuits and redirected to more successful ones.

- Policy Option: Make creative use of tax incentives to encourage acquisitions of entrepreneurial ventures by growing corporations, thereby expanding the number of exit opportunities for entrepreneurs.

Section 5. Finally, governments have a crucial role to play in celebrating entrepreneurs publicly and in promoting a positive public image of innovation and entrepreneurship in general. By being bold about celebrating thriving entrepreneurial ventures – such as through the use of media events, well-publicized award programs, and statements by public officials – governments can draw attention to success, educate about the necessary existence of failure as part of the process, and elevate role models for other aspiring entrepreneurs to follow. Media should contribute to this process by cultivating journalists knowledgeable about start-up businesses, scientific research, and other issues related to innovation and entrepreneurship.

A. The Importance of New High-growth Companies to Growth and Job Creation

The essential drivers of economic growth and job creation in mature economies such as Japan and the United States are young, small companies that are on their way to becoming much larger enterprises. Recent research shows that the formation of new companies drives net job creation in both Japan and the United States, and it suggests that some new companies contribute more to the wider economy than others.[1] A study in Japan shows that younger firms create jobs in spite of their small share in the labor market (6% for the firms established in 2002-2006); however, older firms have lost many jobs in spite of their large share in the labor market (27% for the firms established before 1956). Younger firms also have a high net job increase ratio, even taking account of their entry and exit (see data in Appendix 1). New companies that remain small contribute to job creation by replacing jobs lost elsewhere in the economy as older firms reduce headcount or disappear altogether. By contrast, new firms that grow and become market leaders in either new or existing lines of business, as well as those new companies that merge with such market leaders, contribute much more. They disseminate new technology, create more high-paying jobs, enjoy higher worker productivity, and are able to engage more readily in international trade, with all of the benefits accruing from such competitiveness. As these firms mature, they foster innovation in other ways such as by acquiring other successful ventures and grooming managers and technologists who leave to start their own companies.

Entrepreneurs have a critical role to play in catalyzing the emergence of these successful young companies, often called "gazelles."[2] Entrepreneurs who found high-growth firms may start small when launching their business ventures, but they think big from the outset and aim to turn a profit. They build their company operations around selling into new market opportunities, using new business models, delivering an innovative product or service, or some combination of these that can create an entirely new economic sector or reorganize an existing industry. When successful, such companies grow rapidly, creating jobs, expanding social capital and generating macroeconomic growth. This process encompasses more than the simple creation of more new firms, which on its own is insufficient to generate significant growth and job creation. It is evident, for example, in the waves of new sectors that have emerged in recent years relating to

personal computing, wireless communications, biotechnology, computer networking and the Internet, health care, electronic games, synthetic fibers and social media.

New industries making use of disruptive technologies are vital to growth and prosperity in the twenty-first century, because both developed and emerging economies are experiencing technology disruptions spanning a broad range of areas that challenge familiar ways yet open doors to new opportunities. In particular, these disruptions create business opportunities that must be exploited if gazelles are to be created. Examples include new approaches to clean energy development and carbon sequestration, DNA synthesis and personalized genomics, as well as stem cell development. Similarly, advances in artificial intelligence, speech recognition technology, computer vision and augmented reality along with advances in sensors and nano-devices are ushering in a new generation of wireless communications, personal robots, and space exploration.

The object of policy should be to establish the conditions conducive to the creation of strong new companies that grow rapidly and go on to become much larger enterprises. The venture businesses that will go on to become gazelle firms will contribute significantly to the growth of their industries of the future, and commercial leadership in these technology domains will enable Japan and the United States to create millions of new jobs and generate economic growth.

Americans and Japanese are keenly aware that modes of business and employment are changing. The Internet has created conditions in which information flows freely allowing manufacturing firms to establish operations around the globe. Firms employing new “free” business models have challenged companies that stay with familiar models based on a single component or commodity. As the cost to launch a startup firm has fallen – and the idea of the "lean startup" has gained currency – available evidence indicates that most new companies now can start their business with fewer employees than they did in previous decades. Unexpected events such as the March 2011 earthquake and associated disasters affecting Japan as well as continuing anxiety about the health of the global economy contribute to this uncertainty. The perception is growing in many developed countries that young people will be less well-off than their parents or grandparents and this contributes to feelings of economic insecurity.

Yet it is precisely these forces of disruptive change that make it possible to cast aside failing models and create the space for new approaches to success. U.S. statistics show that periods of recession have historically been times of entrepreneurial dynamism. Since 1855 over half of the largest and most successful U.S. companies began during a recession or bear market. [3] Japan has likewise experienced dramatic outbursts of entrepreneurial activity during periods of upheaval, most notably after the Meiji Restoration of 1868 and following the end of the Second World War in 1945. [4]

Less widely understood is the scale of the technological disruptions now underway across a broad and diverse range of areas. Many of these technologies are either directly or indirectly advancing at an exponential pace, in the same manner semiconductor technology developed since the 1960's (where the doubling of power and performance approximately every 18 months has been referred to as "Moore's Law"). Recent growth in energy, biotechnology, information technology, robotics, and space exploration demonstrate this trend. This is important because the gazelles of tomorrow will form in the industries of tomorrow, not the industries of the past decades. [5] To illustrate, appendix 1 shows venture business activity in Japan. Appendix 2 provides data on venture business activity in the United States.

B. Key Entrepreneurship and Innovation Issues

Section 1 - *Market Opportunities / Entry / Introduction*

a. DESCRIPTION – Section 1

(1) Need for entrepreneurs to focus on market opportunities: When starting any business enterprise or commercializing any technology, entrepreneurs must focus on finding a market for the product or service to offer to customers. Only by meeting needs in the market will customers pay the company so the company can establish itself as a going concern. There are many cautionary examples in the business history of Japan and the United States where entrepreneurs and companies went to great expense to produce items or services that no one wanted to buy. While large companies may have the resources to absorb the losses resulting from such failure, startup firms have much less margin for error because they do not enjoy an established stream of revenue. Additionally, there are

many more examples on both sides of the Pacific of would-be entrepreneurs who never identified a market application for their scientific research and who never succeeded in building a business around it that could survive without continued support, whether in the form of a subsidy or other such payment.

The danger for new firms is that until they have established a profitable venture, entrepreneurs seeking to establish a business face the prospect of their funds running out, regardless of the stage of development or the source of their funding. Time is not on their side. While early identification of a promising market may be ideal, a venture that ultimately succeeds will likely make up for any stumbles along the way. To ensure the most efficient use of government funds, investor capital and other resources, it is even more important to determine as early as possible when to cease a venture's operations or put a stop to a research effort. In this manner, the entrepreneur and all others concerned can move on and devote their attention to more promising pursuits. Such early-stage "failure" while the scope of the effort is limited minimizes total loss. By contrast, an unsuccessful effort that consumes more time and financial resources results in much greater cost at every level.[6] Appendix 3 graphs data on survival rate of ventures in Japan and the United States.

(2) Customers and sales revenue as indicators of success: Facilitating new ventures' acquisition of customers is indispensable to any effort to promote innovation through entrepreneurship. The success of a venture commercializing any business idea or technology solution depends on whether it obtains paying customers. Only by securing customers will a new company be able to generate sustainable revenue, and only by generating revenue will it be able to turn a profit. Paths to market will vary depending on the nature of the product or service. Retail sales to individual consumers represent a possible source of revenue for some new businesses, some of which gain high visibility very rapidly. Sales to corporate customers typically represent an even more important potential source of revenue for most high-technology companies. Sales to market-leading firms can also stimulate other corporate customers to purchase from the new company.

Moreover, they reinforce investors' confidence in the viability of the venture, thereby bolstering its access to financing.

Notwithstanding the importance of corporate sales to the success of new companies, the challenges ventures face when acquiring customers are greater than many analysts, journalists and policymakers appreciate. Outside of certain cradles of innovation, large corporations tend to be conservative in making purchases from new firms. While many senior executives do talk about "open innovation" and recognize the importance of drawing upon outside sources, middle managers at the operational level are often unwilling to take the risk of buying from a startup company that they fear may not endure. In fact, sometimes export markets may offer better prospects for acquiring customers when it is difficult to make headway in the domestic market.

(3) Sourcing of technology from universities, laboratories and companies to build profitable businesses: One important quality of successful high-growth companies is their use of new technologies or business models to meet market needs in a manner that enables them to turn a profit. Development of a given new technology alone is not enough to ensure the survival of an enterprise; its owners and managers must build a thriving business around that technology by using it to provide a product or service that customers will pay for. In established industries, where large firms are improving existing products or services in some way, the linkages making possible the flow of technology from the research phase to the consumer are often readily apparent. Established companies – particularly large, profitable, innovative firms – devote considerable resources to maintaining their relationships with other institutions as a matter of course, and their employees similarly follow closely new developments in the industry.

In the case of novel business models especially, the entrepreneurs who establish new companies often use new technologies in the service of other business rather than sell the technology itself (either as a product or a service) as is evident in the cases of Internet retailers, for example. New companies rather than established firms have been more

likely to put the effort into commercializing technologies likely to disrupt established markets in some way, in part because doing so is more risky in the short-term than continuing to serve an established market. In either case, the successful "spinout" or transfer of technology from the place where it was developed to the company that brings it to market is among the most difficult challenges to overcome in the entire process of commercializing new technologies.[7]

(4) Government purchases as a way to generate sales revenue for new high growth business: Direct purchases of goods and services by government can provide a valuable and cost-efficient role in promoting new high-growth businesses by creating demand that new firms can meet to gain experience and stability. The history of Silicon Valley confirms that government can also act as the first customer of new technologies that the private sector has not yet adopted.[8]

b. BEST PRACTICES and POLICY OPTIONS– Section 1

Best Practice for 1.(4) #1: One approach is to facilitate procurement of a share of government purchases as an element of standard government procurement practice. Governments have focused on setting aside a certain share of total procurement for supply by small- and medium-sized enterprises (SMEs). An example is the U.S. Small Business Set-Aside (SBSA) Program, one of the oldest programs established to assist small businesses win government contracts by reserving (e.g., "setting aside") certain government purchases exclusively for participation by small business concerns. In fiscal year 2008, the Small Business Administration helped small businesses in procuring $93.3 billion in federal contracts. In addition to the revenue successful bidders received from these contracts, participating firms are often able to win additional customers upon becoming a supplier to the U.S. Federal Government. Additional information on the SBSA Program is set out in Appendix 4.

Policy Option for 1.(4) #1 *Set-asides for High-Growth Firms*

A potentially more effective way to direct government procurement orders toward high-growth firms that are expanding employment would be to set aside a share of government

procurement orders for companies growing revenue and/or employment by a certain percentage (e.g., 10 percent per year). Such an approach would avoid providing an incentive to beneficiary firms to remain small.

Best Practice for 1.(4) #2: In Japan, the Act on Ensuring the Receipt of Orders from the Government and Other Public Agencies by SMEs (the "Public Demand Act") of 1966 has aimed to expand opportunities for SMEs through government procurement. In fiscal year 2011, procurement from SMEs stood at 3.6 trillion yen. Expanding opportunities for SMEs with technological capabilities and for newly established SMEs to receive orders should be taken into consideration under the system. Additional information is set out in Appendix 5.

Policy Option for 1.(4) #2 *Advanced Technology Projects*

Policy options to use government demand to spur the creation and growth of companies bringing advanced technology to market include both low-cost projects involving regulatory changes and large public projects. The common element in both options is the use of government spending to act in place of a market that does not yet exist as a means to generate advanced technology and the creation of new firms. Projects focused on regulatory changes can examine technical standards in selected sectors with a view to redefining them so as to achieve specified outcomes (e.g., energy efficiency) consistent with other basic national policy. Additionally, large, public, technology-intensive projects have been proven to encourage commercialization of new technologies and creation of new high-growth firms, but only at substantial cost requiring strong political commitment. An iconic example of such a project was the development of the Saturn V rocket in the 1960's as part of the U.S. program to transport human beings into space. Unlike the situation approach where the government purchases goods and services as one of many potential customers, a large, technology-intensive project involves the government purchasing goods and services for which there is no other customer, but from which new industries are generated by the new technologies in combination with new human capital. Possible scenarios for such projects include bilateral cooperation on a revived manned space program to visit Mars as well as projects to develop fusion power

or other energy sources, ocean exploration to map resources, and development of environmentally-friendly communities or smart cities. Appendix 6 provides additional details on possible advanced technology projects.

Section 2 – *Human Resources / Capital, and Networking*

a. DESCRIPTION – Section 2

(1) The ecosystem supporting entrepreneurship: The business environment conducive to the emergence and growth of entrepreneurial ventures is often compared to an ecosystem, because its many elements work in combination with each other.[9] While there are many descriptions of these elements, certain common themes stand out. Fundamental to innovation, of course, is knowledge, and for this reason institutions of higher learning and research that interact effectively with industry represent a core element of such ecosystems[10]

A vital element in this process is the role of professional services companies, including particularly lawyers, accountants, financial supporters, financial advisors, and various other consultants. Like the members of the company's management team, they too must be selected carefully. Although often overlooked by outside observers, this supportive business environment, where the private sector offers services keyed to the needs of new companies, contributes significantly to making regions of innovation and entrepreneurship the dynamic places they are. These services companies and their personnel provide much of the unseen connectivity binding the universities, venture capitalists or other financial backers and high-growth companies – all entities that usually draw much more public and media attention. In view of the rich capacity to support new companies and their management teams that has accumulated in both economies' private-sector service providers over the years, publicizing their role in the establishment and growth of start-up companies to would-be entrepreneurs, educators, the media, policy makers and the wider public would contribute to building a stronger ecosystem for entrepreneurial ventures.

(2) Encouraging mobility of talent: It follows that a high quality work force is necessary for success in the knowledge economy. Because educated and skilled individuals are sought after and often have many choices of where to live, a community with a high quality of life is important to attracting them. An openness to diversity and youth is also more likely to appeal to those individuals who are willing to take intellectual risks and consider ways to push the boundaries of what technology can do. A business climate that rewards risk-taking and does not punish failure provides the incentives likely to encourage the formation of new companies. Open and shared standards – whether they relate to personnel management, financial transactions, or services that may be outsourced – reduce transaction costs and increase communication. A healthy venture capital industry also supports new ventures by structuring their deals and portfolios to manage the risks associated with high-risk investment and motivate entrepreneurs and their employees. Finally, collaboration among business, government and independent organizations (e.g., industry associations and non-profit organizations) encourages the common sense of purpose that contributes to the identity of individual regions of innovation and entrepreneurship.

When considering how successful businesses come into being, it is easy to overlook the simple fact that new companies consist of people coming together to form a new organization. Their formation and growth depends on the mobility of talent or liquidity of human resources. Without the entrepreneurs to move forward with plans to start a company and the employees to join it, even the finest technology will remain unutilized commercially. Of particular importance is the mobility of experienced personnel transferring from existing firms to new enterprises, whether as potential founders, managers, or other employees.

(3) The significance of "pull" entrepreneurs: Recent research into the creation of high-growth firms in Japan shows that companies established by founders who have prestigious educational backgrounds and career experience have enjoyed a higher likelihood of success. These founders are entrepreneurs who choose to found companies rather than peers and society would otherwise regard continuing pursuing what as

desirable careers. Such "pull" entrepreneurs are thought to bring strong social networks to their new enterprises and confer on their ventures a prestige that enables them to recruit high-performing employees who might not otherwise take the risk of moving to a new firm. [11]

(4) What should be taught in entrepreneurship education: With the recent growth of interest in entrepreneurship, schools at different levels and other organizations have expanded existing programs and developed new offerings in entrepreneurship education. This trend continues to develop in both countries, having started earlier and advanced further in the United States than in Japan. Striving to develop a single curriculum to serve as a standard is unlikely to serve entrepreneurs well because they need different skills and knowledge at different times. Unlike work in many specialized fields of knowledge, where achievement requires focusing attention on a specific area, success as an entrepreneur depends to a much greater degree on combining talents and managing those of others. As Edward P. Lazear has explained, "Entrepreneurs have to be sufficiently skilled in a variety of areas to put together the many ingredients required to create a successful business."[12]

The process of starting new firms can be analyzed, understood and taught. It is possible to increase the likelihood of success of those who embark on entrepreneurial careers by effectively teaching the process part of entrepreneurship. There are three key components in entrepreneurship education; 1) Business Basics, 2) Project Management, and 3) Leadership and Team Building. The knowledge of key business routines is also critical. These include accounting & financial analyses, marketing & sales strategies, competitive analyses, dynamism of angels and venture capital communities, and writing a business plan effective enough to communicate with stakeholders and customers. Entrepreneurs should also be fully aware that the success of their entrepreneurial ventures comes from the general business environment and luck, but also that the successful management of pivotal events as their organizations evolve depends on their leadership team.

Given the generalist nature of management of an entrepreneurial venture, mid-career applicants to programs who possess experience managing transactions at a large firm, running a smaller firm, or managing people in any other organization should receive serious consideration.

(5) Leverage local conditions and connect across borders: However tempting it may be to try to re-create conditions in cradles of innovation such as Silicon Valley in California and Boston, Massachusetts, experience suggests that such efforts do not succeed. The interactions among the elements of any given innovation ecosystem are rooted in their own particular history and cannot be re-created completely elsewhere. In addition, the industries with greatest potential for growth in a given region are often those that are able to leverage existing conditions and resources to their benefit (e.g., high technology in Israel, outdoor sporting goods in the U.S. Pacific Northwest, and mobile telephone games in Japan). It is well established that startups tend to be more successful where other startups are also located, allowing entrepreneurs the opportunity to speak with other entrepreneurs on a daily basis. Another reason is that such areas are also more conducive to the formation of teams – including not just employees but also board members and board advisors – thereby bringing together the full range of skills needed for the successful launch of a company.

(6) Importance of making use of networks to the success of entrepreneurs: Precisely because new business ventures must grow and develop as enterprises (rather than simply maintain their existing relationships) in order to survive, their operations are defined to a much greater extent by creation of new linkages through networking activity than is the case for established firms in existing industries. In this environment, the work of building entirely new relationships takes on great importance, regardless of whether the issue is recruitment of personnel, acquisition of customers, or lining up exit opportunities. Moreover, in the current complex and rich global market, entrepreneurs very often must build relationships with personnel, customers and partners who are highly dispersed, both sectorally and geographically.[13] In this increasingly complex and fast-moving economy, networks of all kinds are critically important. Building such networks and making use of

them must, accordingly, be high priorities of those attempting to launch entrepreneurial ventures.

b. BEST PRACTICES and POLICY OPTIONS– Section 2

Policy Option for 2.(2): Reducing the risks, disadvantages, and inconveniences associated with moving from one organization to a new enterprise would encourage greater mobility of talent. Examples include facilitation of greater female participation in the workplace, as well as portability of pensions and other benefits to reduce the financial disincentives from changing employment. Even without adoption of any new policy by government, affirmation of such best practices by public officials can affirm to society their value and desirability.

Best Practice for 2.(5) #1: In the case of ties with Silicon Valley, we observe many efforts to build effective bridges so as to connect to and make use of the innovation ecosystem already in existence there. For example, in 2001 the Japan External Trade Organization (JETRO) established the U.S.-Japan Business Innovation Center (BIC) in San Jose, California. Since then, the center hosted promising Japanese start-up companies and technology oriented small and medium enterprises seeking to develop business and explore market of their products and services. Many companies which used BIC have been successful in developing their global operation. [14]

Best Practice for 2.(5) #2: The German Silicon Valley Accelerator aims to support German startup companies in their initial efforts to establish ties there and to develop their business operations in the United States.[15] While such initiatives will take many forms, the point in common is the realization that business development in the twenty-first century depends on talented people who have varied, practical experience. Thus, a basic question for public policy makers and private sector leaders alike is how to encourage this mobility of talent or "brain circulation" required to cultivate and make use of such human resources.

Policy Option for 2.(5): Build and maintain relationships with other centers of innovation. Establish cross-border exchanges of venture capitalists, entrepreneurs, and academics so to shape an ecosystem around local conditions and finding ways to connect across borders.

Policy Option for 2.(6): For the vital activity of entrepreneurs, supporters, such as venture capitalists, lawyers, and accountants, all have very important roles and their network is a key component of a thriving ecosystem. To enhance the support network for entrepreneurs who seek global markets, establishing a platform of supporters would have a positive impact on creating a sustainable entrepreneurial environment.

Section 3 – *Financing Business Ventures*

a. DESCRIPTION – Section 3

(1) Financing trends in the United States: A crucial test of the management team of a new business is whether they are able to obtain financing for business needs. While individual entrepreneurs may lament the challenge they face in obtaining financing for their business, recent data shows that the present entrepreneurial environment has more potential sources of venture financing than ever before. In previous decades, venture capitalists in the United States enjoyed a preeminent position between traditional commercial banks and public financial markets as providers of investment capital to high-growth companies. While fewer companies completed initial public offerings (IPOs) of stock during the decade after 2000, many new players emerged, both in the United States and globally. High net-worth individuals (often former entrepreneurs) wishing to support entrepreneurs have entered the market as so-called "angel" investors. Private equity firms expanded operations significantly. Similarly, the venture funds of large corporations or other such corporate ventures entered the market in force. The decline in amount of capital required on average to launch a new firm also reinforces this trend by increasing the relative importance of even small units of investment, whether from formal "angel" investors or informal networks of friends and family members.

Governments have also gotten into the act of trying to encourage markets to fund new businesses, the most notable example being the U.S. "Jumpstart Our Business Startups Act" (commonly known as the JOBS Act) of April 2012. It bears emphasizing that this legislation does not entail direct provision of financing to business by the government. Rather, its aim is to increase businesses' ability to raise capital, and the test of its success will be whether it in fact encourages better functioning of the market without causing distortions.

(2) Challenge for funding in Japan: In Japan, there has been some discussion of loosening restrictions on investment of pension fund assets, but the Japanese Government's pension fund continues to avoid allowing investment in venture firms as part of an understandable conservative approach to investing its assets, which sets the tone for the country's pension fund industry.

(3) University Endowment: In the U.S., university endowments and public/private pensions are major sources of money for venture capital funds. Those two sources often represent 70-80 % of the leading VC funds in Silicon Valley. In contrast, their contribution to the supply of long term risk money is extremely small, or minimal in Japan. The major reason for the side of university endowments would be that Japanese national universities are not allowed by law to put their endowment money in risk assets including VC funds. This regulation may be worth liberalized.

(4) Valuation of companies and the role of support services in venture financing: Whatever the source of investment capital, the basic question at issue in the financing of start-up companies is how much money, and over what period of time, will the company require such support to become self-sufficient? Essential to answering these questions so that deals can come together is valuation of start-up companies in quantitative terms. In view of the dynamic quality of a start-up company's operations, and its changing needs at every stage, the process of putting a number on what a company – and its management team – is worth necessarily occurs as an ongoing process by different players.

(5) Governmental fund initiatives: When financial service providers are in short supply or the entrepreneurial ecosystem has not yet developed in some way, governments in some economies have implemented programs or created funds using public money to facilitate the flow of financial resources to new companies in an effort to spur the creation of high-growth firms.

(6) Gap funding possibilities: The idea of gap funding may also be employed by entities other than government. For universities, gap funding or proof of concept funding holds the potential to enable university faculty and their students to bring the results of research performed at the university to market.

(7) Angel investors: Of particular interest has been the activity of "angel" investors – affluent individuals who provide capital for startups, usually in exchange for equity – because it fills a gap between the funding entrepreneurs can obtain from friends and family and that available from professional investors such as venture capitalists. While their informal nature makes it difficult to establish the amount of angel investment, preliminary data set out in Appendix 7 suggests clearly that it is significant and growing. Moreover, research indicates that angel-backed ventures have a higher likelihood of success.[16] It is thought that this tendency flows from the greater familiarity with venture firms by angel investors, many of whom were once entrepreneurs themselves.

By the same measure, angel investor networks may offer a useful means of protecting entrepreneurs from onerous debt obligations when their ventures fail. Angel investors usually possess a more sophisticated understanding of venture businesses than an entrepreneur's friends and family, who often regard a debt as a debt even after the business fails. For this reason, they are less likely to consider funding as a personal loan to be repaid under any circumstances, and more likely to terminate funding of a venture when it is apparent the business is unlikely to succeed or that the founders would be better placed to start over. That said, the emergence of angel networks is a gradual process, and their growth depends on the rise of more high net worth individuals, often with entrepreneurial experience.

b. BEST PRACTICES and POLICY OPTIONS – Section 3

Best Practice for 3.(1): Governments support for new venture investment follows the well-established approach of encouraging investment into high-growth (but also high-risk) companies, where pension funds are allowed to devote a share of their overall holdings to such a purpose. Changes to U.S. law in the late 1970s and early 1980s, including modifications to administration of the U.S. Employee Retirement Income Security Act of 1974, have facilitated the flow of investment into venture investments.

Policy Option for 3.(1): To facilitate U.S. firms' obtaining funding in the Japan, allow U.S. company registration with English language documents in Japan.

Policy Option for 3.(2): To facilitate Japanese firms obtaining funding in the U.S., allow Japanese company registration with Japanese language documents in Delaware.

Best Practice for 3.(5) #1: Experts observe that the most successful efforts, like the 1993 Yozma venture fund established to encourage venture capital investment in Israel, have built-in self-liquidation. Even more than the capital it made available, Yozma's success flowed from the talented individuals it attracted to Israel's entrepreneurial ecosystem such that it was no longer necessary. From the beginning, the Government of Israel gave private-sector partners the option to buy out the government's interest in the funds on attractive terms, and after five years the remaining assets were liquidated. Thus, the government's exit from the market demonstrated that real value had been generated by Israel's nascent venture capital industry. By attracting the backing of both domestic and foreign investors, subsequent initiatives growing out of this initial program supported the creation of high-growth firms that have listed on major stock exchanges in the United States and Europe or been acquired by leading firms in the technology, health and other sectors. [17]

Best Practice for 3.(5) #2: The Japanese government has also engaged on the issue by expanding the focus of policy on small and medium enterprises (SMEs) to include support for startup companies. The fund of Organization for Small & Medium Enterprises and Regional Innovation, JAPAN (SMRJ) and its support network for startup companies are detailed in Appendix 8.

Best Practice for 3.(5) #3 - *Connecting U.S. Small Business Innovation Research (SBIR) program participants to financial markets*: There is growing awareness of the importance of third-party funding to business ventures' success. The SBIR program, in which eleven U.S. federal government agencies participate, aims to facilitate commercialization of new technology by encouraging domestic small businesses to engage in federal government-funded research with the potential for commercialization.[18] Each participating agency allocates 2.5 percent of its R&D budget to these programs and awards grants based upon a competitive evaluation of applications received from small businesses. Participating agencies now have commercialization assistance programs of one form or another, involving feedback and communication within industry, mentorship components, concept development, attention to marketing, and branding as well as product launch.

Policy Option for 3.(5): *Cross-Border SBIR Programs*

In view of the increasingly global nature of scientific research in that project teams often include participants from several countries, as well as the many decades of cooperation between the scientific communities of the United States and Japan, facilitating cross-border participation of venture companies in programs such as SBIR administered by government in both countries merits consideration.

Best Practice for 3.(5) #4: - The U.S. National Science Foundation (NSF) launched a program called Innovation Corps (I-Corps) to facilitate the transition of NSF-funded basic research from laboratory to market through an intensive program of training and mentorship. One aim of the I-Corps program is to strengthen the market-readiness of teams submitting proposals to the SBIR program.[19]

Best Practice for 3.(6): The Massachusetts Institute of Technology's Deshpande Center takes advantage of financial and professional support from successful alumni, entrepreneurs and investors to bridge the gap between university research and its commercial application. Since 2002 the Center has reviewed over 500 proposals from faculty and funded more than 90 projects with about $11 million in grants. Twenty-six projects have spun out of the Center into commercial ventures, which have raised over $350 million in outside funding.[20]

Policy Option for 3.(6): *Gap Funding for Prototype from University Research*

In view of the absence of such entities in Japan, the innovation ecosystem in Japan would benefit from establishment and funding (whether from private or government sources) of equivalents at Japanese research universities.

Best Practice for 3.(7): - *Tax incentives, particularly for "angel" investors*: Another mechanism by which the governments of the United States, Japan, and other countries have attempted to encourage the flow of capital to new businesses is the use of tax incentives. While the exact provisions may vary, the idea is to encourage the flow of money into new firms by either reducing the tax rate on profits made from investments in them or increasing deductions allowed when such investments result in losses. The tax incentive for angel investors ("Angel Tax") of Japan has provided valuable financial incentives for personnel/angel investors to boost the amount of investment in start-up companies.

Policy Option for 3.(7): *Angel Tax Incentives Support*

To achieve the full potential of angel tax incentive schemes, governments should make efforts to raise public awareness of the availability of such schemes. Also, where appropriate, tax incentives for angels can be enhanced, such as by lengthening the age threshold requirements for investment in start-ups to which such incentives apply. Japan's productive treatment of deductions on income tax is worth considering for

application in the U.S. Appendix 9 describes current tax policies in Japan to encourage investment by "angels".

Section 4 – *Exit*

a. DESCRIPTION – Section 4

(1) How large corporations can support new business: Looking beyond the operations of an individual firm and the services that support it, the wider business environment also affects the prospects of any new company. In that environment large companies can play a significant and visible role at every stage from establishment to exit. Business leaders with experience managing or investing in start-up companies all point to the pivotal role of support from large established companies in facilitating the growth and successful exit, by investing in them, doing business with them, and by acquiring them as a way of growing their own businesses.

It is widely appreciated that without the active interest of leading companies in encouraging the emergence of start-up companies bringing new technology to market, that the Silicon Valley would not be the cradle of innovation that it is. In the challenging economic climate since 2009 a growing number of Japanese companies have completed an unprecedented number of corporate acquisitions overseas, including of venture companies, as part of an effort to expand business operations globally. They have pursued relatively few acquisitions of domestic startups by comparison (see Appendix 10). Entrepreneurs and their backers all identify several specific ways that large corporations can support new businesses, notably by purchasing their products or services and pursuing growth through acquisition of venture business.

(2) Corporate Venturing: One dynamic new element in the broad ecosystem for innovation is the rapid expansion of corporate venturing activity in recent years, with 2011 witnessing a record number of corporate venturing funds raised. This rise in corporate venturing is the result of many factors, among them technology company

leaders' desire to bring external sources of innovation into their companies, the recovery of corporate profits after the economic downturn of 2008-2009, and the reduced competitiveness of many venture capital firms during the decade after 2000. Additionally, it must be emphasized that underneath the rubric of "corporate venturing" there are many variations. These range from the "fund-in-a-company approach" of many leading U.S. and Japanese technology companies, to the "separate entity, strategically-focused fund" – more like a traditional venture capital fund – of some leading European and Korean technology firms, to what can be called a "relationship-building" model, where the firm emphasizes partnerships with other companies and limited-partner investments to build a broader ecosystem.

Of particular interest for Japan is the preliminary finding of research on the effectiveness of corporate venturing. While additional research will be needed, early indications are that in Japan corporate venture-backed startups have created more value than traditional venture capital firms, possibly because they bring a more rigorous and industry-specific strategic focus to the transaction. Regardless of how the current wave of corporate venturing plays out, much more inquiry into its scope and effect are needed to better understand how the existing entrepreneurial ecosystem is changing – in Japan, in the United States, and beyond both countries' shores.

(3) Exit options: In general terms, high-growth startup companies can exit from the venture stage of the business in one of three ways: by merging with or being acquired by another company, by listing on a stock exchange with an initial public offering (IPO), or by going bankrupt or otherwise ceasing operations. A functioning ecosystem for innovation through entrepreneurship will facilitate the exercise of all three possibilities. A very limited number of companies will be able to meet the high bar for listing and publicly offering shares. In the United States, the number of companies conducting IPOs is down from previous levels, owing to the increased expense resulting from more stringent regulations, among other factors. As a percentage of all exits, a greater proportion has sought to exit the venture stage through merger or acquisition than was the case during the dot.com boom of the late 1990s. In Japan, by contrast, exit via

acquisition is relatively rare and earnings for venture capital firms come overwhelmingly from IPOs. While many may shy away from welcoming exits via bankruptcy, in fact the liquidation of companies that are unable to grow profitably contributes to the wider economy by freeing up human and other resources for more productive uses. Thus, the question for policymakers is how best to realize an environment that serves as a functioning ecosystem to support the creation and growth of high-growth companies.

(4) Mergers and Acquisitions: In Japan as well as in the U.S., companies consider M&A as an efficient option to accelerate growth by gaining talented employees, intellectual properties, and customer assets. Sentiment of the acquired, traditionally somewhat negative, has changed into that of a success in recent years. Given this condition, it is important that venture capital shareholders are able to execute terms outlined in preferred shares. Also, the condition of "deemed liquidation" needs to be clearly defined in the laws governing corporations ("Corporate Law). Overall, venture capital investment return will be higher by having M&A exit options at the stage prior to IPO with smaller market capitalizations. Having active M&A scene also drives innovation that crosses country borders, by enticing talents, intellectual properties, and technologies move internationally.

(5) Preferred Stock: Though the use of preferred stock as a means of raising equity from VCs and other external investors has been standard practice in the financing of venture companies in the US, it has not been widespread in Japan, where historically, preferred shares have only been issued in about 10% of cases. One possible explanation for its limited use may stem from concerns about the potential tax implications for the use of stock options from the perspective of the issuing venture, and concerns about the fair treatment of the right of liquidation preference in the event of an M&A or some other liquidity event from the perspective of the investor. Though in fact these points are well addressed in the existing laws and regulations governing preferred shares, there are in fact some misunderstandings about their implications and applications. As a result, the issuance of preferred shares has been muted in Japan to date. However, the use of such mechanisms would seem essential to allow flexibility and to provide broader options for financing ventures in Japan. Broadening the use of such instruments will require a harder

push as well as more communications and public relations from the government as well as from venture capital associations going forward.

b. BEST PRACTICES and POLICY OPTIONS – Section 4

Policy Option for 4.(3): *Incentives to Support Exit*

To encourage acquisitions of entrepreneurial ventures in Japan by growing corporations, thereby expanding the number of exit opportunities for entrepreneurs, we suggest tax incentives may be effective. While additional study is required, tax incentives would encourage corporate leaders to consider more seriously strategies of growth through acquisition of entrepreneurial ventures. For example, if a mid- or large-sized corporation acquired a startup that has a licensing agreement in place, the total amount of the transaction could be regarded as a one-time expense or the acquiring firm could amortize the goodwill part of the transaction in that year of carrying out the acquisition. Another recommended policy option for Japan to take is to introduce lowering obstacles to an IPO. With this enacted in place, we envisage entrepreneurs will be much more motivated to go public and it will help create new employments eventually.

Section 5 *– Public Image of Entrepreneurship*

(1) Role for government in celebrating entrepreneurs publicly: Recent experience in countries such as Ireland, Israel and Chile suggests that government can play a pivotal role in improving the environment for entrepreneurship by changing public attitudes to be more accepting of entrepreneurship as a career path. By being bold about celebrating thriving entrepreneurial ventures in public, government can draw attention to success and possible role models. It must also highlight how failure is a part of the process. The use of media events, highly publicized awards and mention in government literature, speeches and interviews all have impact. Experts note that a small number of highly visible and highly successful new companies can have an outsized impact on public impressions and serve as an inspiration for those who go on to found their own companies. Those successes are the ones that go on to capture the public imagination. It

is worth adding that this point applies in some measure to both the United States and Japan, each of which exhibits considerable regional variation. While known for being home to the Silicon Valley, even in the United States such pockets of innovation are outliers; most communities tend to encourage relatively conservative career choices by comparison. It is in the latter environments where government, particularly top leaders' (i.e. Prime Minister and the President) celebration of entrepreneurs can assist in closing the prestige gap that may deter would-be entrepreneurs from launching their own ventures, either individually or as part of a team.

(2) Media celebration of entrepreneurs: Any celebration of entrepreneurs by government will depend at least in part on the media for its success. In both the United States and Japan there are highly knowledgeable journalists and editors working in the segments of the media that cover start-up businesses, scientific research, and a broad range of other issues relating to innovation and entrepreneurship. Entrepreneurship, however, is new to many major media outlets, which often struggle with how to cover the subject, whether because of inexperience or lack of familiarity with the subject. Yet celebration of entrepreneurs by major media organizations is important to cultivating a supportive climate for entrepreneurs, particularly those who have other attractive career options. In this context, big events that have the potential to attract considerable media attention, like those startups that go on to become big successes, can have an outsized impact.

(3) Lowering the risk/cost of failure: Along with entrepreneurial successes there will be failures, so a supportive environment for entrepreneurship must also incorporate ways of lowering the cost of failure. The aim here is not to eliminate the consequences of failure, for doing so would invite moral hazard. Rather, the objective is to limit the liability when a business does fail. Legally discharging all debts of a company through bankruptcy, for example, enables those who failed to move on to more productive pursuits. When some of those debts remain the personal responsibility of the founders, however, it creates an incentive to keep the company from failing even if it is not likely to succeed. The result is to tie up resources – human and financial – in unproductive pursuits. Research suggests that for "pull" entrepreneurs in particular, reducing the cost of failure has the

effect of encouraging more entrepreneurial behavior precisely because such individuals have other career options. This point applies in particular to those cases where the founders raised money from friends and family through agreements that are often informal in nature. Providing legal remedy to discharge such obligations in case the business fails would send an important signal that will over time shape expectations regarding risk.

Entrepreneurs are most likely to start firms and be successful in an environment where the risk to taking up entrepreneurial challenges is relatively small. In that sense, it is crucial to create an ecosystem where human capital is mobile and the risk starting new ventures is relatively low. It has been said that the human mobility in the Silicon Valley is high, where the barrier to taking up new challenges is low, while in Japan the opposite is said to be true -- where it is difficult to take up new ventures and where the people cannot easily move from one job to another. However, after the bursting of the Internet Bubble from 2002 to 2003 and in the post-Financial crisis period from 2009 to 2010, the rate of new entrepreneurial activity fell even in the Silicon Valley.

In Japan, entrepreneurs are advised to prepare themselves for hardship and hard work to undertake a new venture and this gusto entrepreneurial spirit is emphasized. But in fact, we see that whether in the Silicon Valley or in Japan, people are finally people and they will naturally hesitate if the going looks tough. Therefore to encourage people to start new ventures, it is necessary to prepare an environment-- a cultural, intellectual, and financial infrastructure-- that reduces the overall risk for would-be entrepreneurs in taking the challenge of joining or starting a new company.

C. U.S.-Japan Cooperation: Proposed Projects to Promote Entrepreneurship

There are many types of projects which can contribute to promoting and celebrating entrepreneurship. Such projects may be undertaken by government entities in cooperation with the private sector, or by private sector entities themselves. Possible projects could include:

- **Media Workshop on Entrepreneurship:** A one-day program for journalists and editors from media outlets to increase press and public appreciation for entrepreneurs. One part could consist of interaction with experts; the second could feature entrepreneurs themselves. Beyond familiarizing journalists new to the subject of entrepreneurship with relevant background information and points of reference, such an event would also provide entrepreneurs with the opportunity to tell their stories and appreciate the importance of the media to connecting with a wider audience.

- **Showcase Event Featuring Start-up Success Stories:** A one-day contest or other event featuring new companies conducting actual operations could be held to highlight business start-up success stories for would-be entrepreneurs, the media, policymakers, and the public. By featuring actual businesses, it would focus attention of would-be entrepreneurs and the wider public on how actual businesses got started and overcame the challenges they faced.

- **Mega-prize Business Plan Competition:** A business plan contest with prizes could aim to achieve a very high level of visibility to stand out from the many other contests, to attract top-tier judges and competitors, to draw wide media coverage, and to increase public awareness and acceptance of entrepreneurship. Second- and third-tier or other multiple prizes could be incorporated into the event so as to maximize the value of the event in terms of number of companies benefiting. The purpose of making the competition a by-invitation event, requiring that participants have previously distinguished themselves in some way such as placing at a prior contest, would be to ensure the quality is sufficiently high. Care would need to be taken not to favor any one particular company or other entity; one way of doing so would be to include a broad range of partners from both governments as well as the private sector in both countries.

- **Cross-border Networking Programs:** Organizations can expand people-to-people connections by making use of existing programs and creating new opportunities for engagement with partner organizations. Possibilities include: short-term visitation programs for travel to the United States, university fellowships or other scholarship programs, and training programs, possibly for organizers of entrepreneurship education efforts.

- **Promotion of Horizontal and Inter-company Networking:** Programs can be designed which seek to highlight the activities of existing networks and connect them to each other. Particular emphasis would be placed on those aiming to expand connections among would-be entrepreneurs, new businesses, service-providers, and large companies so as to build a more connected and supportive entrepreneurial ecosystem.

- **Study of Firm-Level Trends to Measure Success:** This project would seek to establish a consistent measure over time to offer market observers a useful understanding of ongoing changes in entrepreneurial firm formation to inform policy discussion. Such a project would break out of the pattern of existing government-sponsored, firm-level research of emerging market trends, which tends to be ad hoc and disconnected from international metrics. A data sample sufficiently large to make inferences about broader innovation and market trends would be potentially useful to angel investors and seed-stage venture capitalists, who may not be able to make use of costly pay-per-use data services currently available; the ventures they support would benefit. METI and JETRO are well positioned to make such data widely available to the public. Impactful firm level data collection standards and benchmarks such as the Kauffman Firm Survey (KFS) in the United States represent a possible template.

- **Study of Corporate Venturing:** In cooperation with relevant academic and private-sector experts, a study could be conducted into the significance of growing corporate venture activity for startups and the wider entrepreneurial ecosystem. Even if the findings prove to be preliminary or inconclusive, any progress toward making widely available reliable statistics on the subject would be of value to all parties concerned.

- **Speaker Program by Major Silicon Valley Entrepreneurs and Investors:** A sponsored program of lectures by major Silicon Valley entrepreneurs and investors could serve to disseminate lessons and best practices to wider audiences.

- **Entrepreneurial Training:** Several groups provide training to prospective entrepreneurs, including Founder's Institute, TechStars and 500 Startups. These programs could be reviewed to determine if they are appropriate for a particular locale, and if so, could be encouraged to provide their programs in that location.

- **Study of Best Practices in Spin Outs:** A significant number of companies have been started based on technology from an existing corporation. (For example, Hortonworks is a spinout from Yahoo to commercialize Hadoop software.) A report could be commissioned to determine the best practices in successful spinouts.

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[1] Dane Stangler, Ewing Marion Kauffman Foundation, "Where Will the Jobs Come From?" (2009): http://www.kauffman.org/uploadedFiles/where_will_the_jobs_come_from.pdf

[2] The term "gazelle" refers especially to startup firms that grow rapidly and sustainably, with the potential to become companies with a market capitalization of $1 billion or more. The expression is commonly applied to the famous new firms that led in the creation of new sectors in a given economy since the 1980s.

[3] See paper by Dane Stangler, Ewing Marion Kauffman Foundation, "The Future Just Happened," June 9, 2009, p.6. URL: http://www.kauffman.org/uploadedFiles/the-economic-future-just-happened.pdf

[4] One such Meiji Period serial entrepreneur was Eiichi Shibusawa (1840 – 1931), who founded numerous firms, including Sapporo Beer and Japan Airlines.

[5] Energy: wind, solar, wave, and other new approaches to clean energy and carbon sequestration.
• Biotechnology: DNA sequencing, DNA synthesis, personalized genomics, drug discovery, stem cells. (Advances in sequencing of the human genome are proceeding faster than was the case for semiconductors, with cost expected to drop from hundreds of thousands of dollars to hundreds of dollars by 2015).
• Information technology:
Software: advancement of artificial intelligence, speech recognition and natural language, computer vision and augmented reality, cybersecurity, software languages and platforms.
Hardware: advanced computing and communication processors and storage systems, advanced sensors, microelectrical mechanical systems (MEMS), and nano-devices.
• Robotics: next generation robots for manufacturing and personal use.
• Space exploration: space has shifted from being the domain of government-led activity and has become the focus of commercial operations, by private companies bidding on U.S. government- and Japanese government-funded projects as well as by private companies seeking to serve non-governmental customers.

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[13] Rohit Shukla, "Supporting high-growth entrepreneurs: the Network-Centric approach to entrepreneurial assistance."http://www.larta.org/publications/Supporting_high-growth_entrepreneurs.pdf.

[14] Notably, three companies accomplished to be listed on stock market and one was acquired by a major IT company. For more information on the U.S.-Japan Business Innovation Center, see: http://www.jetro.org/working_with_japanese_startups_and_smes.

[15] Additional information on the German Silicon Valley Accelerator is available here: http://germanaccelerator.com/.

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See also, for example, Daniel L. Isenberg, "How to Start an Entrepreneurial Revolution," *Harvard Business Review* (2010).

http://hbr.org/2010/06/the-big-idea-how-to-start-an-entrepreneurial-revolution/ar/1.

[18] Information on SBIR is available at: http://www.sbir.gov/about/about-sbir. The assessment of the SBIR program is available at: http://www.nap.edu/catalog.php?record%20id=11989.

[19] For additional information on I-Corps, see: http://www.nsf.gov/news/special_reports/i-corps/.

[20] On the Deshpande Center, see: http://web.mit.edu/deshpandecenter/

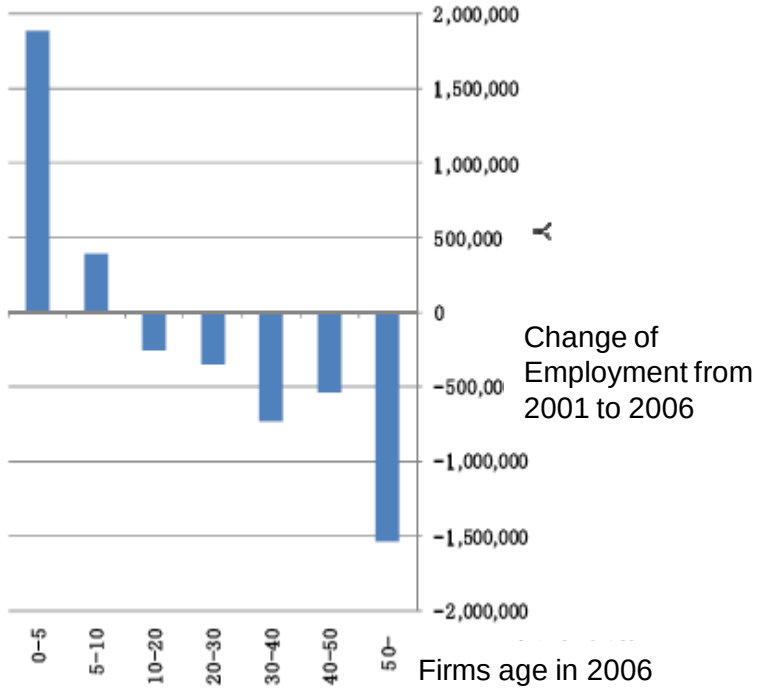
Appendices

Job creation of Venture Business in Japan

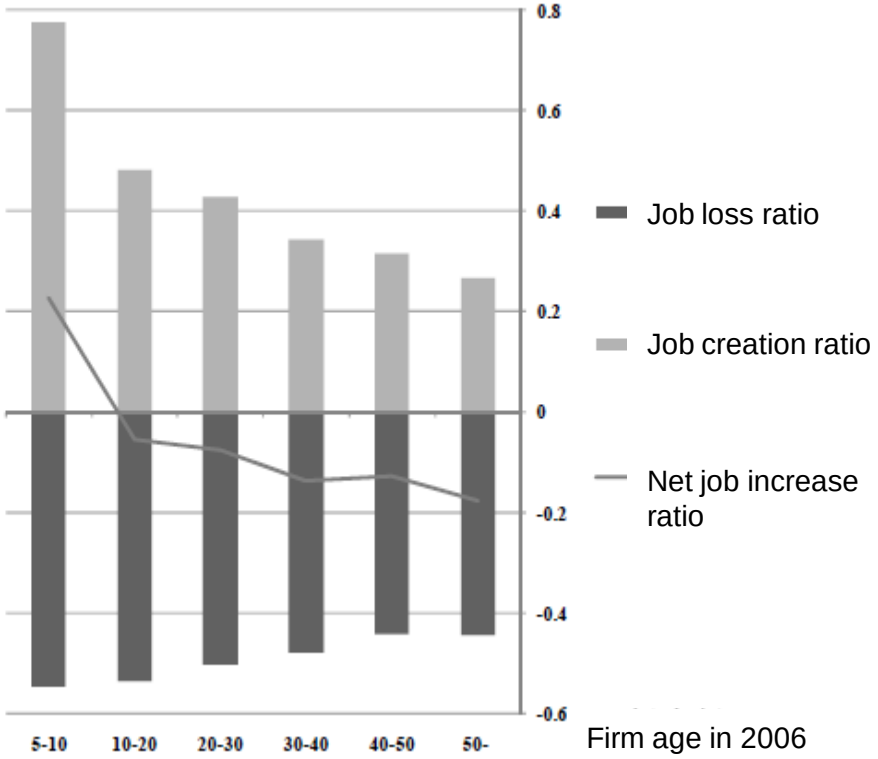
Appendix 1

- Younger firms create jobs in spite of their small share in labor market (6% for the firms established in 2002-2006). On the other hand, older firms have lost many jobs in spite of their large share in labor market (27% for the firms established before 1956).
- Younger firms have high net job increase ratio, even taking account of their entry and exit.

Change of employment from 2001 to 2006



Company age and Jobs creation/loss ratio (2001-2006)



Reference : Kyoji Fukao, Hyeog Ug Kwon (2010) "The Key Drivers of Future Growth in Japan"

Job creation and economic effect of Ventures

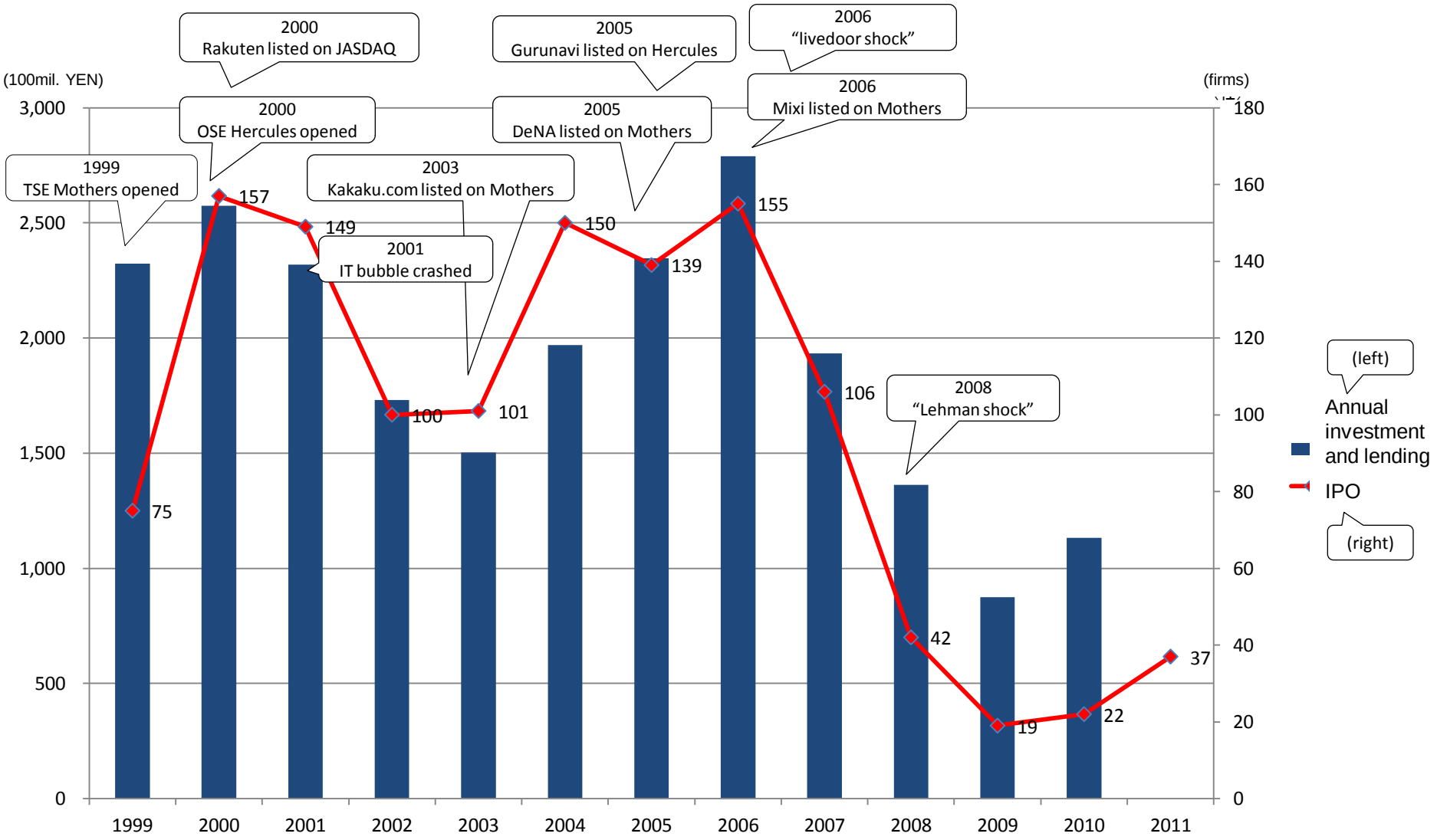
The list of the firms which receive investment from Venture Capital, set up after 1990, listed on stock market after 2001 and meet one of the following conditions.

(1) more than 30 billion Yen of market capitalization, (2) more than 45 billion Yen of consolidated sales,
(3) more than 2000 employees (excluding subsidiaries of major companies, etc.)

Name	Main business	Market cap. (mil. Yen) as of May 2010	Sales (mil. Yen)	Employee	Set up date	Listed date	VC share (data:JVR)
Gree	Social media, social application platform	264,085	13,945	102	Dec. 2004	Dec. 2008	9.82%
DeNA	Social networking, social gaming platform	378,568	37,607	637	Aug. 1999	Feb. 2005	8.80%
ACCESS	Software development	49,515	31,156	1,569	Nov. 1996	Feb. 2001	—
Kakaku.com	E-commerce	95,990	9,713	291	May. 2000	Oct. 2003	33.60%
Mixi	Social networking service	70,089	12,052	278	Oct. 2000	Sep. 2006	16.89%
NPC	Photovoltaic module manufacturing equipment	27,896	14,164	294	Dec. 1992	Jun. 2007	19.86%
Dwango	Network entertainment contents and systems	31,383	26,568	789	Aug. 1997	Jul. 2003	5.20%
Japan Wind Development	Wind power	31,670	7,198	128	Jul. 1999	Mar. 2003	18.10%
Starttoday	Operation of online apparel sales	72,094	10,696	233	Apr. 2000	Dec. 2007	—
Message	Nursing home for old people	37,128	27,099	3,117	May.1997	Apr. 2004	—
Index	Mobile contents	31,984	74,256	1,260	Sep. 1995	Mar. 2001	—
MCJ	PC manufacturing and distribution	5,103	94,427	954	2000.9	Jun. 2004	11.12%

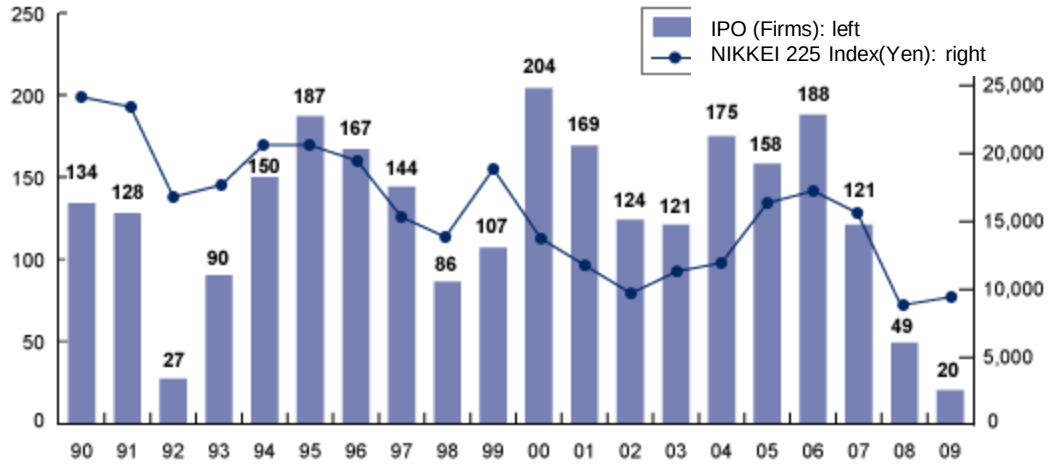
VC Backed Company (at least one of 5 major Japanese Venture Capital is in its top 5 stockholder)
= **1,400 companies** with **140,000 total employees** and **6.2 trillion Yen of total sales**
(data: Teikoku Databank, 2007)

Annual investment of Venture Capital / newly listed firms



Trend of IPO in Japan

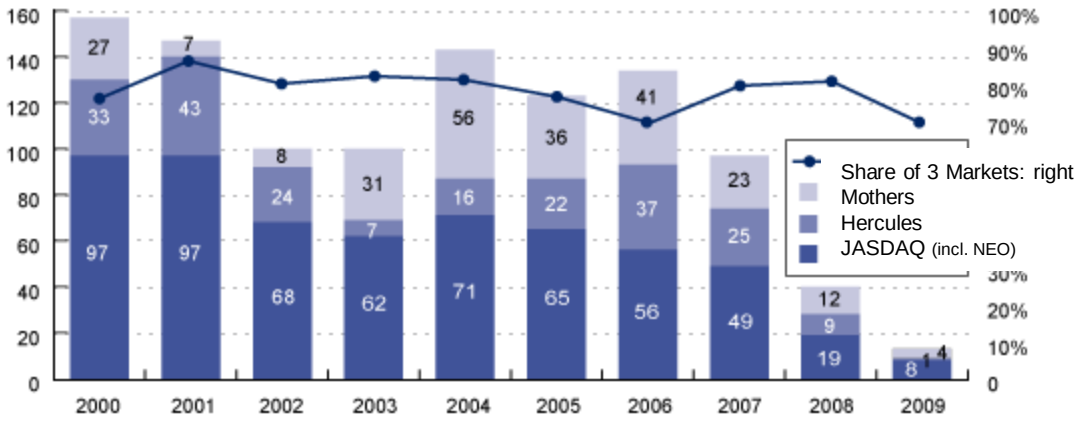
Trend of IPO



Source: KPMG AZSA LLC "IPO Trend (1) Feb. 1, 2010"

The trend changes due to the performance of stock market and the firms expected to be listed, or related laws and regulations. When stock prices remain low, the number of IPO is also relatively small.

Share of Emerging Stock Market in total IPO



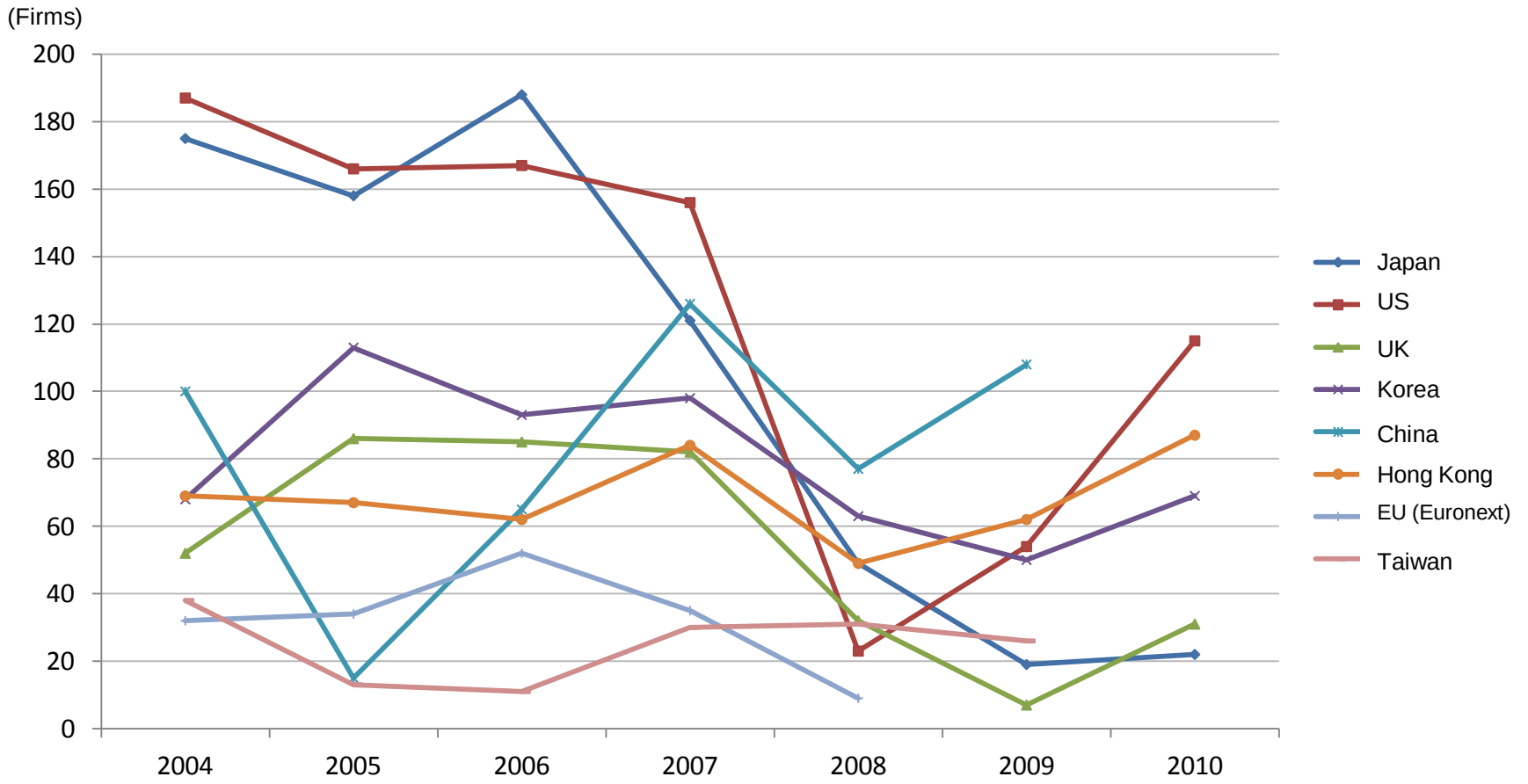
Source: KPMG AZSA LLC "IPO Trend (2) Mar. 8, 2010"

Before 2000, JASDAQ (former OTC Market) played a central role.

- 68.1% share of total IPO on average from 1991 to 1999

Although the number of total IPO has changed, the share of emerging stock market remains high, which means it still plays an important role for growing enterprises.

IPO in major countries



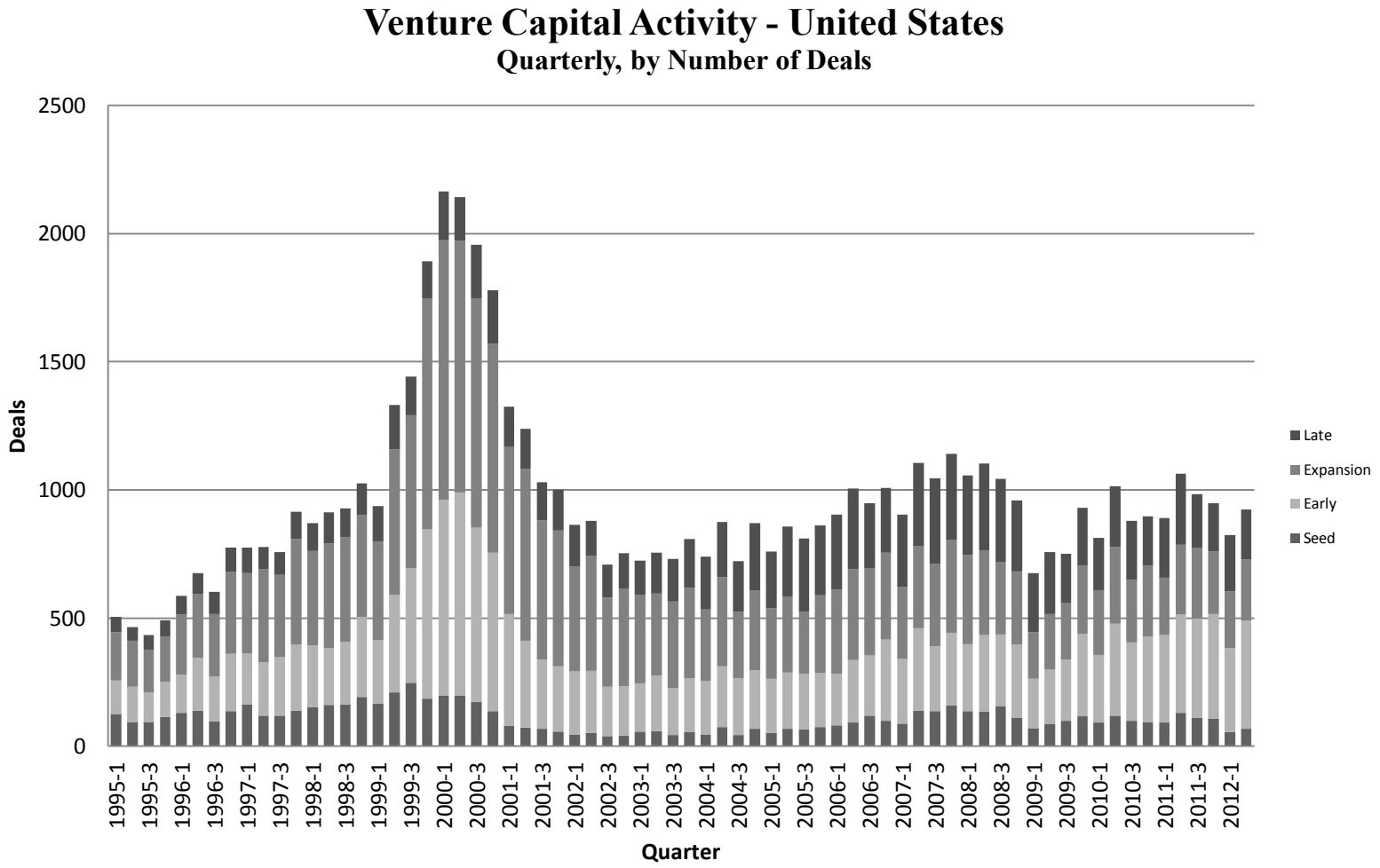
Country of Stock Exchange	2004	2005	2006	2007	2008	2009	2010
Japan	175	158	188	121	49	19	22
United States	187	166	167	156	23	54	115
Korea	68	113	93	98	63	50	69
China	100	15	65	126	77	108	

Note: except investment trust. The data of UK excludes IPO in AIM, PSM(Professional Securities Market), SFM(Specialist Fund Market). The data of Korea and China covers from 2004 to Nov. 2009.

Source: Venture Enterprise Center, National Venture Capital Association, World Federation of Exchanges, Ernst & Young “2009 global IPO update”, Stock Exchange of each country/area

Venture Capital Activity – United States

Appendix 2




Venture Capital Activity - United States
Quarterly by Dollar Amount
US$ (billion)
30
25
20
15
10
5
0
1995-1
1995-3
1996-1
1996-3
1997-1
1997-3
1998-1
1998-3
1999-1
1999-3
2000-1
2000-3
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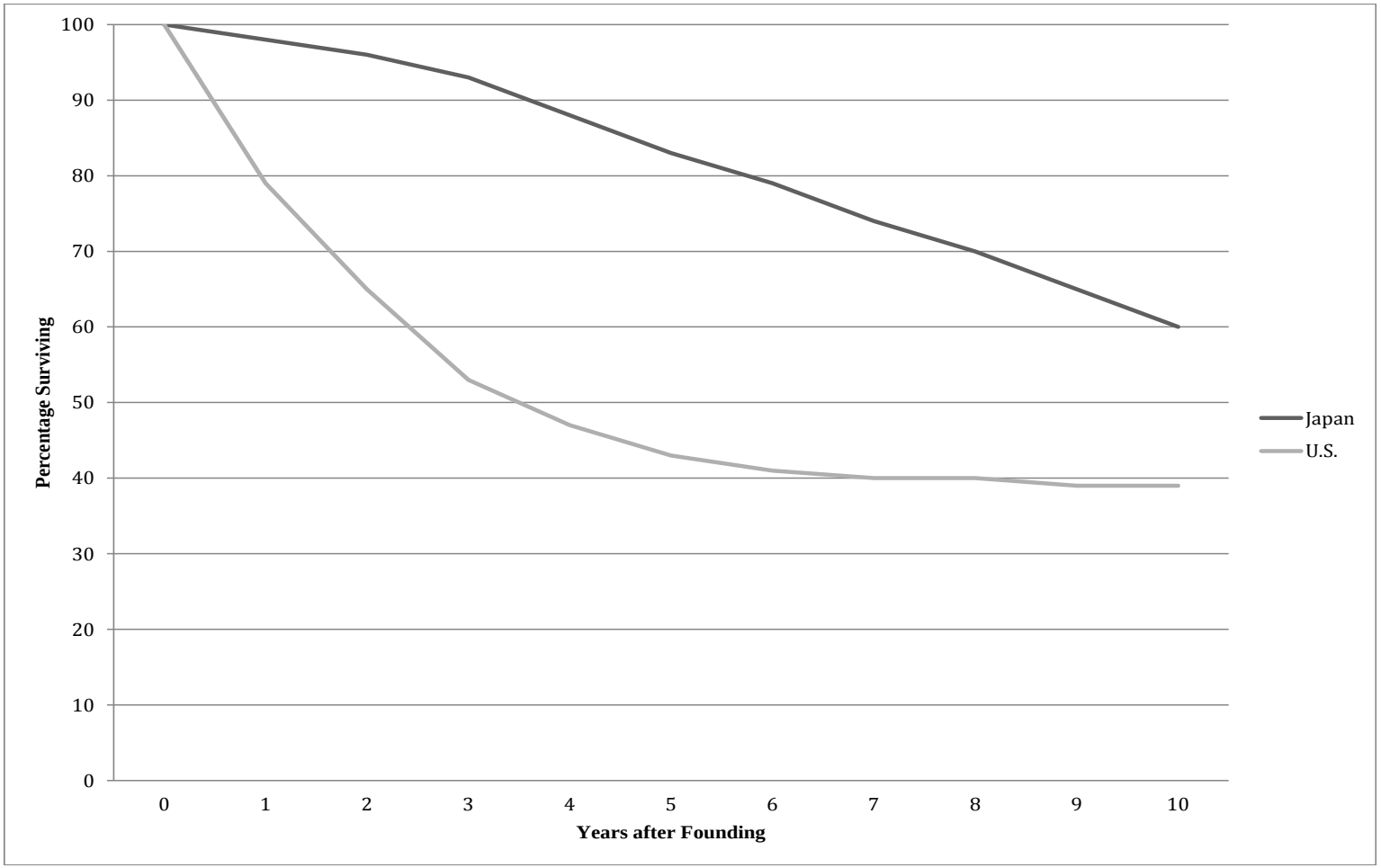
2007-3
2008-1
2008-3
2009-1
2009-3
2010-1
2010-3
2011-1
2011-3
2012-1
Quarter
Late
Expansion
Early
Seed

Japan - U.S. New Corporation Survival Rates

Appendix 3



Source: Teikoku Data Bank, U.S. Census

Small Business Set-Aside Program

The United States maintains and strengthens the national small business economy through the Small Business Administration (SBA). Using an assortment of procurement programs, loans, education and out-reach, the SBA fulfills its goal of aiding, counseling, assisting, and protecting the interests of small business concerns. Through the focused use of procurement, the United States government strengthens small business by directing already budgeted funds for federal contracts towards small and minority owned businesses.

The Small Business Set-Aside program (SBSA) is probably one of the oldest programs established to help small businesses win government contracts. The SBSA helps assure that small businesses are awarded a fair proportion of government contracts by reserving (i.e., "setting aside") certain government purchases exclusively for participation by small business and minority-owned concerns. To reach the federally mandated goal of at least 23 percent of all federal government procurement, the SBA assists small business in obtaining these contracts. During fiscal year 2011, the SBA assisted small businesses in procuring $91.4 billion in federal contracts.

Under the SBSA, federal procurement is broken into smaller categories. These categories include prime contracting, subcontracting and programs focused on gaining federal contracts for business concerns owned by socio-economically disadvantaged persons, economically disadvantaged persons or businesses located in economically distressed areas. The categories allow the federal government to better emphasize certain areas of the small business economy, such as women's and minority involvement. Set-aside contracts are also determined by monetary value, ranging from $3,000 to $150,000.

The implementation of SBSA procured contracts is determined by a federal agency contracting officer. Once a set-aside has been determined, every acquisition of supplies or services that has an anticipated dollar value between $3,000 and $150,000 is automatically reserved exclusively for small businesses participating in the 8(a) Business Development (BD), HUBZone, Veteran-Owned, Service-Disabled Veteran-Owned (SDVO), or Woman- Owned Small Business (WOSB)Programs

For a procurement to qualify as a set-aside, there must be a reasonable expectation that when the procurement is put out to bid it will generate bids from two or more small business concerns that are competitive in terms of market prices, quality, and delivery ("Rule of Two"). When a set-aside contract is offered and only one acceptable bid is received, the contract will be awarded to that firm on the basis that the price is determined to be fair and reasonable. If no acceptable offers are received from responsible small business concerns, the set-aside will be dissolved and the product or service, if still valid, will be re-solicited on an unrestricted basis.

Table 1: Procurement Assistance (in millions)

		FY2008	FY2009	FY2010	FY2011
Prime Contracting	Annual Value of Federal Contracts*	$92,148	$96,833	$97,946	$91,467
Surety Bond	Number of Final Bonds Guaranteed	1,576	1,220	1,588	1,863
HubZone	Annual Value of Federal Contracts*	$10,157	$12,413	$11,968	$9,915
8(a) Program	Number of Small Businesses Assisted	9,462	8,827	8,444	7,814
8(a) Program	Annual Value of Federal Contracts*	$13,573	$18,669	$18,466	$16,678

* As reported in FPDS-NG: http://www.fpdsng.com/fpdsng_cms/index.php/reports

Appendix 5

Public Demand Act and the Guideline

- ✓ Act on Ensuring the Receipt of Orders from the Government and other Public Agencies by SMEs ("Public Demand Act" enacted in 1966) provides that the Government should make efforts to expand the opportunities that more SMEs will receive order from the Government.
- ✓ Guideline of contracts by the Government and other Public Agencies will be decided by Cabinet each fiscal year. (For FY2012, it was approved on June 22th)
- ✓ After the Cabinet decision, METI Minister issues requests to Ministers, Governors and Mayors of major cities of more than 100,000 population for taking actions to increase the opportunities of SMEs' receiving orders.
- ✓ The details of the Principle will be explained in the Seminars at 51 locations all over the country.

Major Summary of the Guideline in FY2012

1. Measures on expanding the opportunities of receiving order for SMEs
   a) Arrangement for SMEs in the area affected by the Great East Japan Earthquake
   b) Ensuring the provision of information on public procurement
   c) Facilitation for SMEs to receive more orders
   d) Consideration on the features of SMEs
   e) Encouraging prevention of anti-dumping measures

2. Target amount of contracts with SMEs
   - 3,831.2 billion YEN
     (56.3% of total budget of the Government and other Public Agencies procurement*)

3. Approach by the whole Government on the issue

* except special orders not capable for SMEs

Figures of SMEs' Receipt of Orders from the Government and other Public Agencies

(100mil. YEN)

	Results in FY 2011			Target for FY 2012		
	Total （A）	For SMEs（B）	Ratio（B/A）	Total （A）	For SMEs（B）	Ratio（B/A）
House of Representatives	173	45	26.2%	122	67	55.0%
House of Councilors	33	6	19.9%	31	17	55.0%
Supreme Court	233	124	53.2%	275	135	49.1%
Board of Audit	7	3	47.0%	8	5	68.9%
Cabinet Office	1,186	641	54.1%	978	530	54.2%
Reconstruction Agency	1	1	75.7%	7	4	55.3%
Ministry of Internal Affairs and Communications	240	113	46.9%	273	132	48.3%
Ministry of Justice	797	505	63.4%	1,321	747	56.6%
Ministry of Foreign Affairs	98	31	31.6%	93	66	71.0%
Ministry of Finance	906	462	51.0%	801	440	54.9%
Ministry of Education, Culture, Sports, Science and Technology	594	486	81.9%	488	455	93.2%
Ministry of Health, Labor and Welfare	548	384	70.1%	897	606	67.5%
Ministry of Agriculture, Forestry and Fisheries	2,028	1,563	77.1%	2,320	1,790	77.2%
Ministry of Economy, Trade and Industry	187	121	64.7%	178	110	61.8%
Ministry of Land, Infrastructure, Transport and Tourism	22,906	12,492	54.5%	21,855	12,015	55.0%
Ministry of Environment	381	135	35.5%	283	192	67.9%
Ministry of Defence	9,984	4,099	41.1%	8,661	3,936	45.4%
Public Agencies*	28,490	15,043	52.8%	29,459	17,063	57.9%
Total	68,791	36,256	52.7%	68,052	38,312	56.3%

＊ totally 196 entities including Independent Administrative Institutes, National Universities

Appendix 6

Advanced Technology Projects: Concepts and Examples

Objectives:

A.1 Create a significant, public funded, market for advanced and yet uncreated technologies.

A.2 Create a market that will require both existing and new firms to invest in research and development to supply those advanced needs, and have the certainty of a market.

A.3 Establish conditions in which prime suppliers will need the expertise of new sub-suppliers.

A.4 Create long-term employment opportunities for engineers, scientists, and administrators.

A.5 Obtain public support through capturing the public's imagination, and producing results that are public goods such as scientific exploration or significant expansion of knowledge.

A.6 Ensure the need and opportunity for further significant U.S.-Japan cooperation.

Market Size and Project Duration:

B.1 To ensure minimum market size necessary to accomplish the objective, advanced projects would require adequate funding.

B.2 Advanced technology projects, to provide opportunities for stable employment and attractive careers, should have a minimum duration of 10 years.

Examples of Conceptual Projects Meeting These Criteria:

C.1 Joint U.S.-Japan manned mission to Mars by 2025. Minimum crew size of five. Mission duration of 1.5 to 4 years, depending on ascent method. Joint effort of governments and private sector.

C.2 *De novo* Smart City. Creation of complete smart cities, minimum population of 100,000. Replacement and re-engineering of all facilities. One city in each country. Develop methods for proliferation. Quantify, measure, and verify benefits.

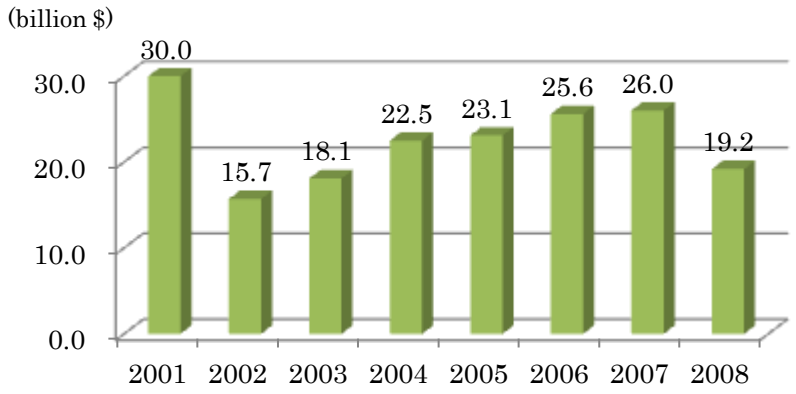
C.3 Creation of under-sea permanent research and exploration network of occupied stations. Locate near geologic interest, resource interest, and extreme deep sea sites. Objective is to create resource maps, categorize and discover new species, study ocean ecosystems, create surface expositions and interest.

Appendix 7

Summary - U.S. Angel Investment

U.S. angel capital, that is capital to fund new firms that in not part of a formal organization in terms of disbursement or an intermediated arrangement like venture capital, is larger than venture capital investments. The following from the Center for Venture Research makes clear:

Center for Venture Research: Annual US Angel Market Investments (billions)



The largest study of angel investors in North America is available in a report by the Ewing Marion Kauffman Foundation and the Angel Capital Education Foundation. It was conducted by Robert Wiltbank of Willamette University and Warren Boeker of the University of Washington. The "Returns of Angel Investors in Groups" study was conducted over 2010 and analyzed results from 86 organized angel investor groups throughout the United States who experienced more than 1,130 exits; (acquired, went public, or were closed.) Some key findings:

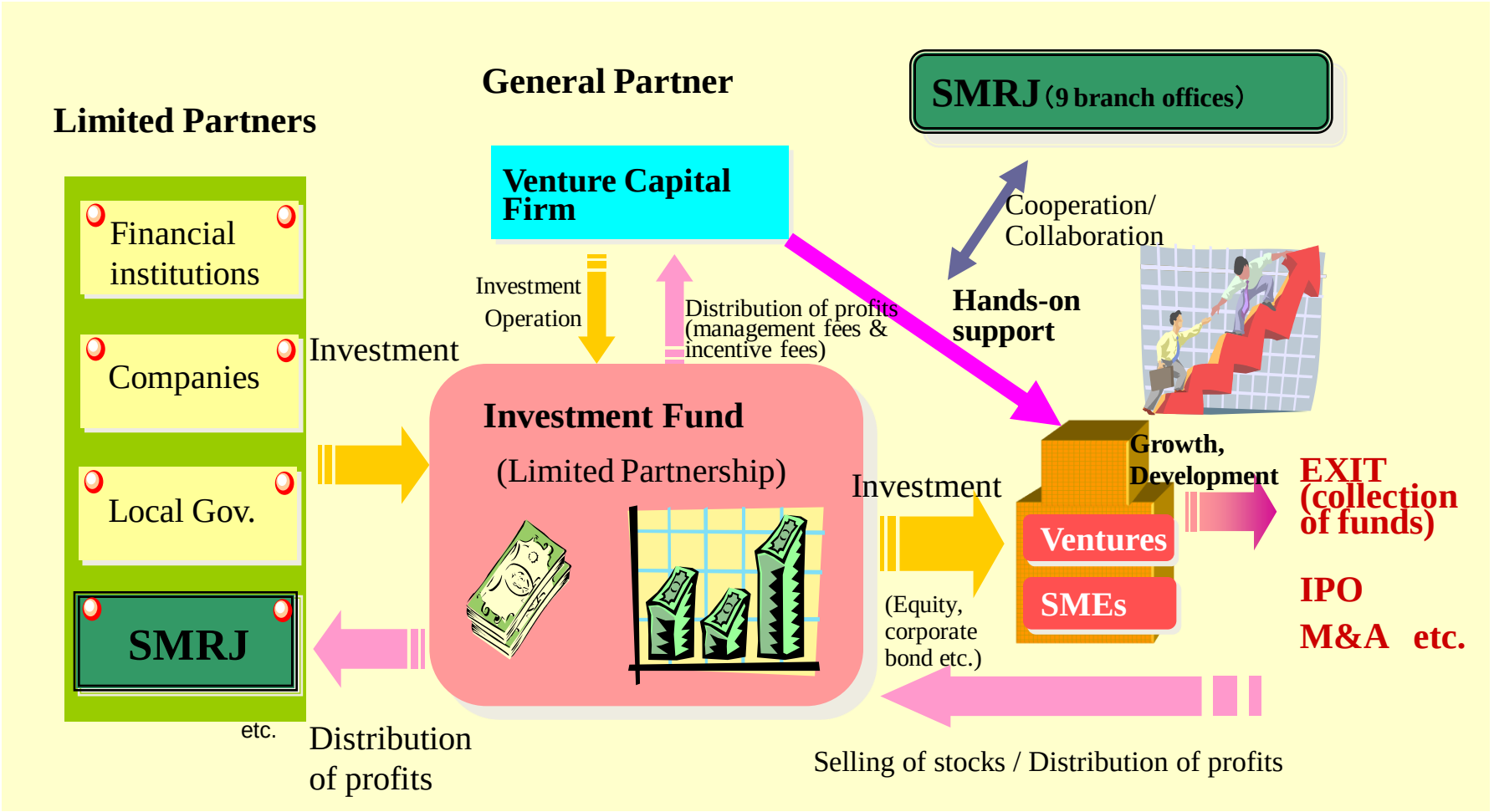
- Angel investors participating in organized angel groups achieved an average 27 percent internal rate of return.
- Seven percent of exits generated returns above 10 times their initial investment.
- In slightly more than half the venture investments, some or all of the study respondents' investment capital was lost.
- Nearly 45 percent of the investments in companies that had no revenues at the time of the first investment
- Returns were nearly double for investments in ventures where the investor had related industry expertise.
- After an angel makes an investment, his or her participation in the venture – through mentoring, coaching, and financial monitoring – is significantly related to that venture's returns.
- Sixty-five percent of the exits with below-average time spent on due diligence reported a return that was less than their original investment. Losses occurred in only 45 percent of the deals where investors did above-average due diligence.

Overall, this studies set of angel investors affiliated with angel groups experienced exits that generated 2.6 times their invested capital in 3.5 years from investment to exit. This return compares favorably to that of other private equity investments, including those of early-stage venture capital.

SMRJ's Fund Investment Scheme

Appendix 8

- A venture Capital firm (VC) raises capital from financial institutions, companies and public institutions as general partners (GP), and establishes pooled investment funds.
- Financial capital is invested in entrepreneurial ventures/SMEs, while GP provides those companies with management assistance to improve their corporate value.

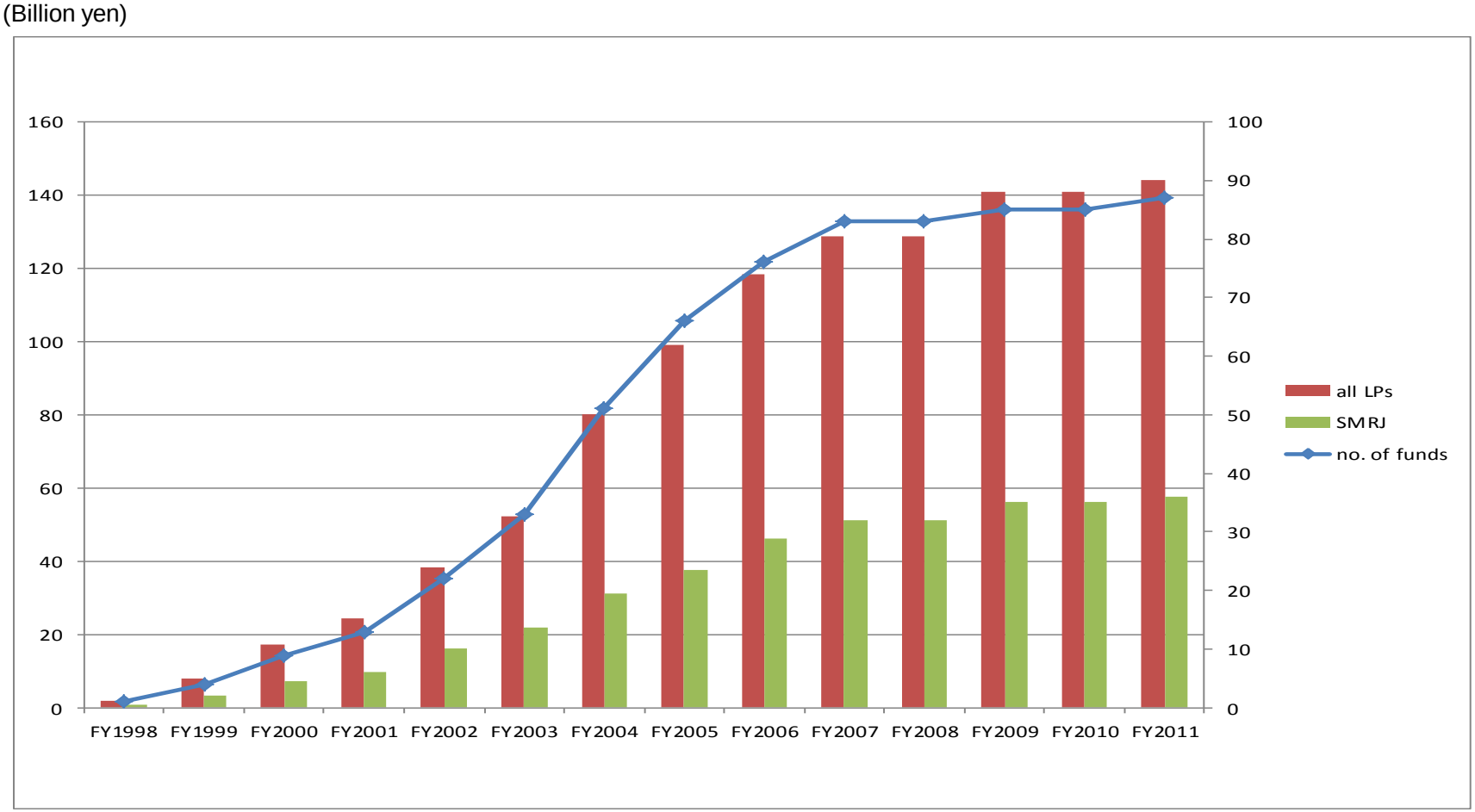


SMRJ - The Organization for Small & Medium Enterprises and Regional Innovation JAPAN is the sole government policy implementation organization for comprehensive SME management support and promotion of regional industries in Japan.

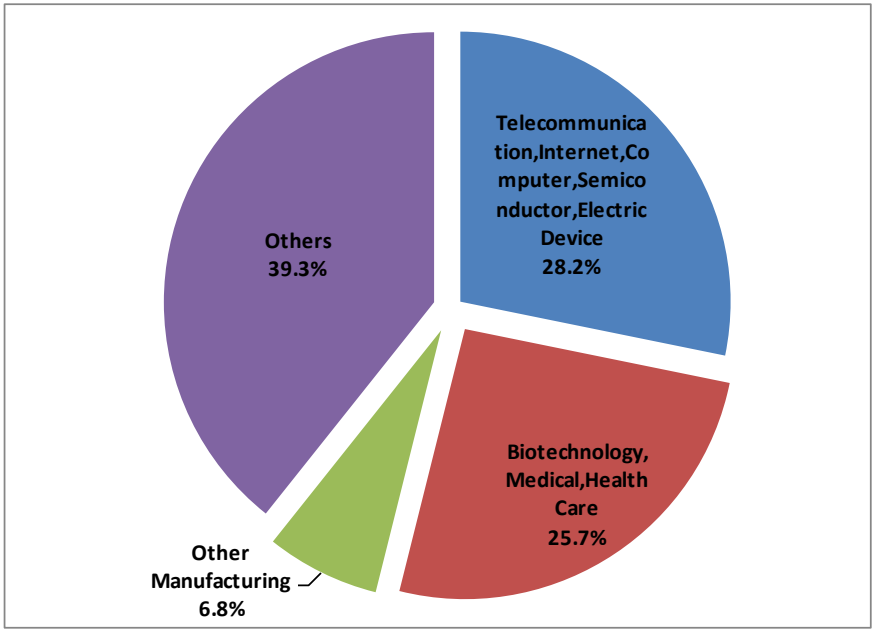
Venture Fund Investment Business (SMRJ)

For the purpose of collecting private funds, the Organization for Small & Medium Enterprises and Regional Innovation Japan (SMRJ) launched the fund investment business in order to expand supplying funds to foster small and medium enterprises and venture firms since 1998.
The target of this business is a fund which aims at investing more than 70% of its total investment amount or 1.4 times the amount invested by SMRJ in entities at the early stage (within five years from establishment) and SMRJ provides the fund up to half of total investment amount.

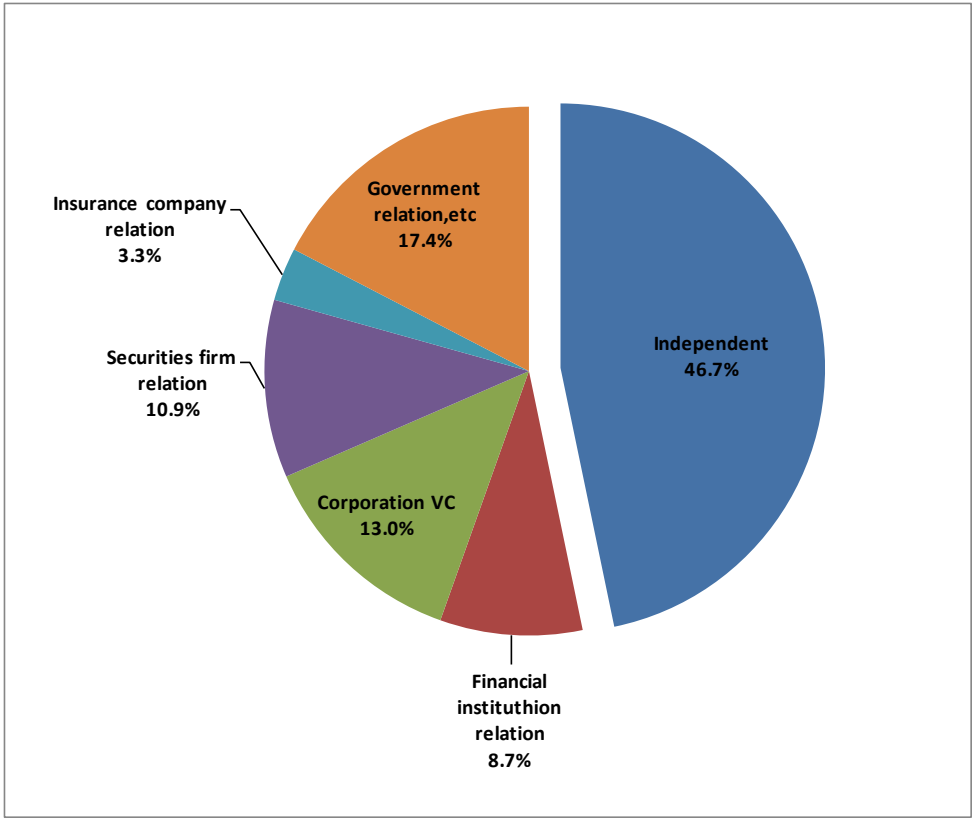
At the time of March 31, 2012, SMRJ invests to 87 funds, amount of total investment is 143.9 billion yen (of which, SMRJ invested 57.5 billion yen).



Invested Companies by Venture Funds



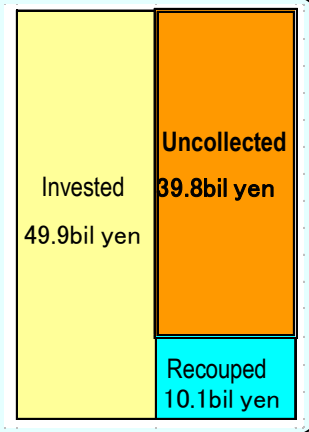
General Partners of Venture Funds



Results of the Venture Fund Program
(Contributions to the increase in sales/employment)

Balance of payments of the Venture Fund (as of end of March,2010)

Total investment :49.9bil yen
Total distribution :10.1bil yen
Net expenditure:39.8bil yen

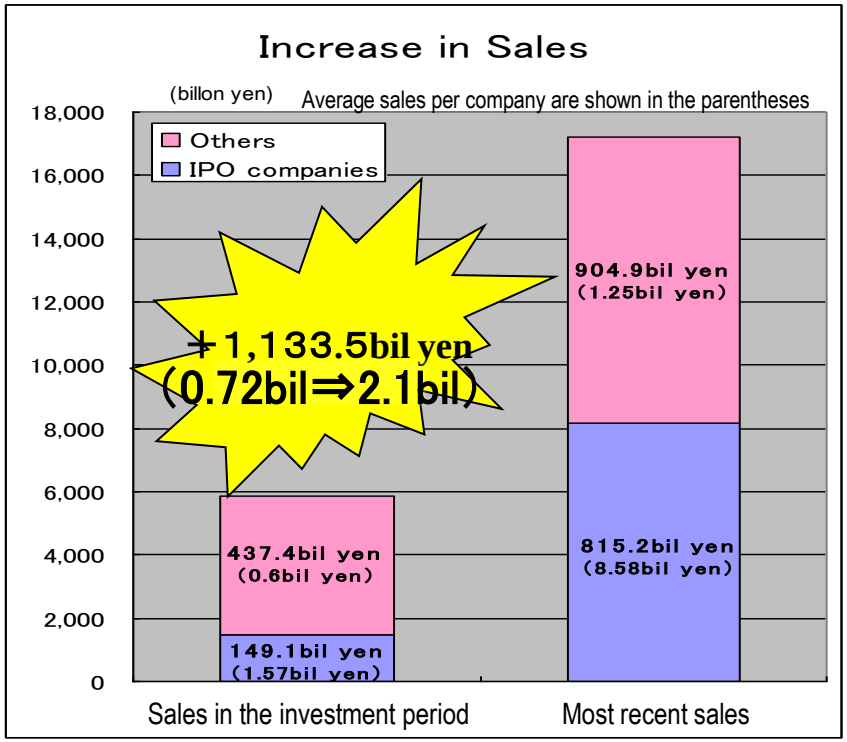


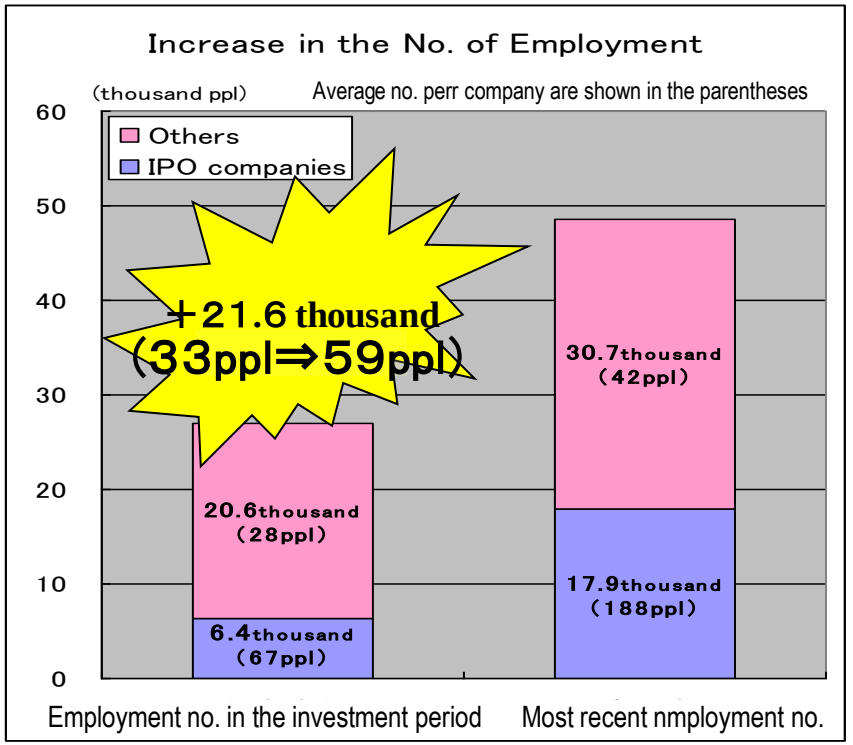
＜The Economic Effects of the Venture Fund＞

★The amount of sales increase is approx. 30 timrs the net investment amount
1,133.5bil yen÷39.8bil yen≒28.5

★1 employee per 1.85mil yen was generated
39.9bil yen÷21.6thousand ppl≒1.85mil yen

※Employment creation by public investment requires approx. 7.35mil yen per person（Estimates by MLIT in Feb.2009）





Summary : Tax Incentives for Angel Investors in Japan

Appendix 9

- Tax Incentive for Angel Investors in Japan ("Angel Tax") was established in 1997. Since then, the system has been frequently upgraded.

[Current system]

Preferential treatment at investment

Preferential treatment A

An amount (investment to Venture – 2,000Yen) will be deducted from taxable income of the year.

※the amount of investment can be up to 40% of taxable income or 10 mil. Yen, whichever the lower.

Preferential treatment B

An amount of investment to Venture will be deducted from capital gain on stock sales of the year.

※No ceilings on the amount of investment

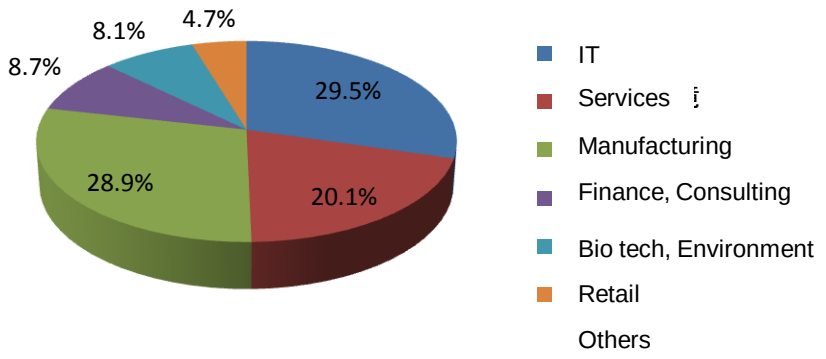
Preferential treatment at sales

- The loss from stock sales will be sum up (offset) together with profit on other stock sales of the year.
- The excess of loss which cannot be offset may transfer (offset) over the next three years.

・Quantitative Data (FY1997 – 2011)

	Total
Number of Investment	4,741
Investors	3,854
Confirmed companies	310
Amount of investment	7.89 bil. Yen
Average investment (invest amount / investor)	1.67 mil. Yen

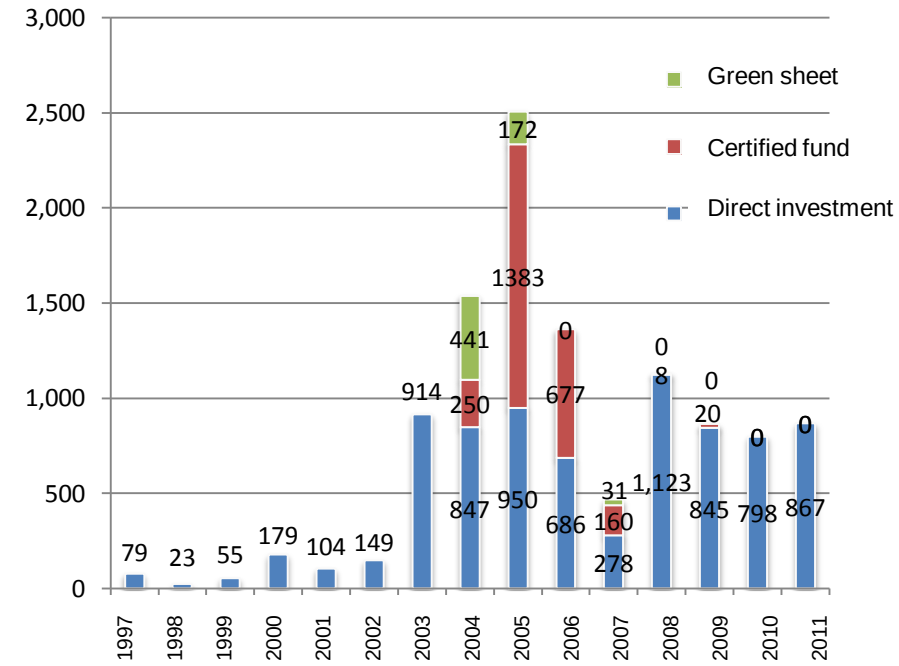
Confirmed company by sectors



Yearly Data : Angel Tax in Japan

The amount of investment
Direct investment, Certified fund, Green sheet issues
as of Mar. 2012

(mil. Yen)

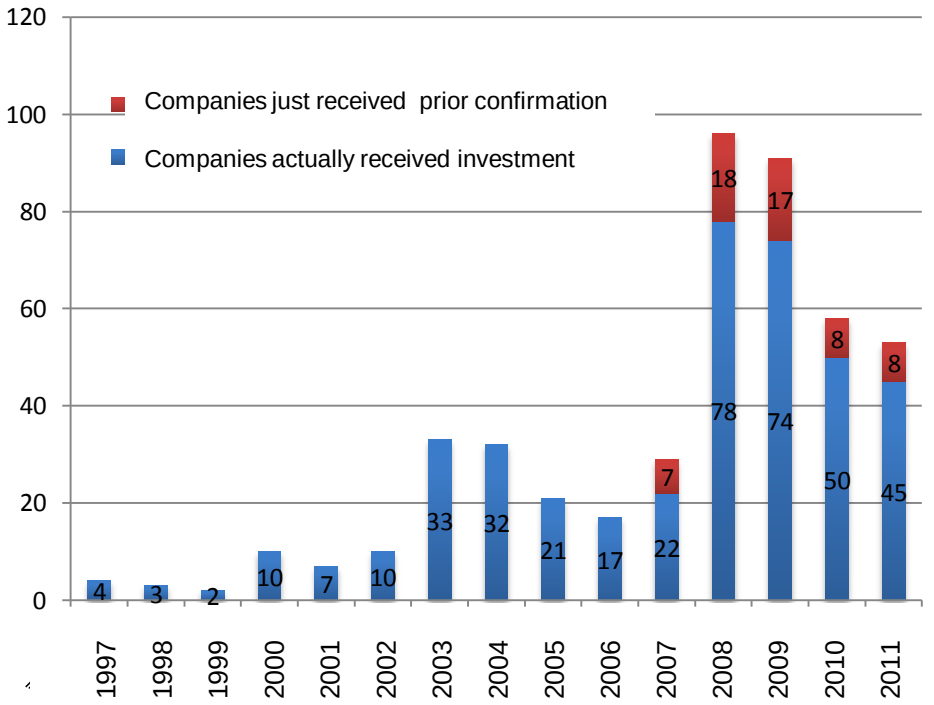


※"Green sheet": Securities designated by Japan Securities Dealers Association as Emerging Section of Green sheet issues.
※"Certified fund": Investment limited partnership certified by METI

Number of Companies Using Angel Tax
as of Mar. 2012

Number of investor* 497 in FY2008 → 834 in FY2010
***total number**

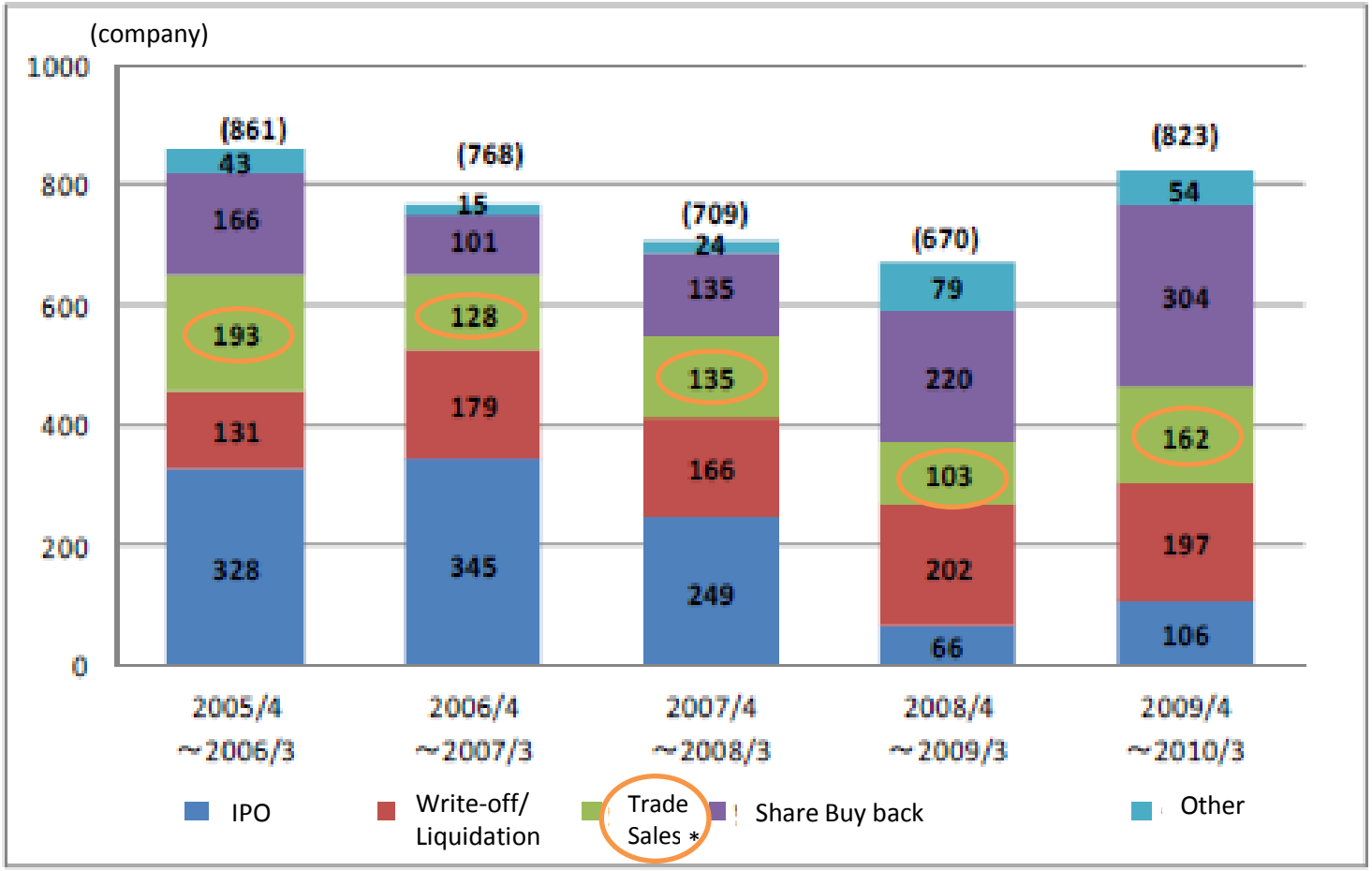
(company)



※Investment companies of Green sheet Market and Certified funds are excluded.

※The number of FY2011 will increase due to past financial year applications.

Exits of Venture firms in Japan



(*including M&A) (Source: Survey by Venture Enterprise Center)