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Scattering Geese: The Venture Capital Industries of East Asia*
A Report to the World Bank

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At the beginning of the 21st Century, the importance of venture capital for the funding of new high-growth potential firms is universally recognized. Many defining firms of the last three decades including 3Com, Amgen, AMD, Compaq, Cisco, Federal Express, Genentech, Intel, Oracle, and Sun Microsystems were first funded by venture capitalists. Venture capital provides capital for financing some of the most dynamic, innovative firm clusters in the world. In the last two decades, venture capital investing has diffused internationally - - there are now 30 national venture capital associations. This report examines the development of the venture capital industry in China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan, and Vietnam.[1]

The diversity of East Asian nations in terms of their national systems of innovation, levels of entrepreneurship, political economic development, varying labor practices, corporate ownership regulations, educational achievement, and business cultures means that each country and its venture capital industry has a different evolutionary trajectory. This, quite naturally, means that current development and prospects for the future differ significantly from country-to-country. Moreover, the larger economies especially China and Japan have complex and even contradictory forces at work complicating any assessment of the continuing development and emerging role of venture capital.

This report is divided into five major sections. The first section discusses the history, development, and operation of venture capital as an institution and its economic impacts. This is followed by a section that provides a checklist of the criteria of qualifications to be considered venture capital and the necessary conditions and preconditions to develop a dynamic venture capital industry. The third section is a general overview of venture capital in Asia. The fourth and longest section is a nation-by-nation discussion of venture capital in Asia. The final section summarizes the situation of venture capital in Asia and speculates on its further development.

1. Venture Capital as an Institution: History and Operation[2]

Prior to World War Two, the source of capital for entrepreneurs everywhere was either the government,

[1]In this report we treat Hong Kong and Taiwan separately from China because of their very different political and economic systems.

government-sponsored institutions meant to invest in such ventures, or informal investors (today, termed "angels") that usually had some prior relationship to the entrepreneur.[3] In general, throughout history private banks, quite reasonably, have been unwilling to lend money to a newly established firm, because of the high risk and lack of collateral.[4] After World War Two, in the U.S. a set of intermediaries emerged who specialized in investing in fledgling firms having the potential for extremely rapid growth. From its earliest beginnings on the U.S. East Coast, venture capital gradually expanded and became an increasingly professionalized institution. During this period, the locus of the venture capital industry shifted from New York and Boston on the East Coast to Silicon Valley on the West Coast (Florida and Kenney 1988a; 1988b; Gompers 1994). By the mid 1980s, the ideal-typical venture capital firm was based in Silicon Valley and invested largely in electronics with lesser sums devoted to biomedical technologies.[5] Until the present, in addition to Silicon Valley, the two other major concentrations have been Boston and New York City. In both Europe and Asia, there are significant concentrations of venture capital in London, Israel, Hong Kong, Taiwan, and Tokyo.

In the U.S., the government has played a role in the development of venture capital, though, for the most part, it was indirect. The indirect role, i.e., the general policies that also benefited the development of the venture capital industry, was probably the most significant. Some of the most important of these were: The U.S. government generally practiced sound monetary and fiscal policies ensuring relatively low inflation with a stable financial environment and currency. U.S. tax policy, though it evolved, has been favorable to capital gains, and a number of decreases in capital gains taxes may have had some positive effect on the availability of venture capital (Gompers 1994). With the exception of a short period in the 1970s, U.S. pension funds have been allowed to invest prudent amounts in venture capital funds. The NASDAQ stock market, which has been the exit strategy of choice for venture capitalists, was strictly regulated and characterized by increasing openness thus limiting

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[2] This section is adapted from Kenney and Burg (1999) and Dossani and Kenney (2001).
[3] On angels, see Robinson and van Osnabrugge (2000).
[4] Normally, banks charge interest. A practice that, to be successful, requires the repayment of the capital. Or, put differently, bankers cannot afford the loss of their capital when their return is only an interest payment.
[5] There are, of course, important venture capital firms headquartered in other regions, and there is a diversity of venture capital specialists. For example, there are funds that specialize in retail ventures. Some of the largest venture capital funds such as Oak Investment Partners and New Enterprise Associates have partners devoted to retail ventures, though their main focus is IT. So, there is significant diversity in the venture capital industry (Gupta and Sapienza 1992).

investor's fears of fraud and deception. This created a general macroeconomic environment of transparency and predictability, reducing risks for investors. Put differently, environmental risks stemming from government action were minimized -- a sharp contrast to most developing nations.

Another important policy has been a willingness to invest heavily and continuously in university research. This investment funded generations of graduate students in the sciences and engineering. From this research has come trained personnel and innovations; some of who formed firms that have been funded by venture capitalists. U.S. universities particularly, MIT, Stanford, and UC Berkeley played a particularly salient role (Kenney and von Burg 1999; Saxenian 1994).

The most important direct U.S. government involvement in encouraging the growth of venture capital was the passage of the Small Business Investment Act of 1958 authorizing the formation of small business investment corporations (SBICs). This legislation created a vehicle for funding small firms of all types. The legislation was complicated, but for the development of venture capital the following features were most significant: It permitted individuals to form SBICs with private funds as paid-in capital and then they could borrow money on a two-to-one ratio initially up to $300,000, i.e., they could use up to $300,000 of SBA-guaranteed money for their investment of $150,000 in private capital. There were also tax and other benefits, such as income and a capital gains pass-through and the allowance of a carried interest as compensation. The SBIC program became one that many other nations either learned from or emulated.

The SBIC program also provided a vehicle for banks to circumvent the Depression-Era laws prohibiting commercial banks from owning more than 5 percent of industrial firms. The banks' SBIC subsidiaries allowed them to acquire equity in small firms. This made even more capital available to fledgling firms, and was a significant source of capital in the 1960s and 1970s. The final investment format permitted SBICs to raise money in the public market. For the most part, these public SBICs failed and/or were liquidated by the mid 1970s. After the mid 1970s, with the exception of the bank SBICs, the SBIC program was no longer significant for the venture capital industry.

The SBIC program experienced serious problems from its inception. One problem was that as a government agency it was very bureaucratic having many rules and regulations that were constantly changing. Starting in 1965 Federal criminal prosecution was necessary to rectify the misappropriation of funds, incompetence, and fraud undertaken by some SBICs. By one estimate, "nine out of ten SBICs had violated agency regulations and dozens of companies had committed criminal acts" (Bean 2000). Despite the corruption, something valuable also occurred. Namely, and especially, in Silicon Valley, a number of individuals used their SBICs to leverage their personal capital, and some were so successful that they were able to reimburse the program and raise institutional money to become formal venture capitalists. The SBIC program accelerated their capital accumulation, and as important, government regulations made these new venture capitalists professionalize their investment activity, which had been informal prior to entering the program. Now-illustrious firms such as Sutter Hill Ventures, Institutional Venture Partners, Bank of America Ventures, and Menlo Ventures began as SBICs.

The historical record also indicates that government action can harm venture capital. The most salient example came in 1973 when the U.S. Congress, in response to widespread corruption in pension funds, changed Federal pension fund regulations. In their haste to prohibit pension fund abuses, Congress passed the Employment Retirement Income Security Act (ERISA) making pension fund managers criminally liable for losses incurred in high-risk investments. This was interpreted to include venture capital funds, as a result pension managers shunned venture capital nearly destroying the entire industry. This was only reversed after active lobbying by the newly created National Venture Capital Association (NVCA) (Pincus 2000; Stultz 2000). In 1977, it succeeded in starting a gradual loosening process that was completed in 1982 (Kenney forthcoming). The new interpretation of these pension fund guidelines contributed to first a trickle then a flood of new money into venture capital funds.

The most successful case of the export of Silicon Valley-style venture capital practice is Israel where the government played an important role in encouraging the growth of venture capital (Autler 2000). The government has a relatively good economic record, there is a minimum of corruption, massive investment in military and, particularly, electronics research, and the excellent higher educational system. The importance of the

relationships between Israelis and Jewish individuals in U.S. high-technology industry and the creation of the Israeli venture capital system should not be underestimated. For example, the well-known U.S. venture capitalist, Fred Adler, began investing in Israeli startups in the early 1970s, and in 1985 was involved in forming the first Israeli venture capital fund (Autler 2000: 40). Still, the creation of an Israeli venture capital industry would wait until the 1990s, when the government funded an organization, Yozma, to encourage venture capital in Israel. Yozma received $100 million from the Israeli government. It invested $8 million in ten funds that were required to raise another $12 million each from "a significant foreign partner," presumably an overseas venture capital firm (Autler 2000: 44). Yozma also retained $20 million to invest itself. These “sibling” funds were the backbone of a now vibrant community that invested in excess of $1 billion in Israel in 1999 (Pricewaterhouse 2000).

In the U.S., venture capital emerged through an organic trial-and-error process, and the role of the government was limited and contradictory. In Israel the government played a vital role in a supportive environment in which private-sector venture capital had already emerged. The role of government differs. In the U.S. the most important role of the government was indirect, in Israel it was largely positive in assisting the growth of venture capital, in India the role of the government has had to be proactive in removing barriers (Dossani and Kenney 2001).

In every nation, the state has played some role in the development of venture capital. Venture capital is a very sensitive institutional form due to the high-risk nature of its investments, so the state must be careful to ensure its policies do not adversely affect its venture capitalists. Put differently, capricious governmental action injects extra risk into the investment equation. However, judicious, well-planned government policies to create incentives for private sector involvement have in the appropriate lead to the establishment of what became an independent self-sustaining venture capital industry.

2. Economic Impact of Venture Capital

Measurement of the importance of venture capital in most economies is quite difficult, because in terms of capital investment it is only a minute portion of the total economy. Moreover, the most powerful benefits of

venture capital come in the form of Schumpeterian innovations that establish the basis of, not only, new firms, but, more important, new industries. Accounting for the economic impact of venture capital is difficult, because it is possible that the firms the venture capitalists backed would have come into existence without funding, as the entrepreneurs might have funded the firm from other sources or simply boot-strapped the firm by reinvesting retained earnings. In such a scenario the innovation would have been actualized more slowly.

The anecdotal evidence of the economic importance of venture capital is overwhelming. On the U.S. stock exchanges a number of highly capitalized firms including Intel, Cisco, and Federal Express were originally funded by venture capitalists. As of 1999, the U.S. venture capital firm Kleiner, Perkins, Caufield and Byers claimed that the portfolio firms that it had funded since its inception in 1973 had a total market capitalization of $657 billion, revenue of $93 billion, employed 252,000 persons, and had invested in excess of $2 billion (KPCB 2001). Though extrapolation from KPCB, which is probably the most successful venture capital firm in the world, is risky, it is safe to say that the cumulative impact of the currently over 600 venture capital firms in the U.S. has been substantial even for an economy as large as the U.S. In specific regions, especially Silicon Valley and Boston's Route 128, venture capital has been a vital component of what Bahrami and Evans (2000) term the entire ecosystem (see also Lee et al. 2000).

The U.S. General Accounting Office (1982: 10) studied the impact of the venture capital industry on the U.S. economy. Extrapolating from 72 publicly-listed, venture capital-funded firms in operation in 1979 (there were 1,332 venture capital-funded firms in existence at that time), the GAO concluded that employment would increase in 1989 to between 522,000 and 2.54 million employees depending upon the annualized growth assumption. A recent study commissioned by the NVCA (2001) and conducted by the consulting firm WEFA estimated that the firms venture capitalists had invested in were cumulatively responsible for the creation of 4.3 million jobs and $736 billion in annual revenues in the 2000.

In the United Kingdom, a survey by the British Venture Capital Association (1999) found that private-equity financed firms grew at an annual compounded rate of 24 percent, or three times faster than firms in FTSE 100 and 70 percent faster than the FTSE 250. By estimation, they concluded that 2 million Britons or 10 percent of the

current private workforce were employed by venture capital-backed firms. This estimate seems somewhat high, but provides some indicator of how important private equity/venture capital has been to the growth of the British economy. In the case of Taiwan, there has been little study of the benefits of the venture capital industry to the entire economy, but many of the most recent Taiwanese computer-related success stories received venture capital funding. The one study attempting to quantify the benefits was done by Wang (1995) who found that the tax deductions encouraged venture capital investments during 1990 to 1992 that were ten or more times greater than the tax dollars expended. For Israel, there has been no quantification of the benefits of venture capital, but in 2000 high-technology industry accounted for approximately 25 percent of the entire GDP, and venture capital investing has been an important support for the high-technology environment there.

Another indicator of the significance of venture capital investment is its impact on the innovation process. Kortum and Lerner (2000) using a sample of firms and patent filings found that venture funding accounted for 8 percent of U.S. industrial innovations in the decade ended in 1992 and believe that this might have increased to as much as 14 percent by 1998. They also found that a dollar of venture capital was 3.1 times as likely to lead to a patent than was a general R&D dollar. Given that venture capitalists, in general, do not invest in process innovations (and these are patented far less frequently), these estimates are likely somewhat high, but they do indicate the importance of venture capital for U.S. innovation. Also, this finding might be somewhat of an overestimate, because it is quite likely that some of the inventions venture capitalists are commercializing were actually made in corporate research laboratories, if this is true then the corporate research laboratories would appear to be less efficient than they actually are. However, their result confirmed the importance of venture capital in encouraging R&D investment, and as a complement to other R&D sources.

There is sufficient evidence to conclude that venture capital has made a significant contribution to the economies of the U.S., the United Kingdom, Israel, and Taiwan. Venture capital backing seems to be an efficient method for commercializing innovations. Though there has been only limited research on the macro-economic impacts, there is ample evidence that it has had a significant impact in the U.S. It certainly has been the key financier of the U.S. "New Economy" firms, become a part of the U.S., Israeli, and Taiwanese national system of

innovation for commercializing R&D, and become a vital resource in regions such as Silicon Valley and Route 128.

3. The Necessary Preconditions and Conditions for a Venture Capital Industry

The estimation of which countries have developed a successful venture capital sector is open to debate and the preconditions are not the same in each political economy. The following preconditions and conditions are thus drawn largely from the U.S. case and, to a lesser degree, from that of Israel and Taiwan. The following "Facts" thus are derived from the general academic and popular literature on venture investing.

Fact One: Venture capitalists do not make loans (except in cases where there are clauses guaranteeing the convertibility of the loans to equity). Also, they do not invest in private equity deals preferring to concentrate on investing in new firms.

Our definition of venture capital does not include firms that depend upon providing loans or practice leveraged buyouts, management buyouts or buyins, or other such transactions related to established firms.[6]

Fact Two: Venture capitalists demand seats on their investee firm's board of directors and add value by through monitoring and providing contacts and advice.

In return for investing, the venture capitalists not only receive a significant equity stake in the firm, but they also demand seats on the board of directors from which they intend to monitor the firm. This is important because the venture capitalist intends to provide more than just money, and highlights one of the salient differences between venture capitalists and passive investors. Namely, venture capitalists plan to actively monitor, assist, and even intervene in their investments. The venture capitalist's objective is to leverage their involvement to increase the investment recipient firm's probability of survival and rapid growth to make it more valuable. This involvement extends to the performance of a variety of functions, and can include assistance in recruiting key

[6] In many Asian countries, transactions aimed at restructuring existing firms may be more prevalent than venture investments. This is especially true in the economies requiring restructuring such as Korea and Thailand, and, to a lesser degree, Japan. So much of the venture capital in Asia is actually what the U.S. National Venture Capital Association terms "private equity." We use the Asian Venture Capital Journal as our statistical source, but it does not strictly separate these two genres of transactions.

persons and providing strategic advice and introductions to potential customers, strategic partners, later-stage financiers, investment bankers, and various other contacts. As with any other professional practice, experienced venture capitalists, having seen many fledgling firms experience growth pains are able to provide valuable advice (Florida and Kenney 1988a, 1988b; Gompers 1995). It is the venture capitalists' experience and connections that differentiate them from other sources of capital.

Fact Three: There must be investments capable of providing large capital gains in less than five years. Because of the large number of failures, venture capitalists require large returns on their successes and therefore invest only in firms promising high return rates. The absence of such opportunities will inhibit venture capital formation.

Newly established firms have a high mortality rate, so the craft of venture investing is risky. Since these new ventures are very person-intensive and have little fixed assets, in most failures little can be recovered. Thus to be viable, a venture fund must find large successes to compensate for the failures. The venture capital firm invests in a recently established firm that it believes has the potential to provide a return of ten times or more in less than five years. Put succinctly, venture capitalists are not interested in funding firms that do not show the potential for a rapid appreciation in value. In this sense, venture capitalists search for only the very best investments, and have little interest in promising, but slow growing, firms.

Fact Four: Venture capitalists are not permanent investors. They need to liquidate their investments to complete their investment cycle.

The venture capital process requires that investments be liquidated either through bankruptcy, merger, or an initial public stock offering. For this reason, the venture capitalist is a temporary investor and usually a member of the firm's board of directors only until the investment is liquidated.[7] For the venture capitalist, the firm is a product to be sold not retained. There must be the possibility of profitably exiting their investments. Nations that erect impediments to any of the exit paths (including bankruptcy) are choosing to handicap the development of

[7] This is not always true. Arthur Rock, the lead venture capitalist in funding Intel, remained on the Board of Directors for two decades. Donald Valentine, the lead venture capitalist in funding Cisco, continues on the board fully a decade after it went public.

venture capital -- this is true regardless of the macro-level reasons for the impediment. This does not say such nations will not have entrepreneurship, only that it is unlikely venture capital as an institution will thrive.

Fact Five: The limited partnership form is dominant in all nations with a successful venture capital industry except Taiwan.

With the exception of Taiwan, globally the predominant institutional form for venture capital is the venture capital firm operating a series of partnerships called "funds" investing capital raised from investors consisting of wealthy individuals, pension funds, foundation, endowments, and various other institutional sources of funds. The venture capitalists were professionals often with industry experience and the investors were silent limited partners. The typical fund operated for a set number of years (usually between seven and ten) and then was terminated. Normally, each firm managed more than one fund, simultaneously. The only other persistent source of venture capital has been as subsidiaries of major corporations, financial and non-financial.

Institutional Level:

Fact Six: Entrepreneurship is a precondition for the development of venture capital. However, these entrepreneurs must have business ideas that can result in fast-growing firms.

Entrepreneurs are a necessary, but not sufficient condition for the existence of venture capital. At some level, entrepreneurship exists in nearly every society. A recent international survey discovered that, on many dimensions, Brazil was a very entrepreneurial society (Reynolds et al. 2000), as are the Southern European nations. However, these nations have very little venture capital. The problem is that formal venture capital investing can only exist where there is a constant flow of opportunities that have sufficient growth potential. During the last fifty years, only information technologies have offered a sufficiently consistent flow of opportunities to sustain a group of investors specializing in funding such small enterprising firms. To a lesser degree, opportunities have emerged in the human healthcare field and retail. Thus even though entrepreneurship is a precondition, not any type of entrepreneurship will do.

The historical record indicates that the causal arrow points in a single direction from entrepreneurship to the emergence of venture capital, i.e., without entrepreneurship venture capital would not have emerged. However, there is an important feedback loop. Namely, the presence of venture capital and entrepreneurial success can create a virtuous circle. The practice of venture investing encourages and increases the "proper" type of entrepreneurship, i.e., affects the environment. In regions that have had many startups and have spawned a strong venture capital community, yet other institutions such as legal and accounting practices, executive search firms, and consultants of all types specialized in facilitating startups have emerged, operating to reinforce the startup dynamic. This dynamic can become so pronounced that it actually initiates a "startup" culture.

Fact Seven: Venture capital requires a stable currency, a relatively uncorrupt government, and a predictable regulatory regime.

Venture investing is by definition risky. Increased risks due to the environment correspondingly decrease the likelihood of success. In nations with unpredictable regulations, corrupt governments, and unstable currencies the probability of success is decreased, and such situations are beyond the control of both the entrepreneur and venture capitalist. These environmental risks discourage the practice of venture capital.

Fact Eight: Excellent universities are an important asset to the development of a venture capital industry. A corollary to this was the massive funding of research undertaken by the Federal government during the entire postwar period.

In the U.S., MIT and Stanford played a critical role in assisting in the development of venture capital industries in Boston and Silicon Valley, respectively.[8] In the case of Silicon Valley, the added factor of having UC Berkeley and the UC San Francisco Medical Center accelerated the success of the Bay Area. The importance of federal funding for graduate student training and faculty research should not be underestimated. Biotechnology and the Internet were the direct result of federal funding. On the other hand, some other technologies had a more

[8] Kuemmerle (2001) argues that the private universities were the reason for the success of the U.S. venture capital industry. We believe that this ignores the very important role of UC Berkeley in Silicon Valley. Moreover, in the other successful nations of Israel and Taiwan; all of the major universities are public. Finally, he does not place sufficient emphasis on the federal funding of research that went to private and public schools alike.

mixed background and their development can be traced to corporate research laboratories especially Xerox PARC and the IBM San Jose Laboratories (Kenney and von Burg 1999).

Fact Nine: For a successful venture capital industry to emerge it is very important to have viable equity-driven capital markets.

There are two exit strategies for venture capitalists: corporate merger and an offering of shares to investors usually in an IPO on a stock exchange. Thus far no venture capital industry has been able to prosper by liquidating their investments through mergers alone. Jeng and Wells (2000) find that the single best explanation of a vibrant national venture capital industry is the existence of IPO exit strategies. However, this should be qualified by specifying that such exchanges should be liquid and transparent. In other words, stock exchanges that acquire reputations as exits for immature or fraudulent firms will quickly become illiquid as investors refuse to purchase and hold the shares. With such illiquidity comes insider trading and stock manipulation and barring an effort to reform, an eventual collapse of the exchange. This it is not simply the existence of an exchange through which the venture capitalist can exit, but rather a well-disciplined exchange capable of discharging its primary purpose of raising funds for promising companies. The "exit" of investors and owners is a by-product of the exchange's function of raising capital.

Conclusion

These preconditions will allow us to evaluate the various Asian nations along these parameters. We would expect that nations failing on a number of these Facts will find it difficult to develop a venture capital industry. Thus, for example, nations in which venture capitalists simply provide loans will find it difficult to develop a U.S.-style venture capital industry. Very often, of course, a nation will not fulfill a number of conditions and preconditions, both in institutional terms and in the operation of its venture capital firms. Undoubtedly, in many cases these are interrelated. For example, exit strategies may be complicated by the lack of institutions. Or, the ability to invest might be complicated by the nature of the entrepreneurship. Thus, the previous Facts must be treated carefully, because of the complicated nature of actual socio-economic environments.

4. Venture Capital in Asia -- A General Introduction

The growth of venture capital in East Asia has been extraordinary. In this section we discuss the environment for venture capital in East Asia. As **TABLE 1** indicates that, in absolute terms, the funds available for investment in venture capital increased from $30.6 billion in 1997 to $43.5 billion in 1998 and $65.8 billion in 1999 (AVCJ 2001). Also, most countries experienced increases in their pools of capital. Moreover, 2000 was even more successful for fundraising. As **TABLE 2** indicates, investment increased dramatically from 1994, then stagnated until 1998, and jumped again in 1999. The global high-technology stock market boom, especially that portion fueled by the Internet Bubble, attracted enormous investments into venture capital and the venture capitalists invested heavily in startups.

The venture capital process is divided into various stages ranging from start-up through expansion and private equity. Comparison between different global regions is difficult, because statistics are kept differently. However, **Table 3** compares the distribution of investment by stages between the U.S., Europe, and Asia. Despite the statistical and definitional methodological difficulties, there is evidence that, at least, at the Seed/Early stages the Asian investment pattern is similar to the U.S. and differs from Europe. The difference between the U.S. and Asia is that the U.S. invests a greater percentage of total investments in the Expansion/Mezzanine/Later stages. The reasons for the U.S. emphasis on later stages probably relates to the intense competition that requires venture capitalists to pour large sums into the expansion of fledgling firms. The difference between Europe and the U.S. is probably linked to the fact that in the U.S. private equity and venture capital are treated as different industries, whereas in Europe they are combined. In the case of Asia, private equity has not been strong due to the general unwillingness of the owners of firms to sell control over existing firms. This is especially true in the case of Japan and Korea where the keiretsu and chaebol ties are still strong. What **Table 3** does demonstrate is that Asian venture capitalists are investing in early-stage firms and thus are performing the vital function of extending capital to promising start-ups.

The heterogeneity of Asian political economies results in quite different patterns of investment by industry. This is illustrated in **Table 4** that compares the distribution of venture capital investment by industry in the Asian

nations and the U.S.[9] Though the categories used by the NVCA and AVCJ are quite different, the national diversity in investment portfolios is remarkable.[10] For example, the U.S. surveys do not even have a category for financial services and electronics is treated differently. **Table 4** illustrates the heterogeneity of Asian venture capital, and the ways in which venture capitalists have adapted their practice to their environments.

There are obvious differences in the investment patterns. First, U.S. investment is powerfully clustered in the IT sector, with a significant sum also being invested in medical and biotechnology fields. In effect, U.S. investments are clustered in sectors with extremely high valued-added and where manufacturing is not a significant issue. Of special interest is the fact that in 1999 the online portion of the U.S. investments had grown to 38 percent of the total. The only Asian nation to rival this was Taiwan, which not surprisingly has the closest relationship to Silicon Valley and Asia's most dynamic venture capital industry. Korea and Japan share a similar profiles, but are very different from the U.S. This is not surprising as Korea and Japan are industrially rather similar. Industry is their largest single category of investments with Finance also being important. Taiwan, in contrast, emphasizes only three categories; all of which are electronics-related. Singapore has an even distribution across categories and has a much greater percentage devoted to the Medical area than any other Asian nation. Hong Kong and China resemble each other very closely especially in the Industrial/Energy category. China has received a large percentage of its investments in the residual category and Hong Kong has a strong emphasis on Communications. This indicates that national specializations have emerged.

The sources of venture capital in Asia differ by nation. This will be discussed in the national sections in more detail, but, as **Table 5** indicates, Asian nations differ dramatically in the national origin of their venture capital. For example, Hong Kong and Singapore receive much of their venture capital from other countries, both in Asia and from outside of Asia. In the case of Hong Kong, 93 percent of its venture capital comes from either other nations within Asia or outside Asia. In contrast, only 18 percent of the venture capital in Japan is from foreign sources, while for Taiwan only 15 percent of the capital is imported. In aggregate then capital from outside Asia

[9] In the case of the U.S., both 1998 and 1999 are included because 1999 was unusual due to an enormous wave of investments in the Online area, which was a one time event that already began subsiding in 2000 and has continued to decrease in 2001.

[10] For the types of firms in each AVCJ category see Appendix One.

is an important contributor to the Asian venture capital industry, though interestingly enough in the most vibrant venture capital investment location, Taiwan, the capital is largely local.

Even as Asian nations received venture capital from around the world, there was also a flow of investments to yet other nations. Though this is covered in greater detail in the national sections, the Asian nations differ significantly by where their funds are invested (See **Table 6**). In general, the larger venture capital markets provide more significant portions of their funds. The most important exceptions to this rule are the more self-contained markets of Korea and Japan.[11] Singapore and Taiwan invest a significant portion of their capital outside Asia. The most important destination for these funds is Silicon Valley. Hong Kong and Singapore are significant investors in the rest of Asia.[12] From **Table 6,** it can be seen that the nations differ significantly as to whether they are venture capital importers or exporters and where and to where the venture capital flows.

Though we have emphasized the heterogeneity of the various national industries, there are also some similarities. In **Figure 1**, we group the venture capital industries in the various nations together based on various characteristics. Korea and Japan share many institutional similarities especially in terms of the traditional importance of banks and loans rather than equity. Hong Kong and Singapore are venture capital exporters, while Taiwan and Singapore have strong connections to Silicon Valley. The nations with the difficult environments suffer from corruption, lack of entrepreneurs, and myriad other difficulties. A subset of difficult environments are those nations whose governments appear to have been very important inhibitors of venture capital. Finally, there are a group of nations who one might expect to have been more successful in nurturing a venture capital industry. This is a varied group including the Philippines and Malaysia, due to their governments, and Korea and Japan, both of which have excellent technology, but have not been able to create a vibrant venture capital community. Finally, there is China, which remains an enigma. This is an admittedly subjective assessment, and is the distillation of interviews and archival research.

The remainder of this section will discuss some of the more general difficulties related to the practice of

[11] One caveat here is that a number of the larger Japanese venture capital firms such as Softbank, JAFCO, and NIF have active overseas operations.
[12] Note the AVCJ includes Australia, New Zealand, the Indian subcontinent, and Israel in Asia.

venture investing in Asia. As a general section, the issues addressed in these various sections do not apply equally or sometimes at all to certain nations. However, it is important to highlight these issues, because of their greater generality throughout the region. The order in which these issues are presented does not imply any hierarchy or relative importance. Some issues are general, such as, for example the general weakness of the institutions of higher education particularly when compared to those in the U.S. And yet, other issues are specific to the venture capital industry itself.

General Difficulties in Asia -- Control, Liquidity, and Power

In Asia, traditionally the relationship between the entrepreneur and the firm has been more personal than in the U.S. For example, often entrepreneurs see the firm as an expression of themselves and their family and thus are unwilling to part with significant blocks of stock either to the venture capitalist or in an initial public offering. This prevents the venture capitalist from making a large investment, having a say in the firm's strategic decisions, or securing easy exit. Thereby complicating the situation of the venture capitalist. Tai-Lin Hsu, the founder and Chairperson of H&Q Asia Pacific and dean of venture capitalists investing in Asia, summarized the situation:

> Most people [venture capitalists] over the last 14-15 years went to the passive late stage pre-IPO deals. There you gain 5 percent, 11 percent, or 17 percent of a family controlled company; you have a board seat, but you don't have a lot to say. You can have a role in helping the company, but you cannot really add a lot of value because the family ultimately controls things. You can't tell the father to fire his son, or change the family business to software or telecommunications (AVCJ 1999: 26).

Hsu (1999) went further describing the conundrum. In general, the bottom line is that in "early stage deals, no innovation; later stage deals, no value-added. In other words, no high returns like Europe and the US. But things are changing. With the Asian crisis came better buyout opportunities. With some companies gaining control is now possible. And the Internet is making real inroads. That and the growth of innovation and leveraged buyouts suggest to me that Asian private equity will ultimately generate the same scale of returns -- if not better -- than those enjoyed in the west."

For Lip-bu Tan (2001), the founder of Walden Ventures, the problems can be divided into the following categories: lack of experienced management, generalized over-regulation, problems in the educational systems

especially at the post-graduate level, the need for better funding of research, an unwillingness for entrepreneurs to cooperate and build firms, and the lack of controlled imagination. Tan believes that these have prevented Asia from creating the firms such as Intel, Cisco, and Sun that provide the venture capitalists with the 100 times investment returns that have formed the bases of the first-rank global venture capital firms such as Accel Partners; Greylock; Kleiner, Perkins, Caufield & Byers; Sequoia Capital; The Mayfield Fund; Warburg Pincus; or Venrock. Some believe that only when such elite venture capitalists emerge in Asia will it be possible to speak of a true venture capital community in Asia.

Despite the long history of venture capital in Japan and Taiwan's success with venture capital, on balance Asian economies do not have the same quality of equity markets and tradition of professional investment managers that evolved over the last century in the Western nations. These difficulties have been described eloquently by some of the most experienced and successful Asian investors and provide general perspectives that are valuable for orienting any discussion of the place of venture capital in the overall Asian economic situation.

Despite these problems, in Asia venture capitalists are optimistic about the current changes emphasizing and encouraging entrepreneurship. Especially important for the continuing development of venture capital in Asia are the large numbers of Asians working and gaining experience in U.S. high-technology firms, particularly those funded by venture capital. Also, Asian firms can invest in firms established by Asians in Silicon Valley providing them access to better deals and opportunities to coinvest with the most experienced U.S. venture capital firms. These investments provide not only knowledge transfer and new connections, but also opportunities to capture the higher returns that are available from high-quality U.S. investments.

Asian Universities and Research Institutes

The U.S. venture capital industry from its inception has had a close relationship with universities, whether it be the creation of the first venture capital organization American Research and Development in Boston with it's intimate involvement of MIT and Harvard Business School administrators or the close relationship between venture capitalists and Stanford University and, to a lesser degree, University of California, Berkeley (Gompers

and Lerner 1999). The situation has been different in Asia. For a wide variety of reasons including a tradition that probably can be traced to the influences of the European universities, especially the German ones, Asian universities and their professors, until recently, have not been entrepreneurial. Traditionally, Asian universities have focussed more on undergraduate teaching and administrative work and less on research.

In general, the university research that has been most successfully commercialized stems from the very best universities. This is a difficulty for Asia, because only a very few of them might rank in the global Top 20. If research productivity were the only criteria, then the only ones that might stand in the first-rank would probably be the Korea Advanced Institute of Science and Technology, Kyoto University, University of Tokyo, Seoul National University, and the Tokyo Institute of Technology. At present there is no global university ranking system. However, **Table 7** presents AsiaWeek's most recent ranking of top Asian universities and **Table 8** presents the rankings for the top Asian science and technology schools. Their ranking system is a weighted combination of variables, however we selected the Academic Reputation as the single most valuable rating for our purposes. These rankings most be treated carefully, and there are a variety of difficulties with it. For example, the University of Tokyo and most Chinese universities did not participate. Moreover, it is not a direct measure of commercializable research capability, it is only a very rough proxy. Obviously, in aggregate, the Japanese universities are by far the strongest. After the Japanese flagship universities comes the flagship universities of the other more developed Asian nations: Korea (#2), Singapore (#3), Taiwan (#4), Hong Kong (#5), Malaysia (#9), and Philippines (#13). The highest rated Thai university Thammasat is #20 and the highest Indonesian university is #25. Not surprisingly, Asia is diverse in terms of university quality and practice.

These rankings indicate that the presence of excellent universities is somewhat correlated with venture capital activity, and strongly correlated with GDP per person. As important as the quality of the university research is the willingness of the professors to commercialize that research and the availability of other institutional resources to support this commercialization. In Japan and, to a lesser degree, Korea, the universities have not been important sources of entrepreneurship. However, in Taiwan and Singapore, university professors have commercialized their research. In Singapore there has been a concerted effort to encourage university professors to establish firms

based on their research. China is unique, because the universities own and operate their own networks of firms, some of which exploit their professors' research. Thus in China it is quite acceptable for professors to be involved in for-profit enterprises. Finally, throughout Asia universities have created incubators for inventions from their laboratories. Put differently, in some countries, the universities have developed the seeds of new firms.

Asia resembles Europe in another way, namely the significant role of government-funded research institutes operated separately from the universities. Only in the U.S., Japan, and the UK are the universities responsible for the preponderance of public research. In fact, in Taiwan the research core of the Hsinchu Science Park is ETRI. In Korea, the research institutes have been important, and the national institutes in Taejon have produced a large number of spin-offs (Shin 1999). Similarly, Kent Ridge Research Laboratories in Singapore has successfully spun off a number of startups. Finally, a number of venture capitalists believe there is commercializable research in the various Chinese government laboratories and institutes.

From an aggregate perspective, it could be argued that in Asia research institutions have been more successful in generating entrepreneurial start-ups than universities have been. This is likely because, in general, Asian university faculty have not only heavy teaching loads, but also must discharge much of the administrative activities that in the U.S. are undertaken by staff. Further, in a number of these nations professors were discouraged from undertaking entrepreneurial activity. In contrast, some Asian research institutions concentrate on what in the U.S. would, for the most part, be considered industrial research and thus is far closer to commercialization. Moreover, they are not as burdened by administrative and teahcing obligations. Thus, ITRI in Taiwan, Kent Ridge Research Laboratories in Singapore, and KAIST in Korea have had some success in spinning off firms. From this perspective, thus far public industrial research laboratories that encourage spin-offs have experienced some success. Universities have far fewer examples of successful spin-offs.

Despite certain successes, the record of Asian universities and research institutes in providing investment opportunities has been mixed. Certainly, none of them have pioneered research that has formed the basis of entirely new industries. And, outside of Japan, it is unlikely that they will in the near future. In the Greater China area, the universities and professors have been more entrepreneurial than in Japan and Korea or the less developed

parts of Southeast Asia. Given the quality of the Asian universities and the increased emphasis upon entrepreneurship throughout the region, professorial interest in venture capital can be expected to increase some, but in most cases it is unlikely that any of these universities and institutes will become a core and catalyst for an industrial district. The exceptions are the role of ETRI in Hsinchu, and China, the many universities and research institutes in Northwest Beijing have been very important for the concentration of computer and software there.

Transnational Networks

The genesis of venture capital in Asia differs by country. For example, Japan, the origin was internal, both in terms of sources of funds and proponents, though it was motivated by U.S. developments. For many other Asian nations, the International Finance Corporation (IFC) played an important role by encouraging the formation of many of the early venture capital funds.[13] For example, a 1986 IFC report identified Malaysia and Korea as candidates for the development of a venture capital industry. This IFC involvement is an indicator of a more comprehensive fact, namely that, with the exception of Japan, venture capital in Asia was established with and through international linkages. With the exception of Japan, Asian venture capital was born globalized.

In addition to IFC investments, already in the early 1980s U.S. a few pioneering venture capital and private equity firms established Asian operations. For the most part, these firms found few startup investments so they gravitated to the provision of private equity capital or funds for firm expansion (Brooke 2000: 256). Asia was a difficult environment for these firms. These private equity funds such as Advent International, Apax, and Warburg Pincus, to name some of those with the longest history, saw their operations in Asia wax and wane. Many retreated in the late 1980's, but the few that remained found a modicum of success. Perhaps the most successful of these firms was Hambrecht and Quist, which began investing in Taiwan in the mid 1980s. However the boom in Western venture capital firms operating in Asia began in the mid 1990s, when the number of firms, the breadth of their Asian operations, and their level of activity increased dramatically.

[13] In the case of the IFC and India, see Dossani and Kenney (2001).

Another significant group of investors are venture capital subsidiaries of Western industrial corporations. Very often they are willing to invest in early-stage startups. The largest and most famous of these is Intel Capital. Intel Capital invested $1.3 billion in 2000 of which 10 percent or $200 million was invested in Asia -- up from only 2 percent in 1998 (Rostick 2001). Intel Capital draws upon Intel's offices throughout Asia to search for deals. The Asian nations it focuses upon are China, Hong Kong, India, Korea, Malaysia, Singapore, and Taiwan. An examination of its investments in 1999 and 2000 indicates that the greatest number of Asian investments were in India (Intel Corporation 2001). Intel Capital also makes an involuntary contribution to venture capital in Asia, because many of its professionals have left and joined other venture capital firms.

Intel Capital is by no means alone, other Western firms are also operating or considering the establishment of corporate venturing offices in Asia (See **Table 9**). For example, in 2001 Cisco Systems created a joint venture with the Japanese venture investment firm, Softbank, to invest $1.05 billion in a Softbank Asia Infrastructure Fund dedicated to investing in broadband Internet and wireless technology infrastructure around Asia (Yamada 2001). In September 2000, Sun Microsystems committed to investing $50 million initially and up to $250 million in the Asia Pacific region (Sun Microsystems 2000). Also, in a joint venture with the Singaporean government, Sun created a Java fund for Asia. Despite the initiatives on the part of these leading firms, only a few other Western firms actively invest in Asia. Only recently have other firms begun to consider Asia more seriously. For example, in December 2000 Nokia Venture Partners announced a $500 million fund that for the first time would consider Asian investments (Nokia 2000). Similarly, Ericsson joined Investor AB and Hutchinson Whampoa to create a fund of $177 million to invest in mobile Internet opportunities in Asia (Arnold 2000). It is likely that only the largest Western corporate venturers will establish active Asian operations, however the ones that do have significant sums to invest.

Many Asian industrial corporations are willing to invest in venture situations. Perhaps the earliest Asian industrial firms to invest heavily in Silicon Valley were the Japanese manufacturers such as Komatsu and Kubota during the mid and late 1980s. Almost invariably, these Japanese industrial firms experienced catastrophic losses and withdrew from the market during the early 1990s. Beginning in mid 1990s various non-Japanese Asian firms

began investing throughout Asia (and North America). The most important of these were the various national telecommunications companies such as Singapore Telephone (Singtel) and Hong Kong Telephone (HKTel). These firms sought to expand beyond their formerly geographic constraints, and into new business activities. Whether these efforts will be successful is not yet clear.

The final and most important transnationalization is by venture capital firms themselves and has many different dimensions. A first group mentioned previously are the traditional global private equity players including Advent International, Apax, J. H. Whitney, the Carlyle Group, and Warburg Pincus. They do not specialize in Asia, but have significant regional operations. The second group consists of the U.S.-operated venture capital funds such as H&Q AP, Walden International, WI Harper, and Crimson Ventures that specialize in Asia and operate out of the Bay Area. A third group encompasses the European and Israeli venture capital funds that recently entered the Asian market. Many of these were recruited to Asia through the Singaporean government's efforts to entice foreign firms to establish operations in Singapore in exchange for investment.

The most rapidly growing group of multinational venture capital firms are those headquartered in Asia, itself. These include the Japanese securities firm subsidiaries such as JAFCO (Nomura Securities) and NIF (Daiwa Securities) and the Japanese firm Softbank, which has large operations throughout the world especially Asia. However, the most important group of transnational venture capital investors are those who see their investment area as consisting of "Greater China," i.e., the area encompassing Singapore, Hong Kong, Taiwan, China, and the Chinese in Silicon Valley. (This might be extended to parts of Malaysia and Bangkok, Thailand). This intra-Asian flow of investment is knitting together the venture capital communities throughout the region.

There is an increasing pressure upon all venture capital firms to globalize. Corporate venturers experience this because of their role in supporting their corporate goals. Independent venture capitalists want access to a large number and variety of deals. They also seek to spread their country risk. Finally, the internationally connected venture capitalists can serve their portfolio firms by providing contacts and information about opportunities in other countries. During the next decade, it is likely that only the top-tier Silicon Valley firms will be able to resist the pressure to globalize.

The Role of Silicon Valley in the Development of the Asian Venture Capital

In terms of business models and economic development, Silicon Valley was the inspiration for Asian policymakers, entrepreneurs, and venture capitalists. This is not unique to Asia, as other parts of the world have been similarly inspired. But for non-Japanese Asia the inspiration seems to have been especially profound. The reasons for this include location on the Pacific Rim, the massive exodus of Asian students seeking training in U.S. universities, and the inexorably increasing movement of Silicon Valley manufacturing functions to Asia that began in the 1960s (Saxenian 1999; McKendrick et al. 2000). This led to multiple linkages between Silicon Valley and Asia. There are three linkages that seem to have been especially important: The first linkage was the Asian students that remained in the U.S. and were employed by Silicon Valley firms. They were rapidly assimilated into the Silicon Valley business structure and some then launched their own startups. Not surprisingly, they maintained close relationships with their friends and family in Asia and frequently turned to them for seed money. The second linkage was to the returnees, both Asian students and especially seasoned managers, who returned to their various nations and joined the Asian operations of Silicon Valley firms or established firms that subcontracted with Silicon Valley firms. The third linkage was Asians who were trained in their home country and then joined the overseas operations of Silicon Valley firms. Each of these linkages were conduits for virtuous circles of learning, transfer, and yet further learning. This meant that there was an intense awareness of what was occurring in Silicon Valley, not only in terms of technical and managerial skills, but also of the Silicon Valley "worldview."

Venture capital did not transfer so quickly or so easily. Prior to the early 1990s, there were very few East Asian and even fewer non-U.S. born Asian venture capitalists.[14] During the 1980s, the most prominent Asian-American venture capitalists were Kevin Fong at Mayfield and Geoff Yang formerly of Institutional Venture Partners and now at Redpoint, both of whom were raised in the U.S. This meant that there were very few individuals capable of conveying the practice of venture investing back to Asia. Since the best investments in the

[14] In this section, we omit Asians from the Indian Subcontinent. Though there were only a few Indians in the venture capital business, two were already prominent in the 1980s namely Vinod Koshla at Kleiner, Perkins, Caufield & Byers and Yogen Dalal at Mayfield.

world were close at hand, Silicon Valley venture capitalists had little interest in looking for investments so far afield. They might be willing to visit Asian nations to make presentations and provide advice, but there was no reason to invest, much less open a subsidiary in Asia.

The human connections that contributed to the emergence of venture capital in non-Japanese Asia did not come from U.S. venture capitalists opening offices in Asia. Rather the source was Asian-born entrepreneurs or engineers that had experience in Silicon Valley. Initially only Taiwan would benefit from this transfer. Later Singapore, Korea, Hong Kong, and possibly China and the Philippines benefited. The details of this discussion will be left to the national sections, but one firm, Hambrecht & Quist deserves special attention because it was the first Bay Area firm to establish a successful venture capital firm in Taiwan.[15] Of special importance, though, certainly not alone, was Dr. Ta-Lin Hsu who had been a researcher and then manager at the IBM San Jose Laboratories before joining H&Q. He was instrumental in assisting the Taiwanese government in establishing the legal framework for venture capital. As important as its investing, H&Q AP also functioned as a graduate school for Taiwanese venture capitalists, because H&Q did not compensate them sufficiently well to retain them (later H&Q would "train" venture capitalists in yet other Asian nations).

In the late 1980s and then in increasing numbers throughout the 1990s, Asians successful in Silicon Valley began investing in yet other Asian entrepreneurs and they also began to invest in Asia. Two of the foremost practitioners of this were Lip-bu Tan who formed the Walden International Investment Group with Peter Liu who later left to establish WI Harper. From 1997 onward, a number of other venture capital firms were established in the Bay Area to invest in Asia.

Another linkage was established when Asian venture capitalists opened offices in Silicon Valley, both to serve their Asian investee firms and to find investments in Silicon Valley. Here the Asian venture capital firms leveraged ethnic networks to locate investment opportunities and/or their close relationships to Asian manufacturers to convince the entrepreneurs to accept their investments. Through these investments, they were

[15] H&Q was always somewhat different from the Silicon Valley venture capitalists because it was an investment bank that had a venture capital arm. This meant that H&Q was more willing to range farther afield in search of opportunities.

able to coinvest with the top Silicon Valley firms and thereby secure even greater exposure. Finally, the Silicon Valley investments gave them an opportunity to invest in world-class startups and to reap a commensurately high return.

As we have shown there were many points of intersection between Asia and Silicon Valley, though the movement of venture capitalists was not nearly as great as was that of operating firms. However, the example of Silicon Valley and what venture capitalists there were funding was important as an example. Further, through the constant traffic in personnel there was a transfer of the know-how necessary to create venture capital industries abroad, especially in Taiwan.

Exits and the Creation of New Stock Markets

In the last decade, there has been a proliferation of new stock markets in Asia (and globally) meant to allow high-growth potential small firms to list for public trading with less stringent requirements (See **Table 10**).[16] This provides an increased number of exit opportunities for firms to raise capital and create exit vehicles for investors. And yet, the U.S. NASDAQ continues to be the preferred exit vehicle for Asian venture capitalists (and other venture capitalists).

The increased number of stock exchanges proliferating the number of exit possibilities is not entirely positive. From a systemic perspective, the purpose of the venture capital process is not the enrichment of the entrepreneur and/or the venture capitalist; rather it is the building of new firms and the stimulation of Schumpeterian economic growth. Many governments appear to view these stock markets simply as mechanisms for providing exits for venture capitalists, not as institutions for providing growth capital for firms and viable investment opportunities for public investors. Stock exchanges cannot operate, if their sole role is to foist low-quality firms on the investing public, i.e., exits for early investors. Ultimately, the fate of such firms and stocks is delisting. Large

[16] For a discussion of the situation in Europe, see Posner (2000).

numbers of failures and the concomitant losses drive even sophisticated investors from the market destroying liquidity and threatening the viability of the exchange itself.[17]

The proliferation of exchanges has meant that all of them suffer from a lack of liquidity -- a situation that facilitates stock market manipulation and insider trading. None of the markets has yet reached a critical mass of listings, thereby justifying attention from brokerage firms and analysts. One response to the lack of a critical mass of firms has been to further relax listing requirements. This strategy guarantees that there will be even riskier stocks making investors more cautious and driving down liquidity. NASDAQ works well because of "the presence of many buyers and sellers who are willing to trade securities" (Schwartz 1999). Paradoxically, the creation of ever more stock exchanges actually decreases true liquidity that is based upon "access to broad pool of excess savings and institutional holdings; availability of competitive bid/ask quotations, an impetus to provide objective research on listed companies; transparency in the form of common legal and accounting standards; and, a commitment to investor protection" (Schwartz 1999).

For the larger economies such as Japan or the more developed markets such as Taiwan and Korea, this is not as great a problem, but even in these countries the stock exchange for high-tech startups continues to trade relatively small volumes, particularly since the global stock market decline of 2000-2001. Thus in Asia there has been a proliferation of stock exchanges to facilitate capital raising and provide exit paths for venture capital-financed firms, but they may not solve these problems due to a lack of liquidity and, in some cases, commitment to investor protection. Whether a pan-Asian or, at least, some merger of these stock exchanges is advisable is an issue worthy of discussion, because this might be a vehicle to create larger trading volumes and concomitant liquidity.

[17] A perfect example of this problem is the German Neuer Markt, which many believed could be an important European alternative to NASDAQ. Now, approximately 10 percent of its firms are close to delisting and there is an increasing emphasis on ensuring that the firms listed really are high quality. However, some believe it is already too late for the Neuer Markt (Burger-Calderon 2001).

The Internet, Asia, and Venture Capital

At this early date, it is difficult to fully determine the impact of the Internet Bubble in Asia. The positive aspects are that it encouraged entrepreneurship, alerted governments to the importance of entrepreneurship, made U.S. venture capitalists and investment bankers aware of the opportunities in Asia, encouraged the listing of Asian firms on the NASDAQ, and led to the formation of a number of Asian venture capital firms. Outside of Taiwan, which already had a vibrant venture capital community, until the Internet Bubble there was little venture capital or it was the conservative bank-like venture capital that existed in Japan and Korea. From this perspective, the Bubble made it possible to create new institutions and/or encourage existing venture capitalists to become more venturesome.

The collapse of the Bubble has certainly dampened investor enthusiasm; whether the situation will return to the status quo ante is uncertain. The positive effects have already been seen, but the negative effects may only now be emerging. These include a number of new funds that could suffer such heavy losses that they cannot raise another fund and therefore the professional venture capitalists could be forced to leave the industry. This would mean that the learning and institution building purchased at such enormous cost would be lost entirely. The shakeout process, though healthy in moderation, could become too severe.[18] Second, the wealthy individuals and institutional investors might become so discouraged that they are no longer willing to invest. This might slow the flow of capital even for successful venture capitalists. Third, governmental attempts to loosen regulations and rules inhibiting entrepreneurship might be discouraged. This might be caused by the recognition that dodgy stocks were floated on the various exchanges. In some cases, there may even have been fraud involved. An over reaction might create a situation in which deserving young companies are no longer able to use the stock market to raise capital to fund their continued. Finally, a downturn might discourage entrepreneurship by convincing possible entrepreneurs and much-needed management talent that the risks are too high to justify their resignation

[18] There are so many rumors about losses that it is difficult to be sure. However, investors that committed funds to venture capital firms during 1999 and early 2000 will most likely experience very low returns. In cases where the portfolio firms focused on the Internet there may even be serious losses.

from established organizations. This may be especially pronounced in countries where entrepreneurship and venture capital are still fledgling social activities and have not yet become an accepted career path.

In retrospect, the Internet Bubble will likely be seen as a two-edged sword.[19] It encouraged entrepreneurship and investment, but ultimately many or most investors, especially those in Asia who entered the market late lost large sums. Further, the investing public might become extremely skeptical of not only of the fledgling firms, but also the markets such as GEM, KOSDAQ, MESDAQ, and SESDAQ. So in mid 2001 the ultimate result of the Internet Bubble of the last four years is difficult to predict, however without any doubt it increased awareness of entrepreneurship and venture capital.

5. National Discussions

Ultimately all venture investing is governed by national legal, economic, political, and social environments. Because of these national variations, each national section varies in terms of detail and topics. Taiwan, Japan, and Korea receive the greatest attention because of the age and size of their venture capital communities. Hong Kong and Singapore receive significant attention, because of their role as financial centers (Singapore has a significant number of deals, also). China merits attention because of its potential importance in the future. The other Asian nations have fewer of the preconditions for creating a successful venture capital industry and so receive relatively less attention.

Taiwan

Taiwan is smaller than Japan, Hong Kong, and even Singapore in terms of the available venture capital. And yet, in terms of the number of startups and the success of its venture capital investors, Taiwan is the most active spot in Asia for venture investing. The reasons for this are multifaceted and relate to a background of entrepreneurship, linkages with the U.S., and especially Silicon Valley, an early emphasis on electronics as a key

[19] It may prove to roughly parallel the biotechnology boom of the early 1980s that spread to Europe in the mid 1980s. Many venture capital funds were established to invest in biotechnology, but most of them soon failed and in many countries the venture capital industry almost entirely disappeared.

industry, a supportive government, and a national emphasis on education. These factors created an environment in which industrial growth and venture investing combined into a virtuous circle reinforcing the practices of entrepreneurship and venture investing.

The Taiwanese venture capital industry is intertwined with the development of its electronics industry. Any discussion of the venture capital industry requires an introduction to the development of the Taiwanese electronics industry. With the electronics industry as a context, the creation of the venture capital is examined with special attention to the role of the government and its policies. Finally, the operations of Taiwanese venture capital firms and the current state of the industry is discussed with special attention given to the insertion of the Taiwanese venture capital industry into the international scene.

Creating the Taiwanese Electronics Industry

The growth of the Taiwanese venture capital industry is directly related to the success of the Taiwanese electronics industry. The Taiwanese electronics industry has been built on a combination of steadily increasing manufacturing expertise (this includes product design within well-understood product trajectories) and strong linkages to the U.S. market. In historical terms, it was foreign investors that made it possible for Taiwanese firms to gain access to global markets and absorb new technologies. These factors strategically positioned local entrepreneurs within international markets.

Japanese and U.S. multinational electronics firms arrived in Taiwan roughly contemporaneously and provided the initial catalyst for developing an indigenous electronics industry. Taiwanese entrepreneurship was manifested very early on. The first Japanese electronics firms invested in Taiwan for several reasons. Some sought access to Taiwan's growing consumer market; others, specifically suppliers of labor-intensive parts such as wire harnesses, were more interested in tapping into Taiwan's low-cost labor. By the early 1970s, Japanese assemblers, including Sanyo, Hitachi, and Matsushita, expanded their Taiwanese operations because, in part, of rising trade friction with the United States. The physical proximity of the island to Japan, and its colonial heritage, added to its

attractiveness (Simon 1988; Wade, 1990). Often Taiwanese entrepreneurs established joint ventures with smaller Japanese components makers and assemblers that were seeking access to the protected Taiwanese consumer market (Gold, 1988, p. 166). Through participation in these joint ventures, local firms were able to observe and learn new technologies, internalize new production processes, and increasingly participate in the international electronics industry.

Contemporaneously, U.S. consumer electronics firms established manufacturing sites in Taiwan. Though these factories were wholly owned subsidiaries, they introduced Taiwanese managers to U.S. manufacturing practice (a dubious benefit) and the U.S. market (an enormous benefit). More important, these firms promoted Taiwanese managers who achieved positions of responsibility quite quickly. As the U.S. consumer electronics industry failed, the plants were closed or sold to Taiwanese investors. However, the U.S. firms were often eager to purchase parts, components, and even finished products from their former Taiwanese employees.

These American customers also provided local firms with the opportunity to dissolve their Japanese joint ventures and establish wholly owned facilities. This pattern is demonstrated by the shift in locally produced parts in Taiwanese electronics exports from 10 percent in 1972 to over 30 prevent by 1979 (Wilson, 1992, p. 24). Schive (1990) argues that foreign investment created substantial backward linkages and the necessary channels for the transfer and adoption of new technologies and manufacturing processes. The literature has not examined this process in sufficient detail; however, there are suggestive anecdotes. For example, when General Instruments opened its operations in Taiwan in 1964 it initiated a rigorous training program for Taiwanese managers and worked closely with Taiwanese parts producers to assist them in upgrading the quality and standard of their products. By 1987 several senior executives in Taiwanese electronics firms were former employees and managers for General Instruments and other U.S. electronics plants (Sease, 1987).

The role of the state in contributing to the development of Taiwan's electronics industry was not *sui generis*, but rather resulted from aggressive lobbying by local firms. The first of the local-multinational corporation alliances occurred *prior* to the implementation of proactive product- or market-specific policy targeting. It was not until the mid-1970s, after these relationships were well established, that the state became an advocate for local

electronics firms and shifted legislation from its original general mandate meant to attract foreign investment to one aimed at encouraging and protecting local firms by restricting foreign participation in certain markets and technologies (Lam, 1992; Kuo, 1995). Their ties with foreign firms provided local manufacturers with the know-how and legitimacy necessary for leveraging more customized industrial policy in the 1980s. It seems fair to say that the electronics industry was the agent leading the State to promulgate policies.

The period from the 1960s through to the early 1980s might be seen as a prolonged tutelage during which Taiwanese firms learned how to manufacture parts and components for electronics products. In general, Taiwanese production was relatively labor-intensive and quite low skill, however some important competencies had been developed: First, Taiwan had developed a network-like industrial structure that subdivided manufacturing tasks among a number of smaller firms. Second, Taiwan had developed a keen understanding of the U.S. market. Third, the government and the various firms had developed channels of communication and understood the importance of electronics and industrial upgrading. Fourth, a funding network for startups based on informal family and quasi-family relationships had been formed that could mobilize capital for new investments. Fifth, as Saxenian (1999) details, the Taiwanese government had begun actively tapping immigrant Taiwanese electronics engineers in the U.S. for advice and technology transfer.

The Personal Computer Arrives

The PC would be the product that would allow the Taiwanese capabilities and industrial structure that had developed earlier to blossom into a vehicle for entrepreneurial success. Moreover, it would create the industrial dynamics for the emergence of a true venture capital industry, so it is worthwhile to examine this in some detail. A PC is a modular product composed of components ranging from incredibly basic parts such as the metal case, wiring, and various plastic components to some of the most sophisticated artifacts made, e.g., bleeding-edge components such as the microprocessor, DRAMs, and the hard disk drives (Taiwan is not a leader in any of these products). There are a variety of components such as the various other integrated circuits found on the motherboard (see Curry and Kenney 1999; Steffens 1994). Finally, there are a large number of peripherals such

as keyboards, mice, scanners, monitors, and other products that have standardized interfaces to the PC.[20] The modularity of the PC means that it is easy to enter most segments, and, most important, the PC assemblers can create cutthroat competition between vendors for most PC components (Curry and Kenney 1999).[21] Success is based on being able to lower costs rapidly and continuously.

Taiwanese firms took advantage of this emerging relatively open PC architecture and began manufacturing various PC components. As important, from its introduction IBM began out-sourcing PC assembly to independent contractors indicating that PC manufacturing would be a commodity (Sturgeon 2000). As soon as the BIOS chip was cloned, PC clones were able to enter the market. Quite soon, U.S. clone makers established PC assembly facilities in Taiwan and began purchasing parts from local parts makers who had developed skills in building similar parts for the consumer electronics industry. By the mid 1980s, Taiwanese firms were assembling PCs and various components for U.S. firms. An ever-richer ecosystem of specialized firms geared toward producing electronic components, subassemblies, and even finished computers evolved. Moreover, from these seething mass of small firms, some firms, such as Acer, Mitac, FIC, and Macronix became very successful and grew at rates as high as 30 percent compounded annually – exactly the types of growth rates that interest venture capitalists.

Semiconductors

The final technology, which Taiwan would build an expertise in, was semiconductor manufacturing. Here, government technical and financial assistance took the form of a conscious policy of creating expertise and transferring it to the private sector. The foremost vehicle for this was the Industrial Research and Technology Institute (ITRI) established in 1973 in Hsinchu City by the government. ITRI was the institution responsible for creating the technical expertise that made the move into semiconductors possible (Mathews 1995). ETRI and the

[20] However, the most important aspect of the IBM PC was that it was open system architecture with the standards set by Microsoft and, to a lesser degree, Intel. This created an environment for what Bresnahan and Richards (1999) termed "vertical competition," in which firms at the various places in the value chain undertake strategic actions to drive the cost down in other segments of the value chain.

[21] For a powerful overview of the development of modularity in computer systems, see Baldwin and Clark (2000).

Taiwanese firms drew upon the large number of Taiwanese engineers working in established U.S. high-technology firms and Silicon Valley startups (Saxenian 1999; Dedrick and Kraemer 1998). After attempting to establish integrated firms that undertook every aspect of the production process from design to fabrication, Taiwanese firms retreated to what would prove to a very profitable niche, contract fabrication for a new type of U.S. semiconductor firm that was emerging, the fabless chip design firms (Leachman and Leachman 2001). Taiwanese firms such as Taiwan Semiconductor Manufacturing Corporation and United Microelectronics Corporation (a direct ETRI spinout) offered to fabricate chips for these design firms. This symbiotic relationship proved to be very successful and TSMC, UMC, and various other smaller Taiwanese competitors created an entirely new business, namely what are now called the silicon foundries.

These foundries were relevant to the Taiwanese venture capitalists in two ways. First, though TSMC and UMC received large government investments, private sector investors (including the Dutch firm Philips and numerous Taiwanese venture capitalists) also contributed the initial capital. Here again, Taiwanese investors learned about the significant returns to be had from technology investing. Second, the foundries gave the Taiwanese a very direct production-oriented connection to Silicon Valley. This is significant, Saxenian (1999) and others emphasize the exchange of people in the form of immigrants, and undoubtedly this is important, but, most significant, is that they shared business experiences, i.e., there were mutually beneficial financial and operational interactions. These concrete activities undergirded and gave objective meaning to the interaction between the two regions. This provided Taiwanese industrialists and venture capitalists a powerful connection to Silicon Valley semiconductor design community. This relationship allows not only TSMC and UMC an opportunity to invest in Silicon Valley fabless startups (which they do), but also provides opportunities for the various Taiwanese venture capital firms to create close relationships with Silicon Valley start-ups.

The point here is that Taiwan developed a tool kit of manufacturing expertises that was a direct complement to the tendency in Silicon Valley to out-source manufacturing. Moreover, the industries they were targeting were experiencing extremely rapid growth. This set of capabilities, when combined with an entrepreneurial mentality meant that Taiwan developed something more than simple leverage of low-cost labor, as had been true earlier in

textiles or mercantile entrepreneurship. These conditions were the ones into which the government launched its efforts to create and support a venture capital community.

Creating a Venture Capital Industry

Not surprisingly, with such an industrial backdrop, Taiwanese venture capital industry is the most Silicon Valley-like in Asia. In terms Florida and Kenney (1988a) used, it would be considered a "technology-oriented" complex. This can be seen through the aggregate investment statistics. It is striking that even the most recent statistics continue to show the concentration of investment in electronics and information technology (See **TABLE 3**). Taiwanese venture capitalists do not do much seed stage investing, preferring to concentrate in the start-up and expansion phase (See **TABLE T1**).[22] This pattern was noticed even during the birth of the Taiwanese venture capital industry as the Venture Capital Journal (1985: 3) wrote, "investments will likely be focused on upgrading existing businesses rather than the creation of new companies; also it is likely that investments will be made in products that have been tested in the marketplace." The Venture Capital Journal also noted that investments would likely be concentrated in the computer industry. Curiously, this pattern closely resembles that of Silicon Valley except Silicon Valley venture capital funds invest in global-class, cutting-edge technology, whereas investments in Taiwan are concentrated in products where Taiwanese firms can use their skills at decreasing production costs to transform a high-cost, cutting-edge product into a commodity.

Another important asset was the large number of Taiwanese engineers that occupied executive and managerial positions in U.S. technology firms. They would be used as a resource for advice, directing business to Taiwan, and even returning to establish firms (Mathews 1995; Saxenian 1999). Also, these engineers and managers were able to communicate what might be called the Silicon Valley ethos or savoir- through their actions and expectations. This is a very important point -- it was not an abstract cultural communication, but rather a praxis-based transfer. One could term this a teaching-by-doing process.

[22] Of course, it should be noted that there is a very strong tradition of "friends and family" stage investing in Taiwan. These are, in many ways, simply an extension of the previous family investment pattern that characterize Chinese societies.

The previous paragraphs discussed the development of technical and industrial expertise, however as important are the sociocultural institutions that encourage entrepreneurial activity. Taiwan has had a long history of extended families investing in entrepreneurial ventures that have some sort of family linkage (Hamilton and Biggart 1988). We do not argue that the venture capital business is a direct descendent of this pattern, but it does show the existence of a climate of entrepreneurship and a certain comfort level in investing in new ventures. If family-funded entrepreneurship was an enabling condition, curiously it also created obstacles -- Taiwanese entrepreneurs were reluctant to part with much equity and to subject themselves to the discipline of professional investors. This meant that venture capitalists could invest, but they often had little power or control and the small amounts of equity they received meant that their potential capital gains were small. So, the enabling conditions were not sufficient to give rise to a viable venture capital business sui generis. These were environmental conditions from which a fledgling venture capital industry could draw, but they did not guarantee that venture capital would emerge spontaneously.

The beginning of the venture capital industry can be traced to a study trip to the U.S. and Japan by Li-Teh Hsu, then Finance Minister and the prior Finance Minister K.T. Li. After this trip that included visits to Japan's Tsukuba, Silicon Valley, and Boston's Route 128, they decided to create incentives for the creation of venture capital in Taiwan (Shih 1996: 282; Saxenian 1999: 16).[23] Significantly, K. T. Li was quoted as saying one key piece of advice was given to him by the Provost of Stanford University and one of the individuals most responsible for the creation of Silicon Valley, Frederick Terman namely "lure your talented expatriate engineers home, just as Silicon Valley once lured engineers back from the East Coast" (Knight Ridder News Service 1999).

In 1983 legislation was passed giving attractive tax incentives to individuals willing to invest in professional venture capital firms. In a preface to the original legislation that described the reasons for encouraging the creation of a venture capital industry in Taiwan, the then Minister of Finance, L. T. Hsu wrote:

Venture capital has made great contributions to the development of high technology since its establishment in the United States many years ago. This is because venture capital has the unique features of: innovative financing methods, tax incentives, and its contribution to the better development of the stock market.

[23] Stan Shih, the founder and chairman of Acer accompanied them on this trip (Shih 1996: 282).

Venture capital has supported high technology creativity and satisfy [sic] man's desire for high profits. Therefore, our country will base the promotion of venture capital on improvements in our existing conditions... In the hope that venture capital will play a catalytic role in the next stage of our country's economic development.

This introductory brochure is designed to give local and overseas Chinese as well as foreign investors a preliminary understanding of venture capital in ROC. (Republic of China, Ministry of Finance 1996).

This introduction to the central document describing Taiwan's effort to promote venture capitalism is interesting as it is a direct appeal to the U.S. experience and emphasizes high profits. Also, it is a direct appeal to overseas Chinese to become investors.

The most important feature of the 1983 legislation was an up to 20 percent tax deduction for Taiwanese individuals provided they maintained their venture capital investment for at least two years. To qualify, the investment had to be made by a venture capital fund approved by the Ministry of Finance and in a Taiwanese firm or a foreign firm that would transfer technology to the Taiwan. Notice investing abroad was acceptable as long as a benefit to Taiwan could be shown. Each investment in a firm would be examined by an auditor who decided what proportion met the government criteria of "high technology" and then a percentage rebate of up to 20 percent was approved. With the rebate, if the investor received the full deduction, they only risked $.80 for every $1.00 of investment. The rebate was disbursed two years after the investment. Whereas, initially only individuals could receive the rebate, the Statute was revised in 1991 to allow corporate investors the same 20 percent tax deduction (Liu 2001). This revision dramatically increased the amount of capital available for venture capital and its effect can be seen in the number of funds formed after 1991 (**Table T2**). The ultimate indicator of the program's success came in 1999 when the government declared that the venture capital industry was mature and discontinued the 20 percent tax deduction program.

The tax deduction was by far the largest benefit, but there were other benefits. For example, 80 percent of the investment income was exempt in the current fiscal year, providing a grace period of one year. Also, those who chose to reinvest the earnings garnered from a venture capital investment were allowed to deduct the venture capital income from their tax return in that year (Asian Technology Information Program 1998; Republic of China

1996: 9-10). This encouraged the investors to allow the various venture capital firms to grow on the basis of their retained earnings.

The Taiwanese government also undertook other measures to ensure the growth of venture capital. One measure was a willingness to invest government funds in venture capital firms provided that they were matched by those from the private investors. In return for these incentives, there were restrictions as to which industries were eligible for investment, and the government excluded investments in publicly traded securities, real estate, and retail operations.[24] Thus there was a quid pro quo, in return for the various benefits the government could restrict and channel the activities of its venture capitalists.

Despite the attractive benefits, investment grew only gradually. The expansion in the number of firms was slow initially, but accelerated in 1989. The first venture capital firm in Taiwan was the Acer subsidiary, Multiventure Investment Inc., which was formed in November 1984 and made its first investment in a Silicon Valley startup that year (Shih 1996: 35). The capital for Multiventure came from Glyn Ing, the owner of a construction company and who earlier had been a key investor in Acer, however Stan Shih managed the fund. Multiventure's returns were disappointing, which was not surprising since Acer was a venture capital novice and acted like a corporate investor and not an independent venture capital investor. Finding professional venture capitalists was difficult, as few Taiwanese managers understood venture capitalism (Shih 1996: 287).

Other venture capital firms were formed such as the Sino-Scan Venture Fund managed by China Venture Management Inc.[25] The one that received the most attention was formed by H&Q. The key person was Ta-Lin Hsu, a former executive in IBM's San Jose Laboratories who had been hired by Bob Evans, an IBM vice president who had left for H&Q earlier. In 1986, H&Q launched its venture capital group in Taiwan (Kaufman 1986). H&Q Taiwan recruited investment from major Taiwanese industrial groups such as Far East Textile, President Enterprises, and Mitac (Mitac was Acer's most significant competitor), while the remaining 49 percent was

[24] Though there is no documentary evidence, it is possible they studied the difficult early days of the U.S. SBIC program in which there was much corruption and investment in a wide variety of areas. Some of the worst abuses were in the real estate and property development areas.

[25] China Venture Capital Management reports that it's investors are corporations, established firms etc., but also realized capital gains from earlier investments. This indicates that the incentives discussed earlier operate to encourage investors to reinvest their gains.

contributed by the government's Bank of Communications (Chiao Tung Bank), the Executive Yuan Development Fund, and the Sino-American Foundation for a total capitalization of roughly $25 million (Sussner 2001).[26] Their first investment was in the Taiwanese subsidiary of Data Corporation, a Santa Clara manufacturer of disk drive controllers and floppy disks (Kaufman 1986:7D). This fund was the beginning of what would become H&Q AP, which now spans East Asia.

In 1987, the other important foreign venture capital fund to make an early investment in Taiwan was the San Francisco-based Asian-American venture capital firm, the Walden Group. With the assistance of K. T. Li, Walden established a fund called International Venture Capital Investment Corporation based in San Francisco. It was capitalized at $13 million and included both private individuals and the Bank of Communications (Chiao Tung Bank), the Central Investment Holding Company, Eternal Chemical Company, Tai Yun Textiles, and Walden Asia Ltd. Its first two investments were in Northern California (Besher 1988: C9). This fund evolved into the Walden International Investment Group. Notice that both H&Q and Walden's first investments were in Silicon Valley and this set the binational investment pattern that characterizes the Taiwanese venture capital industry.

Even as the number of entrants increased, there is some evidence that the first ten years returns were not strong. A report by the Asian Technology Information Program (1998) characterized the early investments as "high risk, low yield, with unstable returns." However, Schive (1999) concludes that with the exception of the period from 1984 through 1990 the average returns were relatively good. What is clear is that the environment began to change from 1994 onward when Taiwanese venture capital firms began achieving improved returns. For example, Pacific Venture Group (2000) claims that as of 2000, it has had a total IRR of 57% or a multiple of 3.5 times its invested capital. During the earlier period, it was successful investments in Silicon Valley and the potent subsidy program that guaranteed their survival. However, there can be little doubt that after 1994 profitability for the venture capitalists climbed and the industry became quite attractive. In response as **Table T2** indicates the cumulative number of funds increased rapidly during the 1990s and especially from 1995 to 1998.

[26] The capital invested in the first H&Q Taiwan fund was 800 million New Taiwan Dollars. The exchange rate was between US$1 = NT $27 to US $1 = NT $34.5. Saxenian's (1999) estimate of $40 million is somewhat inflated.

The reasons for this increase are three-fold: First, Taiwan, as were other nations around the world, was gripped by the speculative fever that drove the technology stocks ever higher. In certain cases, this allowed the listing of newly formed firms some of which had little chance of ever becoming profitable. Second, the 1991 rule change permitting operating companies to receive the tax deduction for investing in venture capital firms encouraged the flow of money into venture capital. Third, the deal flow improved as Taiwanese technological capabilities improved. In terms of benefits, according to the calculations of Wang (1995: 89), the multiplier effects of the government's use of tax deductions to encourage venture capital were "ten-fold or above" in years 1990 to 1992.

Operational Issues

The Taiwanese venture capital industry has evolved as have the entrepreneurs and the environment. These changes are reflected in the statistics. In **Table 3** the statistics indicate that the pattern of investment has been fairly stable since the early 1990s and it roughly resembles the pattern in the U.S. Also, Taiwanese investment is far more concentrated in the categories of Online and Computer-related categories than any other Asian country (**see Table 4**). Thus in both stage and industries, Taiwan resembles the U.S. and especially Silicon Valley.

The organizational structure for Taiwanese venture capital operations is quite different from that in the U.S. The first important difference is that the Taiwanese industry does not use the partnership format that has become standard in the U.S. **Figure T1** illustrates the organizational differences between the two nations. Because of the legal system and the government's decision on what would be the sanctioned format, the “funds” are actually what could be termed "paper corporations" whose investments are managed by the venture capital firm whose operations have some resemblance to those of a consulting firm. This structure has implications for the operation of Taiwanese venture capital that are discussed below.

The investing entity in Taiwan is the paper corporation. The paper corporation has no concrete liquidation date -- it is evergreen. And yet, it does not have any employees, rather it pays a management fee and a carried interest to the venture capital firm in return for its services in finding deals and managing the investments. The

paper corporation has a board of directors representing the shareholders, and there is a chairman of the board. There are mandatory board meetings and the board of directors has the ultimate authority to approve all investments. Notice the difference here, in the U.S. the general partners have sole authority and the limited partners have no authority. The Taiwanese investors (corporate owners) are compensated through dividends and not cash or stock distributions.

Nearly all the Taiwanese venture capitalists interviewed believed that the U.S. partnership structure was superior to the Taiwanese system (see, also Wang 1995), but there is no legal provision for this arrangement in Taiwan. The one Taiwanese advantage mentioned was that often the fund's board of directors were experienced high-tech businesspersons, whose input on the investment decision could be useful. The disadvantages were numerous. First, since the funds were evergreen they usually were never disbanded. This meant that successful venture capital firms such as, for example, the Pacific Venture Group had twelve funds operating simultaneously; each of which had a board of directors and required director meetings etc. Second, for every major investment the board of directors must be consulted and agree to the investment using staff time to justify the investment. This arrangement also opens the venture capital firm to pressure to invest for non-economic reasons. Third, because the funds are evergreen and need never liquidate their investments, there is pressure from the entrepreneur to not liquidate the investment. The U.S. limited partnership form demands liquidation, it is not an option thereby eliminating the personal motives from the exit decision. Also, because the return is calculated on the basis of dividends, Taiwanese venture capitalists are difficult to compare with those of other countries and this may impair their ability to secure international investors. These differences stemming from the legal system probably handicap the Taiwanese venture capital industry to some degree and differentiate it from those of other countries.

Not only are the Taiwanese funds structured differently from the U.S., but also the management companies have a different structure. In the U.S., the venture capital firms that manage the funds are either partnerships or limited liability corporations. Compensation for the U.S. venture capitalists comes in two forms, a salary and a share of the capital gains derived from the carried interest. Also, the partners would be expected to invest in each fund. In Taiwan the management firm is privately held company. Thus it has owners, which may be the

founder(s) of the firm, the investors, or some combination of the two. In contrast to the U.S., the professionals in a Taiwanese venture capital firm may not control the firm. In fact, for most professionals compensation is in terms of salary and some bonus related to their performance and the performance of the firm. This compensation scheme means that the professional managers might not capture the bulk of the returns, unless they also were the venture capital firm's founders. As a result, turnover is relatively high. In the future, this could also become an important problem with succession. These operational issues can only be addressed by government action to change the law to allow Taiwanese venture capital to organize themselves like the venture capital industries of the U.S., Europe, and Israel.

Exits and Raising Capital from Public Markets

Today, Taiwan has effective and smoothly functioning equity markets.[27] Firms are able to list and raise capital in the stock markets, however the rules are stringent and prevent weaker and very young firms from using the stock markets to raise capital. In 1988, the Taiwan stock exchange created a third category of listings with more lenient requirements, however as of 1995 this was not much used (Wang 1995: 90). Of course, for global-class Taiwanese firms it is possible to use the U.S. NASDAQ. Also, some Taiwanese firms use other Asian stock markets such as Singapore and Hong Kong to list publicly. Thus Taiwanese firms can use public markets as a source of capital and a mechanism for allowing investors to liquidate their investments.

The other important U.S. exit strategy, mergers, are not popular in Taiwan, because the entrepreneur intends to maintain control of "his/her" firm. Since it is difficult for venture capitalists to gain control of the firm, they are not usually in a position to demand the sale of the firm. Taiwanese investors do have another exit strategy that does not exist as robustly in most other countries, namely it is possible to sell shares in a private equity market or what is referred to by many as a "gray" market. This allows angel investors, friends, and family with only a small number of shares to liquidate their positions. The gray market has no laws regulating it, so it is somewhat ad hoc. However, it does have liquidity and provides small investors a way to exit without waiting until a public offering

[27] This was not always the case. In 1985 "the immature state of Taiwan's market . . . was often cited as an obstacle to the development of real venture capital (Venture Capital Journal 1985: 2).

to realize their investment. Wang (1995: 90) concluded that 47 percent of the exits by Taiwanese venture capitalists constituted private placements, however it is difficult to be sure whether this included the "gray" market, but it seems likely.

In terms of exit, Taiwan does not appear to suffer from any severe blockages except in the case of merger, to which there is a cultural resistance. Though in the author's interviews conducted in 2001, many said this resistance was breaking down as younger more savvy entrepreneurs were much more willing to sell their firms. With a well-functioning gray market, exit is relatively easy and does not form an obstacle to venture investing.

The problems of investment exit have largely been solved. The stock market is large and quite sophisticated in evaluating IPOs. Also, Taiwanese venture capitalists have much experience with taking firms public in other markets especially the U.S. NASDAQ. Though the merger market is weak, the gray market provides an exit opportunity not available in other countries. In summation, there are few problems in of raising capital and liquidating investments.

The Globalization of Taiwanese Venture Capital

The Taiwanese venture capital community was born globalized. Every important Taiwanese venture capital fund has an office in the San Francisco Bay Area. As **Table T4** indicates, from, at least 1992, Taiwanese venture capitalists have invested between 20 and 30 percent of their total funds outside Taiwan. Until recently, this was almost exclusively Silicon Valley. In contrast, with the exception of one year, more than 80 percent of the funds invested in Taiwan have been generated internally. According to the AVCJ in 1998 and 1999, there was a significant change as investments in other parts of Asia increased significantly.[28] One indicator of the destination for these investments is the geographic preferences listed by the firms in the AVCJ. **Table T3** indicates that the U.S. is overwhelmingly the preferred location for investing after Taiwan itself as nearly 40 percent of the Taiwanese venture capital funds mentioned the U.S.

[28] It should be noted that the TVENTURE CAPITALA disagrees with these AVCJ statistics maintaining that the Asian investment was far lower, and in the range of 3-5 percent (Yang 2001).

The aggregate statistics provide only a partial picture of the strength of these linkages. Fortune Venture Investment Group (2001), as an example, reported on its website that of a total of 89 investments; 27 were in Taipei, 25 were in Northern California, 18 were in Hsinchu, 11 in other parts of Taiwan, 4 were in Southern California, 2 were in Singapore, and 2 were located in both Northern California and Taiwan. To manage its investments, Fortune had offices in Taipei, Silicon Valley, Hong Kong, and Singapore. Fortune was by no means unique. For example, the Pacific Venture Group (PVG) had offices in Taipei, Silicon Valley, Tokyo, and Singapore.

Many leaders of the Taiwanese venture capital industry had training and work experience in the U.S. For example, PVG's Chairman and Founder holds a Ph.D. from Carnegie Mellon University, and every single executive above vice president had at least one degree from a U.S. university. Among the entry-level managers, five had degrees from the U.S., two from other English-speaking nations, and two had only a Taiwanese degree (s) (PVG 2000). This was typical for Taiwanese venture capitalists, as nearly all had significant experience in the U.S.

Another dimension is U.S.-based firms investing into Taiwan. From the aggregate statistics this appears to be limited. However, two important venture capital firms in Taiwan are H&Q Asia Pacific and Walden International Investment Group headed by Lip-Bu Tan. As mentioned earlier, these two firms were early investors in Taiwan and they continue to be significant. Other newer U.S. firms such as WI Harper and Crimson Ventures also have offices in Taiwan and are significant investors. For example, Asian Americans or Asian immigrants largely staff these U.S.-headquartered firms and most of the investors are wealthy Asian or Asian firms (Hellman 1998). H&Q AP, in contrast, draws upon Asian and American institutional investors. More recently, Taiwanese firms have begun raising capital in overseas markets. For example, Pacific Venture Group working through Merrill Lynch raised $300 million in 2000 for a partnership.

The knowledge of and linkages with the U.S. were multifaceted, rather than unidimensional. This Taipei-Silicon Valley connection is based on education (and the networks that Taiwanese form with other Taiwanese and overseas Chinese while they are in U.S. schools), investments that they make in Silicon Valley, and the bi-

directional linkages that the Taiwanese venture capitalists can make for their portfolio firms. For U.S. firms, Taiwan or Taiwanese firms offer manufacturing services especially access to fab capacity. For the Taiwanese firms, they can provide access and intelligence about developments in the U.S. market and Silicon Valley, in particular.

Saxenian (1999) emphasizes the "Silicon Valley-Hsinchu Connection," and, of course, Hsinchu is very important. From the perspective of the venture capitalists, this draws the circle somewhat too narrowly, as most of the venture capitalists are located in Taipei and, according to most reports, Taipei likely has more technology startups than Hsinchu. What is undoubtedly correct is that ETRI and Hsinchu formed a crucial institution and region in the industrial upgrading of Taiwanese industry

Venture Capital's Future in Taiwan

The Taiwanese venture capital industry now faces some difficult issues. Some of which are related to the internal Taiwanese situation and some of which are imposed by macroeconomic developments. How the government and the venture capital firms respond to these changes will have significant impacts upon the health of the venture capital industry and its continuing ability to support Taiwanese startups.

The first issue is the elimination of the 20 percent tax deduction. This removed a significant investment incentive. In 2000, this change did not appear to dramatically decrease fund raising. However, after the weak performance of the Taiwanese stock market in 2000, as of May 2001 not one new fund had been raised (T. Yang 2001). If the stock market continues in such a depressed condition, the IPO window will remain closed and it will be difficult for venture capitalists to raise new funds – especially because the risk reduction generated by the tax deduction will be eliminated. For the many small venture capital firms, this could cause closure and/or distress mergers.

Even though, the tax incentive has been eliminated, the Taiwanese government still imposes many constraints on the operation of venture capital firms and their sources of funds. There are rules regarding the maximum investment in the fund's total capital by different institutions. For example, banks are allowed to own no more

than 5 percent of the total capital in a single fund, and an insurance company can only own 25 percent of any one fund's total capitalization. Pension funds are forbidden from investing in venture capital, thereby eliminating a major source of patient capital.[29]

The Taiwanese government must also consider whether the corporate form is the most efficient way organizational form for venture capital. The Taiwanese venture capitalists interviewed believed that the U.S. partnership form was superior in nearly all respects. However, there seems to be little consideration of action to legalize the partnership format. Government regulation continues, even though the most important government incentive has been eliminated.

The Taiwanese venture capital industry was born global, but this was a bilateral globalism. For Taiwanese venture capitalists the next step will be to consider whether globalization is simply bilateralism or will it be multilateral to include Greater China and beyond. Here the Taiwanese government will be faced with some difficult decisions regarding whether to allow Taiwanese venture capitalists to maximize their return by investing wherever the greatest returns are available or handicapping them to support government policy goals.

For Taiwan, the relationship with China is a paramount issue. For the venture capitalists this is vexing because there is no doubt that manufacturers are moving their manufacturing operations to the mainland especially the Shanghai area. Since most of the Taiwanese-based investments are related to manufacturing activities, the venture capitalists are wondering whether their investment opportunities will move to China. The current mechanism for investing in China is using shell firms registered in the Cayman Islands, however most Taiwanese venture capitalists would rather be able to invest directly, rather than through an offshore entity.

Today, Taiwan has the most dynamic technology-driven venture capital industry in Asia. Outside of the U.S., the only consistently more successful venture capital industry is Israel. From this perspective, there is no doubt that the decision in the 1980s to subsidize the creation of a venture capital industry was a major policy triumph. A vibrant industry with experienced professionals and good track records was created. However, the next few

[29] The Taiwanese government believes that venture capital is too dangerous for pension fund investments. This is despite the fact that in the U.S. it was found that for institutions managing large pools of money investing small amounts in high risk, high return enterprises actually improved returns while adding no more risk to the portfolio.

years will be a stern test of the industry's ability to survive without the tax deduction. Minus the deduction, the decisions by investors will be driven solely by the returns the venture capital funds generate, unnecessary regulations will depress those returns, thereby decreasing venture capital's attractiveness to investors. As the entire industry globalizes, investors will seek out the venture capital funds, in Taiwan or abroad, offering the best return.

Even though the Taiwanese venture capital industry faces some obstacles, it remains the most dynamic in Asia. Though not managing as much capital as Singapore and Hong Kong, it actively supports Taiwanese firms, and has very strong relationships with Silicon Valley. The government has stated that the venture capital industry is mature, and yet, it has not deregulated the industry to allow it operate as though it is mature. The Taiwanese government will have to make some tough decisions regarding deregulating its "mature" industry.

Japan[30]

Since the collapse of the "bubble economy" in 1989, the Japanese economy has been mired in an economic stagnation. The once seemingly invincible financial institutions are burdened with the huge number of non-performing loans. Some banks and security firms have already failed and others are threatened. There can be little doubt that Japan's bank-led method of financing industry is experiencing a crisis in the form of stagnation.

Despite its difficulties, in terms of technological R&D capacity especially in electronics Japan continues to lead Asia and is second only to the U.S. Japanese universities, though, on average, not as strong as elite U.S. universities in terms of research, clearly have pockets of global-class engineering and scientific research excellence and the graduates are quite capable. However, it is also true that university researchers are not so entrepreneurial and that the entire research system is organized to discourage entrepreneurial tendencies. In the private sector, the long-term employment system creates significant obstacles to labor mobility especially among the most highly trained and talented. Thus it seems fair to say that Japan is the Asian nation with the greatest

[30] For a somewhat different interpretation of the Japanese venture capital situation, see Kuemmerle 2001.

human resources capable being the raw material for a Silicon Valley-type economy, but just as clearly the entire socio-economic system is not organized to encourage the emergence of a Silicon Valley.

With the exception of the U.S. and United Kingdom, Japan has the oldest venture capital industry in the world having begun in 1963. Also, in terms of capital Japan has one of the largest venture capital industries. Despite the long history and abundance of capital, Japan's venture capital industry has funded very few startups except during the last five years of the Internet Bubble, when the startup ethos also gripped Japan. By all accounts, the situation of the venture capital industry in Japan is paradoxical. In terms of amount of capital it is world's second largest industry, but it is also probably the world's most conservative venture capital industry.

History of Venture Capital

The Japanese venture capital industry tracks the trends in the U.S. with a lag of a couple of years. Moreover, the institutions, policy measures, and rules for Japanese venture capital have been modeled upon those in the U.S. Despite these cursory resemblances, venture capital in Japan has evolved in an entirely different way. It is safe to say that the differing initial conditions and the surrounding environment led to a different outcome.

Japan has a curious history. As a number of scholars have pointed out, the financial system is bank-centered and they have provided the capital that has fueled corporate growth. Moreover, these main banks were the core of a massive set of equity cross-holding networks, sometimes termed horizontal keiretsu. These networks were critical for providing capital to the various firms in the network. However, in addition to this there was a whole network of banks and local development agencies that provided capital to SMEs (for a description see, Nishiguchi 1994). In fact, Japan has a tradition of supporting its large SME sector.

Japan has a long history of entrepreneurship and the large small business sector that can be traced back into the Tokugawa Shogunate, when the regional samurai rulers encouraged enterprise in their fiefdoms in an effort to capture taxes from industry. After the Meiji Restoration, the government funded many industrial projects in an effort to overtake the West. Here again, entrepreneurship was valued. Outside of this sector, many other industrial firms were created in the pre World War Two period, some of the most famous include Matsushita,

Sanyo, Toyota, and Nissan. The sources of capital for these firms are difficult to discover, but likely were the same "friends and family" sources of capital that have been used by entrepreneurs everywhere.

Immediately after World War Two and the accompanying economic collapse, there was a period of intense entrepreneurship and many new firms such as Sony, Honda, and Alps were formed. Again the sources of capital are vague, but in the case of Sony the founders' families were relatively wealthy and provided them with their initial capital (Morita 1986). Local, prefectural, and national government agencies also had various loan programs for SMEs. Thus it is too facile to argue that Japan has not generated entrepreneurship because of certain cultural attributes or an overwhelming favoritism shown to large firms. In fact, Japanese policy makers have had much concern for encouraging and protecting SMEs. However, this interest has not been in supporting small firms undertaking Schumpeterian innovation.

In contrast to most non-Western nations, immediately after World War Two under the direction of U.S. occupation forces, Japan instituted a fairly sophisticated stock market. In the late 1950s and early 1960s, an increasing number of firms that had been formed immediately after World War Two and then grown very rapidly were allowed to list on the Tokyo Stock Exchange. Recognizing that there were a number of firms that were not large enough to list on the TSE, in 1961, the TSE established a second section of the stock exchange and then in 1962 an over-the-counter market was established. The second section and the OTC had less stringent listing requirements. This encouraged increased investment in small and medium-sized firms. So already at this early date, Japan had developed an exit mechanism for startups that was fairly reliable.

For the purposes of this study the evolution of Japanese venture capital can be separated into four phases. Each of which was marked by a new set of policy initiatives and was correlated with venture capital booms in the U.S. economy.

The Japanese Government Creates an SBIC Program

The first phase in the development of venture capital in Japan was a response to the U.S. Congress' passage of a law in 1958 creating the SBIC program. In 1963 the Japanese government authorized the use of public funds

from the national and prefectural governments and the private sector to establish three Small and Medium Business Investment & Consultation Co. Ltd. in 1963 in Tokyo, Nagoya, and Osaka. The Japanese program differed significantly from that in the U.S. Whereas, in Japan only three firms were formed, since the U.S. program was open to anyone by 1963 nearly 500 SBICs were formed by individuals, financial institutions, and even some publicly held SBICs. The significant point being that in the U.S. the SBIC program played a significant role in allowing private individuals to enter the venture capital business.

Through March 1996, these three Japanese SBICs had cumulatively invested in 2500 firms, of which 78 had had public stock offerings. Their total investment during this period was 69.2 billion yen (at an average conversion rate of 150 yen to the dollar over this period this would be in excess of $400 million). In the 1990s the majority of the stock in these SBICs was held by local governments, city and regional banks, insurance firms, stock exchanges, private corporations, and chambers of commerce. Though they played an important role in supporting existing SMEs by providing stable, long-term capital, they had a much more limited role in supplying funds for start-ups (Niimi and Okina 1995).

The Emergence of Private Venture Capital (1970 to 1973)

In 1972, the first private venture capital corporation, Kyoto Enterprise Development (KED) was established with investments by 43 prominent companies, including Kyoto Stock Exchange, Bank of Kyoto, Tateishi Electric, and Industrial Bank of Japan. The motive force behind KED was the Kyoto Association of Corporate Executives that aimed to promote knowledge intensive industries as a regional development strategy. The model for KED was the first organized U.S. venture capital organization, American Research and Development that had been founded in 1946 in Boston. KED was liquidated only four years later, in 1976 (Ono 1995). Also, in 1972 the Nippon Enterprise Development (NED) was formed by a group of 39 firms including the Japan Long-term Credit Bank, Fuji Bank, Daiwa Bank, and C. Itoh, and included both financial institutions and venture businesses. In 1973 Japan Godo Finance, which was the precursor to the present JAFCO, was established by Nomura Securities and 15 other shareholders. In total, between 1972 and 1974 eight private venture capital firms were formed by

major banks, such as Sumitomo, Mitsubishi, Daiichi Kangyo, and security firms, such as Yamaichi and Nikko. In other words, the major Japanese financial institutions formed venture capital subsidiaries. Quite naturally, these financial-institution linked venture capital institutions exhibited the risk averse character of their funders. Moreover, most of the personnel were seconded from the funding institutions and they were rotated ensuring that there was little institutional learning. Curiously, when one compares Japanese institutional commitments to venture investing to those of the U.S., what is striking is that Japanese firms exhibited a long-term commitment, whereas U.S. corporate venturers usually retreated at the first sign of difficulty. However, Americans who joined the subsidiaries of U.S. firms that invested in venture capital usually left the firm to establish or join an independent venture capital firm, while Japanese professionals who served in the venture capital subsidiary nearly always returned to the parent firm. Thus American individuals did exhibit a long-term commitment, while the institutions did not. The ultimate result was that the U.S. accumulated a corps of trained venture capitalists, while in Japan this corps formed more slowly.

The recession triggered by the oil crisis in 1973 ended this phase of expansion. The number of investments declined and the industry stagnated. However, of the eight firms formed, six survive until this day. So a venture capital industry was created, but it did not have sufficient success to become an important part of the Japanese political economy. Ultimately, these venture capital subsidiaries were small divisions in large Japanese financial institutions.

The Second Venture Capital Boom (1982 to 1986)

The U.S. hot new issues market in the early and mid 1980s, once again, attracted Japanese attention and stimulated a discussion about reforming the OTC market. Once again, the major players in this second venture capital boom were the banks, security firms, and regional banks. This time their main goal was to use venture investing to create relationships with the small and medium size firms. So their venture capital affiliates provided funding and underwriting to the SMEs with the goal of gaining access to these firms to provide other services. In 1982 five venture firms including Nippon Investment Finance (Daiwa Security affiliate), Sanyo Sogo Capital

(Sanyo Security affiliate), and Shin Nippon Finance (Shin Nippon Security affiliate) were established. In 1983 ten more firms including Nikko Capital (Nikko Security) and Fuji Bank Capital (Fuji Bank affiliate) were formed. In 1984 alone twenty-two venture capital corporations were formed, the majority of these were owned by the regional banks. Here again, the purpose for starting venture capital subsidiaries was the same as those of the major city banks – they wanted to establish relationships with growing regional SMEs for the purpose of providing other services. Frequently, these regional banks established venture capital firms in cooperation with the major venture capitalists and security firms. As in the case of the first generation of venture capital firms, nearly all of investments were loans. This is important, because it contrasts sharply with the U.S. practice of acquiring equity in exchange for capital. The Japanese venture capitalists were not seeking capital gains, they had an ulterior motive, i.e., they wanted to develop long-term banking relationships with the firms they funded. For this reason due diligence was not so rigorous, and any way they lent to established firms, not new firms. Even had the venture capitalists sought deals promising large capital gains it would have been difficult to find them. There was a comparative lack of deals in the Japan.

In 1982, after studying the limited partnership investment format in the U.S. where the partnership had already become the dominant venture capital organizational format, JAFCO introduced its first partnership investment fund (Hamada 1999: 38-41). However, the second venture capital boom declined due to the recession caused by the rise of yen in 1986 and 87 after the Plaza Accord. Once again, investment activity declined substantially as few new firms were formed or funded and a willingness to lend money to new firms also declined. Then in 1989 Japan entered into the deep economic crisis that continues until today.

The Third Venture Boom (1994 - 2000)

In 1994 and roughly paralleling the growth of the Internet and the upswing in the Silicon Valley economy, interest in role of venture capital in facilitating new business formation and the support of start-ups was renewed. This time, however, the new boom occurred in an environment in which Japanese industrial and government leaders were concerned about the continuing stagnation of the economy. To facilitate new business creation and

start-ups in knowledge intensive and high technology industries, the Japanese government implemented a variety of new measures. For example, in the 1995 Revision of the Law on Temporary Measures to Facilitate Specific New Businesses and the enactment of Small and Medium Size Enterprise Creation Law in 1995 made SMEs eligible to receive financial as well as informational support. These new laws also encouraged the formation of more venture capital firms. Due to the new incentives a number of organizations established venture capital subsidiaries. For example, another wave of regional banks and corporations established venture capital affiliates. Also, some independent venture capital firms were formed. For example, in 1996 Nippon Venture Capital was established with a capitalization of 10 million yen through investments from 41 companies, including Nippon Life Insurance and Ushio Electric.

A Statistical Overview of the Japanese Venture Capital Industry

In 2000 there were nearly 180 venture capital companies engaged in venture capital investing in Japan.[31] Venture capital subsidiaries of major financial institutions, such as banks, securities firms, and insurance companies comprise 70 percent of the entire venture capital industry. Another 25 percent are independent venture capital companies remains small. The structure of Japanese venture capital industry is oligopolistic in a sense that the large venture capital firms predominate in terms of investing. According to the latest available statistics, in March 1997 out of 86 top venture capital firms, 5 controlled 50.5 percent of the total investment, and the share of the top 10 was 66.5 percent. In the area of partnership funds, top five controlled 67. 6 percent (Ono 1997: Ch.7, 13). Large venture capital firms are affiliates of security firms. Among top ten venture capitalists, six were affiliates of security firms. JAFCO, NIF, Japan Asia Investment, Nikko Capital, Yamaichi Finance, and Kokusai Finance are the major security affiliates. Most of large banks and long term credit banks established venture capital affiliates during the first and second venture booms, and rank between top 10 to 30 in terms of size. The major ones are NED, Fuji Bank Capital, Sanwa Capital, Asahi, Daiwa, and Central Capital. For the most part, the source of their capital was their parent banks.

[31] There are no complete statistics on venture capitalists in Japan. The Venture Enterprise Center (VEC) listed 185 venture capital firms to send their survey in 1999.

The other venture capital operations were more varied. For example, the regional venture capital firms established by local banks were much smaller in size, but they are similar organizationally. In the 1990s, insurance firms also established venture capital affiliates, and, though often larger than the regional venture capital firms, they were smaller than the large venture capital firms. At this time, a number of major corporations from a variety of business areas including manufacturing, trading, credit, and software established venture capital subsidiaries. These included CSK Venture Capital and Orix Capital. Another strategy was to establish venture capital firms whose capital came from a consortia of large firms from a variety of industries. Examples of these include Nippon Venture Capital and Diamond Capital, which was formed by a number of Mitsubishi keiretsu firms. Finally, there is one of the largest venture capitalists in Japan, Softbank, which is, in fact, the subsidiary of a software distributor, but it is so different and important that we treat it separately.

There are a variety of independent venture capitalists. However, in terms of size and significance in funding startups they are of little importance. There are also a number of foreign venture capital firms operating in Japan, however, in general, they have invested in later stages or have operated more in the private equity area. In fact, nearly all of the significant global venture capital players are present including the British firms, Schroeders and 3i, and the American firms such as Warburg Pincus, APAX/Patricof & Co, Hambecht & Quist Asia Pacific, and the Carlyle Group. These foreign firms have significant funds available, but generally do not find Japan attractive for startup investing (Sussner 2001).

The Operational Characteristics

Japanese venture capital funds are generally not partnerships, rather they use the assets provided by their corporate parent firms. One reason that partnerships have been underdeveloped is the relative lack of available institutional funds. The largest source, pension funds, were forbidden by government regulations from investing in what was considered the risky area of venture capital. Additionally, until recently, Japanese investors were subjected to unlimited liability, making the investment too risky for such organizations. According to a 1997 survey, 63 percent of the total venture capital investments were made by the venture capital subsidiaries, while the

remaining 37 percent came from partnerships. The use of the partnership mechanism increased, especially after the passage of the 1988 Investment Operations Responsibility Association Law that limited the investor's liability. This is especially noticeable recently, as a survey by the Venture Enterprise Center found that the number of venture capital partnership funds increased from 174 in 1999 to 238 in 2000 and now account for 47 percent of the total investment (METI 2001: 8).

The source of funds for Japanese venture capitalists largely has been financial institutions and domestic operating companies. With pension funds forbidden from investing in venture capital, and the general lack of university endowments and large tax-exempt foundations, institutional investors simply were not a significant source of funds. Among venture capitalists, the affiliates of security firms obtain funds from variety of sources, and invest through partnerships. The bank and insurance-affiliated venture capitalists get investment capital from their parent firms in the form of debt, rather than through an equity investment.

In recent years, the share of loans in the cumulative investments has decreased significantly, as **Figure J1** indicates until the early 1990s loans were a much larger percentage of total investment. Even as late as 1996, loans comprised approximately 30 percent of the total investment. However, the percentage of loans had decreased to 7 percent of total investment and loans in FY1999, a drop from 9 percent a year earlier (METI 2001: 7).

The reasons for the use of loans by Japanese venture capitalists can be traced to characteristics of both venture capitalists and the start-up firms. The acquisition of capital in the form of debt carries with it the need to pay interest. However, a U.S.-style venture capital investment in equity means that for some period of time there will be no returns, thus creating a problem for the venture capital fund as it will have to pay interest out of its initial capital. Quite naturally, this made the venture capitalists more comfortable providing loans, but, of course, loans guarantee a low return so risk must be commensurately low. Of course, it is possible to structure the loan with convertibility or a large equity kicker, but the entrepreneur might balk and paying interest is onerous for a small high-growth firm that by definition is likely losing money during its early stages. This situation was even more difficult due to the long time it takes for Japanese firms to reach an IPO. Typically, Japanese start-ups require

more than 10 years to go public. So these growing firms were unable to use the stock markets to acquire more growth capital for the firm. This meant that the venture capitalists had to support a firm longer and could not liquidate their investments as quickly as their counterparts in the U.S.

In Japan, like in the rest of Asia, entrepreneurs often have the goal of creating a firm that they can give to their families, so they are reluctant to cede large equity interest to other investors. With this goal in mind, they often prefer loans and bonds. The situation for venture capitalists is complicated further by the Anti-Monopoly Law, which prohibits any single investor (including venture capitalists) from owning more than 49 percent of the total equity and when shareholding is greater than 25 percent, the shareholder is not allowed to be dominant. For this reason, Japanese venture capitalists usually only acquire from 15 to 20 percent of the equity of their portfolio companies. This means that the typical investment is small. This, quite naturally, meant that the normal monitoring that is so much a part of the value-added of a venture capital investment cannot occur. In 2000 the disbursements per portfolio company for initial and follow-up were $500,000 for corporate venture capitalists and approximately $700,000 for independent venture capital firms (METI 2001: 9). With such small stakes and an emphasis upon loans, the venture capital firms have trouble making high rates of return.

In terms of industrial sectors, Japanese venture capitalists have quite diverse portfolios including more traditional manufacturing and retail as well as high-tech industries such as computers and telecommunication. Less than 40 percent of the total investments were in high technology. As **Table J1** shows, the exception to this pattern is that since 1998 the share of investment going into Internet-related start-ups grew from 3.8 percent in FY 1998 to 11.6 percent in FY 1999 and then to 21.4 percent in the period of April-June 2000. Likely, from June 2000 onwards Internet investments decreased significantly.

Japanese venture capitalists traditionally invested in the later stages of a firm's growth. According to a 1995 survey by the newspaper Nihon Keizai Shimbun, the percentage of companies receiving investment that were 20 years or older was 48.7 percent in 1994 and 35 percent in 1995 (Ono 1997: Ch.7, 10). This may be changing as the number of the late-stage investments has been decreasing, and earlier stage investments increased dramatically after 1995. A METI survey conducted in 2000 with 72 respondents found that the share in value terms of

investment going to portfolio companies less than five years old was 62 percent in FY 1999, an increase of 50 percent from the prior year (**Table J2**).

The Japanese venture capital investments were largely domestic (70 to 80 percent of all new investments). The Tokyo area received approximately 50 percent of total investment (see **Table J3**). Another 20 to 30 percent of the total investment were made overseas with Asian firms receiving between 10 to 15 percent of the total, while another 5 to 10 percent was invested in North America.

In general, Japanese venture capitalists received only limited training. The foremost reason for this was that the majority of the venture capitalists were seconded to venture capital firms from their parent firms and after two to five years returned to the parent company. The net result was that venture capitalists in most firms had little experience in small firm operations, finance, or a technical background. At this point, in most firms there was no mechanism to accumulate the necessary skills. Finally, since the venture capitalists were paid a salary and received no reward for success either in individual terms or for the venture capital group and would certainly be punished for a bad investment, there was little motivation to take any risks.

The relationship of Japanese venture capitalists to their portfolio firms differed significantly from that of U.S. venture capitalists. This was especially important when it came to assisting their portfolio firms. The lack of in-house skills and experience meant they were unable to provide advice and assistance based on experience to the entrepreneurs. Also, since their equity positions in the firms tended to be small and the venture capitalists usually had a greater number of investments in the form of loans, they could not be too actively involved in assisting and monitoring management. The result was that Japanese venture capitalists are largely passive. Thus there relationship to their portfolio firms resembled that of a banker.

The Current Environment for Venture Capital in Japan

The late 1990s were a period of change in the environment for venture capital in Japan. The diffusion of the Internet and the I-mode wireless telephone service encouraged entrepreneurs to establish firms to exploit the new business opportunities. The stock markets were receptive to new startups, and entrepreneurs such as Masayoshi

Son the founder of Softbank enjoyed great prestige. Moreover, there was a general feeling stemming from the continuing economic crisis that Japanese society needed to change.

The Internet Boom was a defining moment for the Japanese venture capital industry and the awakening of entrepreneurship in the country. The number of Internet users increased rapidly in the late 1990s. The penetration rate reached 27.5 percent of population or 32.6 million users in February 2001, up from 6 percent in 1997. The percentage of households with a PC grew from 38 percent of households in 1995 to 63 percent in 1999. The other area of potential for startups was the rapid increase in the usage of mobile phones with an Internet connection. The number of mobile phone subscribers increased to nearly 65 million surpassing the number of fixed line subscribers in 2000. The number of individuals using the Internet connections was accelerated by the usage of I-mode, which was supplied by NTT DoCoMo.

The growth of Internet users paralleled the growth in the Internet industry. According to the Ministry of Posts and Telecommunication (MPT) estimates, the total value of the Internet industry including Internet commerce (B2C and B2B) and Internet related businesses, such as hardware and software production for Internet connection was $200 billion in 1999 (MPT 2000). Moreover, the domestic output of the info-communications industry increased to 12.5 percent of GDP (112.9 trillion yen), up from 9.3 percent in 1990. Employment in this sector also rose at an annual rate of 2.1 percent during 1980-1998, which compares favorably with the 1.6 percent for all industries; 6.7 percent of all industrial workforce, 3.8 million people, were employed this sector by 1998 (Sako 2001: 8). So during the long Japanese economic recession, the bright spot has been the growth of the information and communication industries.

The Internet boom in Japan energized young entrepreneurs and venture capitalists and contributed to what has been called the "Bit Valley" phenomenon.[32] Approximately 1300 new internet-related companies are located in 23 wards of Tokyo, and about 40 percent of which are located in Shibuya and Minato Wards.[33] In fact, one fourth of those in Tokyo (371 in 2000) are clustered around Bit Valley (Aoyama, Harajuku, Shibuya, and Ebisu).

[32] Bit Valley is taken from Shibuya (which literally translated means "bitter valley") where many Internet-related firms were established.
[33] This description of Bit Valley draws upon Yukawa (2000).

These internet-related firms are generally small firms and relatively new: 39 percent employed 30 employees or less and 49 percent were founded after 1994. Many of entrepreneurs who started the Internet business had the education and/or work experience in the U.S. and have established links to American Internet companies in Silicon Valley and the Silicon Alley (Arai 2000).

Foreign Venture Capitalists in Japan

The true volume of foreign venture capital operating in Japan is uncertain. However, a survey conducted by METI-VEC in early 2000 showed the dramatic increase in foreign investment in Japanese venture capital funds. For funds established between July 1999 and June 2000, including investments in partnerships, foreign investors contributed 26.3 percent of the total investment (METI 2001: 27).[34] The U.S. venture capitalists included both corporate venture capitalists, such as Intel, and other institutional investors, such as Goldman Sachs and GE Capital. These operations often were established as joint ventures with Japanese venture capitalists and corporations. By the end of April 2000, foreign investors had raised or committed significant sums for investment in the Japanese market. For example, J.H. Whitney & Co. committed approximately $200 million; Apax/Patricof raised nearly $180 million in cooperation with the Japanese firm, Globis, and Schroeder Ventures about $150 million (Netry.com 2000). GE Capital Corp. launched an approximately $180 million fund in conjunction with Daiwa Securities. Finally, a $270 million fund was established by the Goldman Sachs Group and Kyocera Corp for the express purpose of investing in high-tech firms (Spindle 2000).

The foreign firms were not the only new entrants into the Japanese venture capital market. The commercialization of the Internet in Japan not only led to the emergence of large number of dot.coms, but also the establishment of Internet companies such as Softbank and Hikari Tsushin that provided venture capital to Internet ventures in Japan and overseas. Also, a number of Internet firm incubators, such as Neoteny and Netyear Knowledge Capital, were established on the premise that they would invest in the seed and start-up stage of Internet firms. These organizations differed from the traditional venture capitalists, because they were

[34] The number of valid responses was 57 firms for this question, representing 177.9 billion yen.

independent and dedicated to early-stage investment. These organizations were a new development on the Japanese venture capital scene. However, during 2001 many suffered due to the bad market conditions and it seems likely that most of the Internet incubators will leave the scene soon. Also, Hikari Tsushin, due to bad investments and management, has seen its stock collapse and hovers close to bankruptcy.

Softbank

Softbank was established in 1981 as distributor/retailer of software and publisher of computer-related publications by Masayoshi Son. Since then it grew to become a significant force in information services and the Internet business space. Through its involvement in computer publishing and operating a number of U.S. high-technology trade fairs such as Comdex, Son and Softbank were alerted to the potential of Internet and became early investors in some of the most successful U.S. Internet firms including Yahoo, Geocities, and eBay. Drawing upon its connections and experiences in the U.S., Softbank began investing in Internet firms in Japan. One its most important strategies was to create joint ventures with established U.S. Internet firms to launch their Japanese sites. The most important examples of this were E*Trade Japan, Geocities Japan, and ONSALE Japan. Softbank also expanded its overseas investment activities through the formation of subsidiaries, such as Softbank US, Softbank UK, Softbank Europe, Softbank Latin America, Softbank China, and Softbank Korea. The remit of these subsidiaries was to invest in joint ventures, partnerships, and local Internet startups. One joint venture between Softbank and the IFC, called Softbank Emerging Markets, was meant to invest in Internet ventures in emerging economies. The theory is that this joint venture would combine the Softbank's Internet and new firm formation expertise with the World Bank's experience in operating in developing countries.

In 2001 Softbank's network included over 300 group firms in finance, e-commerce, media, technology services, and the Internet infrastructure and was often called the "Internet Zaibatsu." As of January 2001 Softbank had invested $8.8 billion in more than 600 start-ups. Softbank Investment Co., the venture capital arm of Softbank, together with the other venture capital operating companies in its group, had established funds with over $2 billion in available funds and had invested in 353 companies, 292 domestic and 61 overseas, by the end of

March, 2001 (Softbank Investment 2001). Softbank has not confined itself to financing Internet firms, for example, in 2000 it organized a consortium of firms including Tokio Marine Insurance, Fire, and Orix to purchase of the failed Nippon Credit Bank (NCB). Softbank very rapidly became one of Japan's foremost venture capital firms, and in terms of the accumulated total investment Softbank ranked second after only JAFCO.

Exit options

Japan has had a bank-centered financial system with equity markets playing a minor role in providing funds for firms. For this reason equity markets were relatively undeveloped and provided limited opportunities for exit. Further, the equity markets were highly regulated by the Ministry of Finance. These regulations and those by the stock exchanges were structured to discourage offerings by new relatively risky firms. The emphasis was to protect investors from risks. These strict listing requirements required a certain level of profitability and minimum net asset requirements – conditions that most young start-ups could not meet (Milhaupt 1997). Despite the limitations, public offerings of portfolio companies on the stock markets have been the most common exit mechanism for venture capital firms in Japan. Acquisition was even less common (see **Table J4** for a summary).

Oddly, whereas in most countries one stock market was formed to serve smaller, less well capitalized firms, in Japan there are three! They all have different listing requirements and characteristics for the firms listed on the market (**Table J5** provides a summary). These are the over the counter (OTC), MOTHERS, and NASDAQ Japan. The OTC market was established in 1963 to serve small and medium size companies and operates through a computerized trading system, JASDAQ (Japan's Securities Dealers Automatic Quotation System), that was introduced in 1999 to increase the OTC trading. By the end of 1999, the OTC had 868 listings, and its market capitalization was $240 billion, more than twice the size of the Second Section of Tokyo Stock Exchange, $110 billion (JASDAQ 2001). Individual investors play major role in the OTC. In 1999 individuals purchased 73 percent of the OTC shares, the foreign investors (including individuals and institutions) accounted for 9 percent, and corporations only 5 percent. Another characteristics of OTC market is that the criteria for listing had been relatively inflexible with the minimum required profit of $900,000 and minimum assets of $1.9 million. In 1995,

a second OTC was established that reduced the listing requirements to permit more technology-intensive companies to go public.

In 1999, the Tokyo Stock Exchange opened the Market for High Growth and Emerging Stocks (MOTHERS) so that the start-ups with high growth potential could raise funds more easily. MOTHERS had even less stringent requirements. There was no requirement that the firm be profitable nor did it have any requirement regarding length of operation. However, drawing from the U.S. experience, MOTHERS required a listed company to provide a quarterly disclosure of its finances and information on their business. Here the objective was to provide sufficient disclosure to enable investors to judge the risks themselves. The only significant requirement for MOTHERS was that the firm be capitalized at over $4.8 million (500 million yen). Because of no age limitation or the requirement that the firm have a history of profits, firms on MOTHERS were regarded as being high risk (Kajiyama 2000).

In 2000, yet another competing stock market NASDAQ Japan was established as a joint venture between the Osaka Stock Exchange and Softbank Corp. NASDAQ Japan used the same criterion for listings as did the U.S. NASDAQ. It had regulations on assets and/or profits and liquidity, thus its requirements were tougher than MOTHERS or OTC second section. It also attempted to certify the quality and liquidity of the stocks it listed. NASDAQ Japan's goal was to raise capital not only in Japan but also overseas by linking to NASDAQ in the U.S. and Europe. In other words, NASDAQ wanted to create a global market for high-growth firms.

In 2000 there were 27 IPOs in MOTHERS market, 33 in NASDAQ Japan, and 97 in JASDAQ (Egawa et. al 2001: 55, Jasdaq 2001). According to Nikkei Venture Survey, among the 209 firms planning to go public in 2001, nearly 40 percent planned to list on the new stock markets including NASDAQ Japan and MOTHERS, this was equal to those planning to list on OTC market.[35] The types of firms listing on each market differed. An examination of industrial sectors for the firms that went public in 2000 indicates that IT and Internet firms predominated on the NASDAQ Japan and the MOTHERS, while for JASDAQ the retail sector was predominated and there were not any Internet firms. Another significant difference between the different stock markets was the

[35] The other regional stock exchanges also opened markets aimed at listing venture-backed firms. For example, the Sapporo Stock Exchange established an exchange named "Ambitious," and the Fukuoka Stock Exchange set up the "Q Board."

relative age of the firms at the time of listing. For JASDAQ, they were on average 27 years old, 15 years old for NASDAQ Japan, and only 8 years for MOTHERS (Sako 2001: 11). Thus, many of the IPO firms were not start-ups by the U.S. standards. However, opening of the new stock markets certainly increased the opportunities of small and medium size firms to raise funds through IPOs by simplifying the procedures and relaxing the listing criteria.

The recent establishment of stock markets accepting less stringent listing standards increased the exit options for the Japanese venture capitalists. This contributed to the increase in the number of portfolio firms making their IPOs. In 2000 IPOs accounted for 48.9 percent of total venture capital exits, up from 42.5 percent from the previous year.

Return

There is no available data on the returns the venture capitalists earn in Japan. There can be no doubt that it was lower than that of U.S. venture capital firms. According to a MITI (present METI) survey covering 99 venture funds set up in Japan between 1983 and 1999, the annual average return among Japanese funds was 5.6 percent (Asia Biz Tech 2001). The relatively poor performance of Japanese venture capital funds is not surprising due to their investment strategies that emphasize loans and low risk. It might be noted that 5.6 percent was not so bad when compared with the extremely low-return of bank loan portfolios (in fact, returns might even be negative given the number of bad loans in the bank portfolios). Also, interest rates were below 2 percent during the entire period. From this perspective, venture capital were a good investment.

The Role of Government and Regulations

The Japanese government has a long history of supporting SMEs. The Japan Small and Medium Enterprise Agency, an affiliated institution of the Ministry of Economy, Trade, and Industry (METI, formerly the Ministry of Trade and Industry), and MITI (METI) have continually developed policies to promote SMEs in general. However, they have not been specifically concerned with start-ups and venture capital, until recently. Only in the

1990s with the low rate of new business formations did the SMEA and METI begin to place more emphasis on new firm formation and venture capital seeing them as a source of innovation and employment.

Since the mid-1990s series of legislation was enacted to support new firms funded by venture capital. For example, in 1994 the Fair Trade Commission amended its regulations to permit venture capitalists to serve on the board of directors of their portfolio firms. Also, the 1989 Law on Temporary Measures to Facilitate Specific New Business was revised in 1995 to extend financial and informational support as well as loan guarantees to firms qualifying as "venture" firms, i.e., those firms producing a new product or service or using a new technology to enhance their existing products or services. It also revised the Commercial Code allowing firms to issue stock options, something that had for all intents and purposes been prohibited. This allowed venture business firms to begin using stock options as an incentive for employees and board members. With the new regulations, venture business firms that qualified for specific METI programs, could have option pools of up to 30 percent of their outstanding shares, whereas other firms were not allowed to issue options for more than 10 percent of the issued shares.

Another major change in 1998 was the enactment of the Limited Partnership Act for Venture Capital Investment. Prior to the passage of this law, all the investors in the partnership funds had to assume unlimited joint liability. With the new law, the regulations governing investment in partnerships were the same as those in the U.S. The liability of investors was limited to their original investment as long as it met METI's official criteria. Also, in 1997 in a measure aimed at stimulating angel investment, the Japanese government introduced a regulatory change, the so-called "Angel Tax" allowing investors to deduct their capital losses from capital gains on other investments.

During the last decade, the Japanese government has developed policies aimed at supporting new start-ups and removed many of the legal and regulatory obstacles to the practice of venture capital. In regard to venture capital itself, it has not created significant programs to provide incentives to increase the amount of venture capital available, probably, in large measure, because, in quantitative terms, Japan has a surfeit of venture capital. One unusual feature of the Japanese venture capital scene is that it is the only significant advanced developed

country that does not have a national venture capital association able to vocalize the industry's needs to policy makers – an especially significant lacunae in a country like Japan where policy is driven by industry associations.

Conclusion

Despite Japan's large venture capital industry in terms of capital, it is not a significant aspect of the economy or the national system of innovation. In large measure, this is due to the existing bank-oriented financial structure and a thicket of government regulations that have only recently been changed. This has made it difficult to develop a dynamic venture capital industry along the lines of the ones in the U.S., Taiwan, or Israel. The bank-oriented system has lacked institutions, such as a developed stock market for equity in new firms and an incentive structure aligned with the needs of entrepreneurs. Given the relative underdevelopment of the independent venture capitalists and the previous lack of stock markets or acquisitions as an exit possibility, it is not surprising that traditional conservatism of the corporate venture capitalists dominated the Japanese venture capital scene (Saijo 2000: 26-29).

The industrial structure of the Japanese venture capital industry still poses problems for the development of a vibrant industry. This is illustrated in the way the venture capital subsidiaries of financial institutions that dominate the system reflect the interests of their parent organization rather than that of the independent venture capitalists. This means that the Japanese scene continues to have many "venture capitalists" that do not actually have any experience at being venture capitalists. Moreover, most Japanese venture capitalists do not have their personal interests linked to the success of venture capital as an institution. This divergence of interests is so great that thus far it has been impossible to even organize an independent trade association of venture capitalists. There are also few personal connections between the U.S. high-technology and venture capital industries and their counterparts in Japan. This lack of connections has meant that there has been little transfer of the social and economic practices between the two economies. Only recently, did this begin to change, to some degree.

In the last five years, there has been a significant change in of governmental policies and regulations. Moreover, there is increased public awareness of the importance of new firm formation and the need for a viable

venture capital industry. The effectiveness of the public policies that have been put in place and resources devoted to encouraging more entrepreneurship remains to be seen. There is still significant doubt if the current bureaucratic procedures required to secure governmental support might not be inappropriate for encouraging entrepreneurship.

The arrival of the Internet economy and opening of new stock markets, especially Mothers and NASDAQ Japan, increased the opportunities for young entrepreneurs to launch new business and raise more funds in the early stage of businesses. The increased chances of exit allow venture capitalists to be more active in taking risks in promising venture business at their early stages. Further, the influence of Softbank's Masayoshi Son on raising awareness among government officials, industrialists, perhaps most important, entrepreneurs should not be underestimated. In many ways, his example made the Internet and entrepreneurship attractive. Moreover, independent and foreign venture capitalists have been playing an increasingly important role in funding new firms.

In 2001, the significant progress that Japan made in developing a venture capital sector may be threatened. The recent stock market decline has had a serious impact on many of the independent venture capitalists. Softbank, which had funded hundreds of Japanese start-ups, was severely affected by the global downtown in high-technology stocks and the collapse of the IPO market. The more difficult environment forced venture capitalists to refocus their investment strategies. It became all but impossible to reap large capital gains through IPOs, especially for the Internet-related start-ups. In 2001, venture capitalists were actively trying to diversify into new industries such as biotechnology and nanotechnology. According to most observers, it seems likely that management buy-outs and other such private equity based strategies will be more important than pure venture capital investing (Nihon Keizai Shimbun 2001). Given the difficult market, the general shortage of experienced venture capitalists, the low levels of labor mobility, and a general risk-averse tendency in the society, the development of a Silicon Valley-like venture capital industry is unlikely in the next five years.

Korea

Korea has been one of the fastest growing economies in Asia. However, more than any other capitalist economy in Asia, Korea has been dominated by a few giant conglomerates, i.e., the chaebol. The evolution of venture capital in Korea has been intimately linked and negatively correlated with the Korean government and the state of the Korean economy. Since the 1960's, there was a deliberate government policy of channeling credit to the chaebol with the resultant starving of the SMEs (Lim 1998). These chaebols also borrowed massive sums from abroad, confident that the government would bail them out. In this environment, SMEs were sacrificed in the name of chaebol gigantism. Until the early 1990's, Korea had little high technology entrepreneurship as the chaebol hired all the best personnel and there was no financial, psychological, or social support for entrepreneurship. Moreover, successful SMEs were nearly always absorbed by the chaebol or their key personnel were hired away (Lim, 1998). Given these conditions, Korea has been a difficult environment for venture capital.

The venture capital industry in Korea is as old as that of Taiwan, but, by any measure, is far weaker and less developed. This is despite the fact that Korea has a highly developed electronics industry with state-of-the-art semiconductor and liquid crystal flat panel technology, excellent manufacturing expertise, a highly educated and motivated work force, a significant number of Korean engineers in Silicon Valley, and an entrepreneurial population.[36] In fact, even in the face of government discouragement Koreans did launch small businesses especially in retail, distribution, and low-tech manufacturing. To understand the development of the Korean venture capital industry, it is necessary to constantly refer to government policy, both in terms of positive encouragement and the unintended and usually negative effect of its other policies.

Korean venture capital companies have traditionally been unable to adequately evaluate portfolio firms. Prior to the mid 1990s, venture capitalists concentrated on lending and after the mid 1990s venture capitalists spread their risks by dividing their investments among many firms. Recently, the aim of government policy has been the promotion of high technology start-ups, so it wants the largest possible number of start-ups to receive financial

[36] Common wisdom is that Koreans are not especially entrepreneurial. However, an international study found them the second most entrepreneurial population of the 21 measured (Reynolds et al. 2000). In fact, anecdotal evidence finds that Koreans abroad open shops, restaurants, and small factories.

support. The government's reasoning is that start-up survival and growth should depend on their own performance in the competitive market. This helps explain why Korean venture capitalists invest relatively small sums in large numbers of early stage startups, rather than making larger commitments to a few startups.

In 2000, Korean venture capital investing concentrated on information technology firms including Internet, software, and information communication-related products or services, as they received 64 percent of the total investments (SMBA, 2001). Moreover, 61.5 percent of the total venture capital investments were in start-up firms less than three years old. This indicates that a new pattern of investing in new technology-start-ups has emerged in Korea. If this is so, then this would be quite different from the earlier pattern of investing in mature technology-based firm or more mature later-stage firms.

These new patterns are the result of a number of qualitative changes in the Korean political economy including financial and trade liberalization, reduction of various kinds of regulations related to venture capital, a healthy stock market for start-ups, and a desire prompted by the 1997 Asian financial crisis to develop New Economy firms. Many of these trends have only begun, and there is still much criticism of the government policies toward venture capital and entrepreneurship. Despite the criticisms, there appears to be a maturation process underway in the Korean venture capital industry that is correlated with some macroeconomic changes that could lead to the emergence of a more vibrant high-technology start-up economy.

Traditional Mechanisms for Funding of New Businesses

In the 1960s and 1970s, the entire Korean financial sector including banking was heavily regulated. As part of an aggressive and centrally controlled economic development process, the Korean government controlled the access to bank credit and concessionary lending and used it to ensure private industry's compliance with official plans. The primary beneficiaries of this policy were the chaebol whose leadership was intimate with the dictators that controlled the nation. In the latter half of the 1970s, government intervention in the financial sector intensified to support the development of heavy industry. The strategic sectors of the Korean economy were the

export industries and the heavy and chemical industries, and they were given high priority in the banks' government-influenced credit allocation system (Cho, Joon-Je 1988: 102).

The Korean financial market concentrated upon bank lending that was provided only to firms with sufficient collateral and a history of success, startups even if they had good technology and business prospects, by definition had neither collateral or history, and thus found it extremely difficult to secure loans. In spite of the fact that many recognized these problems, there was no incentive to change the old financial practices, especially, given that the all-powerful chaebols benefited immensely from the system.

In the 1980s, the Korean financial system changed in conjunction with a rapid industrial transformation and external pressures. There was some liberalization of financial markets, but they continued to operate as a servant of government industrial policy. The primary emphasis was on providing inexpensive credit to the chaebol in the belief that it was necessary to compete internationally. There was no goal of creating a free market or encouraging entrepreneurship, rather finance was a tool to promote economic growth, international competitiveness, and political stability (Amsden et al. 1993: 380).

However, from the 1980s onward due to pressure from various quarters, the Korean government changed its policy and began to provide loans to non-chaebol firms including SMEs at a below market rates. Oddly, what the government chose to do was not change the loan subsidy system for the chaebol, it merely extended the system to government-selected SMEs. Of course, the result was that SMEs borrowed with abandon and their debt increased an average 20.2 percent annually from 1981 to 1990. Once again, the banks were the source of funds for the SMEs (78.5 percent from banks, and 11.7 percent from the Non Bank Financial Institutes). Only 7 percent was equity. Not surprisingly, the increased debt burden led to a deterioration of the SME's margins leading to weakening balance sheets, making it difficult for them to get further funding from the banks or to list on the stock market. The result was that many SMEs had to fall back on their own savings or on a usurious private money market; both of which entailed great risk to the entrepreneur (Nam, Sangwoo et al. 1991: 228).

This proved to be a trap, since by the late 1980s, if the appreciation of the Korean won was taken into account, real interest rates in Korea were roughly three times higher than international rates. To raise capital

firms began issuing bonds or stocks on the capital market, rather than borrow from the banks. In the process, in the late 1980s indirect finance became less important than direct finance. On the demand side, government measures to deepen the stock market had two objectives: to mobilize savings and speculative funds by raising demand for securities, and to spread stock ownership more broadly. To this end, the Ministry of Finance (MOF) worked to improve the integrity and trustworthiness of the capital markets. Stock market institutions were also strengthened – partly in anticipation of the opening of Korea's capital market to foreign investors and securities firms.

The Korean financial system became a government-directed Byzantine network of subsidies, regulations and yet other subsidies to control the unanticipated problems caused by the earlier subsidies. The result was ever greater market distortion, greater financial instability as businesses were not controlled by market forces, and a continually narrowing set of policy options. The provision of subsidies encouraged firms to undertake projects that were not economically justified and squeezed politically unconnected firms out of the capital markets. Undoing previous decisions became too politically and economically costly to contemplate. It was within this context that government policy makers developed policies they believed would create a venture capital industry.

Birth of Venture Capital in Korea

It is difficult to exactly date the inception of venture capital in Korea. In Korea, as in Taiwan, government officials saw venture capital as an institution that could assist the nation by funding technology development. But there was one extremely important difference. In Korea as opposed to Taiwan, venture capital was not considered a mechanism for creating individual wealth. This meant that mechanisms for involving the private sector and providing opportunities for individual wealth creation were not integral components of the government initiatives. This difference in perspective would mean the strategy for building a venture capital industry would be totally different.

The first effort to create a "venture capital" entity came in 1974 when the Korean government established the Korea Technology Advancement Corporation (KTAC). KTAC was supposed to be an "intermediary financial institution" assisting in the transference of research results from government-supported research institutes to technically competent SMEs. KTAC's first client and provider of funds was the Korea Institute of Science and Technology (KIST). Later, several other government-supported research institutes would invest in KTAC. Then in 1991, Korea Technology Credit Guarantee Fund (KOTEC)[37], a government supported financial institution, acquired KTAC, and now holds most of its' equity (83.2 percent). Though called a venture capital firm, KTAC was not a true venture capital company in the U.S. sense of thinking. Rather it was an effort to commercialize government research. Its employees were government officers and not businesspersons. The difference between what was considered venture capital in the U.S. and in Korea can be seen in KTAC's activities and goals. It was meant to support all aspects of the introduction, improvement, and adaptation of advanced technology, particularly semi-developed technology from abroad, the commercialization of R&D results, the development of new products or processes, and the support of plant engineering services. In other words, it had a broad mandate, but the normal goals and activities of venture capital were not mentioned.

Korea returned to the idea of creating venture capital in 1981 when the Korea Technology Development Corporation (KTDC) was incorporated under a special law with the role of supporting industry R&D projects.[38] The initial capital was provided by the Korean government, the International Bank for Reconstruction and Development, and various Korean business and financial interests (KTB 2001). The total amount of capital available to KTDC at the end of 1985 was $182 million consisting of $126 in local currency and foreign exchange of $56 million. The local currency resources were composed of $32.5 million paid-in capital, $80.5 million in technology development financing debentures, and $13 million in government loans. The foreign exchange was provided by loans from the International Bank for Reconstruction and Development (IBRD). A 1985 analysis of the projects approved showed that 86 percent of total approvals were allocated to R&D activities and the

[37] KOTEC, a non-profit institution established under a special law, undertakes credit investigation and provides credit guarantees to SMEs having difficulty in securing bank loans due to a lack of collateral (www.kotec.or.kr).
[38] In July 1992, KTDC was renamed the Korea Technology & Banking Network Corporation.

commercialization of R&D results, 12 percent to technology imports and training, and 2 percent to purchasing R&D equipment (Choi, Hyungsup 1987: 352).

Two other venture capital companies were formed in the early 1980s. In 1982, the Korean Development Investment Corporation (KDIC) was established. KDIC was the most important for the creation of a private venture capital industry. KDIC was a joint venture by seven Seoul-based short-term finance companies in Korea and received funds from international development institutions including the International Finance Corporation (IFC), Asian Development Bank (ADB), the West German Deutsche Entwicklungs Gesellschaft (DEG), Westinghouse (United States), and the Nomura Securities venture capital affiliate JAFCO (KDIC 1986).[39] KDIC was capitalized at $12 million. As a limited liability venture capital company, KDIC's charter was to foster and strengthen Korean technology-oriented SMEs through equity investment and/or equity-type investments. In addition to the provision of finance, KDIC tried to support the management of its portfolio companies through participation on their boards of directors as well as through the provision of business advisory services. As a limited liability company with an emphasis on equity, KDIC operated quite differently from KTDC or KFTC, and is the real beginning of the private venture capital in Korea.

In 1984 KTFC was established with an initial capitalization of $12 million by the Korea Development Bank as a venture capital company.[40] A report on its activities for 1985 indicated that it had an eclectic strategy allocating 24 percent of its investments to R&D, 45 percent to the commercialization of new technology, and 31 percent to the manufacturing process improvements (KTFC 1985).

These venture capital companies were part of a national plan to enhance the technological capabilities of industrial firms. This can be seen as a part of a far larger set of measures to stimulate industrial technology development undertaken during this period. The government's goal was to create a network connecting industry, academia, and financial intermediaries. The Korean government stated this clearly in the fifth national plan in 1982 arguing "technology-intensive sectors, which were thought to be difficult for private companies to develop

[39] In 1996 KDIC changed its name to Trigem Ventures after Trigem Computer Inc, Korea's largest PC manufacturer, acquired KDIC (www.tgventures.co.kr)."

[40] KTFC was renamed KDB Capital after it merged with Korea Development Lease Corp in 1999. At present, KDB Capital is a subsidiary of Korea Development Bank (www.kdbcapital.co.kr).

by themselves, should be developed through joint research between industry, academy, and research institutes with governmental financial support." In the revised national plan issued in 1984, the government included the creation of technology-intensive small businesses and investment in new technology based firms. So as in the case of Taiwan, the birth of Korean venture capital was part of a national effort. The plan was to provide financial support for technology-intensive small businesses, and simultaneously develop the Korean scientific and technological base. In other words, once again, venture capital was to be an instrument for industrial development.

So, from its beginnings in the early 1980s Korean strategy for venture capital diverged sharply from Taiwan. The role of venture capital in Korea was conceived of as a support to government research institutions and small businesses, not as an activity meant to be commercially successful in its own right. Moreover, whereas the Taiwanese invited in foreign investors especially H&Q Asia Pacific, the Korean effort would be entirely indigenous. Given inadequate incentives, a mandate to support research (something that venture capital does not normally do), little connection to foreign venture capitalists, and an environment where the venture capital firms were either operated by government officials or, at least, regulating them; these venture capital firms were crippled from their inception.

Activities and Characteristics of the Early Venture Capitalists

The difficulties in creating a Korean venture capital industry were less related to the amount of funds available and more related to the environment and the practices of the venture capital firms themselves. In monetary terms, initially the amount of funds available were small, but they did increase quite rapidly. The total funds invested by the four venture capital companies increased from $ 28.2 million in 1981 to $112.4 million in 1986, and to $452.1 million in 1990 (Nam, Sangwoo 1991: 101). The problem with these venture capitalists can be seen by the fact that they were much more likely to provide financing through loans, factoring, or leases than through equity investment. This was not entirely surprising given the handicaps. The leadership of these firms was appointed by the government and the compensation system for the employees mirrored the hierarchical

seniority based system used for government employees (though they were, in fact, not government employees). Because of this, the firms sought stable, risk-free investments in the form of loans (see **Table K1**). From their inception through 1989, their investments consisted of loans (81.0 percent), equity[41] (14.1 percent), factoring (4.2 percent), and lease (0.7 percent) (Ministry of Trade and Industry 1991). Given that they were making loans, they usually only assisted firms with collateral. Conversely, the fact that the overwhelming amount of their investments was loans meant that these firms could not capture any capital gains – the very thing that motivates U.S. venture capitalists. By a strict definition of venture capital, these firms would not qualify as a venture capital firm.

For these early venture capital firms there was no limitation on the investment stage or age of the recipient firm. The only requirement was that the investments be in technology based firms. Naturally, given their risk aversion these funds had no incentive to be aggressive or fund innovative young firms. It was far safer to lend to established firms whose technology was proven and already had had some success. The due diligence process was far easier and did not require as detailed an evaluation of the management team or evaluating the prospects for listing in the Korean market – at the time it was unthinkable for a Korean firm to list overseas.

KDIC was the only exception to the overwhelming emphasis on loans versus equity. The reasons for KDIC's different emphasis were that it operated as a private venture capital firm. Since it received less support from the government, it had more operational autonomy. Also, the participation of foreign investors probably contributed to its preference for making equity investments. As Joung-Hyun Cho (personal interview 2001) KDIC put it, "In 1982 when KDIC was incorporated the concept of venture capital did not exist [in Korea]. Moreover, equity investment meant high-risk, because it was an unsecured investment. KDIC did not receive policy-based funds, i.e., monies from the government meant to be invested in specific fields] like the other venture capital firms. The foreign investment companies that were shareholders of KDIC expected us to invest in equity. Raising funds through limited partnerships was very hard until the mid 1980s, because of the unfavorable circumstances for venture capital. It was only in 1989 and in 1991 that the first joint-venture funds with foreigners were formed with

[41] This includes equity investments, convertible bonds, bonds with warrant, and conditional financing.

$9 million and $12 million, respectively. These funds had large capital gains." KDIC, though having less capital than the government-backed funds, was able to choose its investments based on economic criteria and at the urging of its foreign investors, it invested in equity. In terms of industries, Korean venture capitalists concentrated their activities in electronics-related fields. Sixty percent of the investments were in electronic components, equipment, and instrumentation. Other areas receiving significant investment were industrial products including chemicals and machinery.

With the exception of KDIC, it is fair to say that the early Korean "venture capital" firms displayed few of the characteristics of U.S. venture capital. With the exception of KDIC, the Korean firms had neither the desire nor the operational know-how needed to invest in high-technology start-ups. In this sense, they were wise to extend loans to existing firms and not to invest in start-ups. From a policy perspective, this meant that the goal of funding small firms was not met and, as important Koreans were not learning how to be venture capitalists. Ultimately, the reasons for the stunted development of the venture capital industry during this period can only be understood by examining the role of the government.

The Korean Government

The venture capital firms had been created for the purpose of enhancing the domestic technology development and not for encouraging entrepreneurship. In 1988 H. S. Shim, the director of KTDC, put his firm's goals quite succinctly, "we make loans and equity investments only for technology development (Mark 1988: 139)." Notice, he did not say that they were investing to reap capital gains or encourage entrepreneurship. However, simply establishing organizations and decreeing them to be venture capitalists would not ensure that they would function as venture capitalists. In fact, what transpired is exactly what one would expect, these venture capitalists came to resemble banks and for this reason had little effect on the Korean political economy.

Of even greater importance than financial issues was that the government-operated venture capital firms were expected to help the government select the firms for financial support. Put differently, the early venture capital companies performed a consultant-like role in allocating government funds. This "quasi-scout" role was further

strengthened when these venture capital companies were combined into a new venture capital firm called 'New Technology Enterprises Financial Company (NTEFC) in 1986. So instead of concentrating on investing their capital and monitoring their investments, they were performing functions for the government.

The business logic of these venture capital firms was readily understandable. They received government loans at low concessionary rates and because the Korean market had high interest rates in the 1980s, the venture capital firms earned a good return by making low-risk loans. There were few experienced professionals who had experienced the venture capital process. Even if they had wanted to invest in equity, they lacked an ability to assess the promise of their investment opportunities. This was compounded by the fact that few of the available investments were strong technologically – probably because the rapidly growing chaebol hired all the best engineers.

The lack of contact with foreign venture capitalists also was a problem. In keeping with standard Korean practice no effort was made to encourage foreign venture capitalists to invest in Korea. Also, the Korean firms little interest in investing in the U.S. In fact, the government would likely have forbidden overseas investment. Every other non-U.S. venture capital national success story had a strong linkage to the U.S. Korea was an experiment in autarchic development.

Korean firms did make efforts to train their personnel, but they remained inexperienced. Moreover, the employees of the venture capital firms were compensated by salary, not according to their investment or portfolio's success. They also did not personally invest in their venture capital firms, so they had no risks and no incentives. Finally, few officials had business experience and they did not understand the obstacles small firms faced.

There were also difficulties in liquidating any investments. The Korean stock market provided few exit options and merger was not common in Korea. This began to change in 1987 when the Over The Counter (OTC) market was established. However, listing firms in the OTC market was difficult and slow. Hanseop Kim, a director of KTDC (now KTB network), said, "It usually took ten years to list a company on the stock market (personal interview 2001)." Similarly, the Korean merger and acquisition market was difficult, since foreign firms

were largely precluded from acquiring Korean firms by legal obstacles, bureaucratic resistance, and a general mistrust of foreign investors. This meant that the only clear exit strategy was to sell to a chaebol. However, the chaebol did not need to buy a company as they could always undermine the small firm by hiring its employees or squeezing it in any number of ways. In effect, the government could establish venture capital operations, but without providing the markets that could reward venture capitalists for their efforts, it was impossible to develop a venture capital community.

The early venture capital companies (except KDIC) were really fund distribution organizations for government policy. Until the early 1990s, Korea could claim it had venture capital, but in reality there was little venture capital. With the partial exception of KDIC, these pioneering organizations never switched from the stable, relatively risk-free environment of providing loans to that of providing equity. Moreover, given their banker-like stance, the professionals in these firms never underwent a learning process that would prepare them to become venture capitalists in the U.S. sense.

Evolution of Venture Capital in Korea: 1986-1996

After 1986, the environment for venture capital began to change. Some of this change was part of a larger movement to democratize and liberalize of the Korean economy. There also were institutional changes in the legal regime, institutional infrastructures, the attitude toward foreign investment, and the willingness of Koreans to undertake new ventures.

In practice, the efforts prior to 1986 to create a venture capital industry had had little effect. So the government decided to try to create an environment like the one experienced by developed country venture capitalists. To accomplish this, they permitted the organization of private venture capital companies and public venture capital institutions, an OTC market, and provided favorable tax treatment. But, inexplicably, also forbade the participation by venture capitalists in firm management including participation on the board of directors.

In 1986, the government enacted the Small and Medium Size Enterprise Start-up Support Act (SMESS Act) meant to support the establishment and growth of small enterprises. Then later in 1986, the New Technology

Enterprise Financial Support Act (NTEFS Act) was promulgated to support the four earlier venture capital organizations by bringing them into the institutional financial community (AVCJ. 1992/1993). With these two laws, the Korean venture capital firms were divided into two types, each having different roles and characteristics. The four venture capital companies mentioned earlier were now called New Technology Enterprises Financial Companies (NTEFC). They were permitted to invest their funds more freely. The firm's growth stage and the type of financing were no longer stipulated by law. However, under the new law, they still retained their government consultatory role as they were expected to assist in the direction of government funds to SMEs.

On the other hand, the venture capital firms covered by the SMESS Act were meant to focus primarily on equity investments in start-up and early stage enterprises that were less than five years old. These venture capital firms were supposed to discover good start-ups and invest in them. This division of labor came about, at least to some degree, because there was a division between the government ministries, each of which wanted to participate in supporting venture capital. So, the Ministry of Trade and Industry (MTI) administered the SMESS Act, while the Ministry of Finance (MOF) was responsible for NTEFS Act. However, because of this division, SMESS Act venture capital companies under MTI administration were in a disadvantageous position. Hanseop Kim who was a director in KTB at that time said, "SMESS Act venture capital companies were restricted so much, because they were at the boundary of the financial industry that traditionally had been under MOF administration. There was a conflict between governmental ministries about that problem (personal interview 2001)." The situation is further complicated by the fact that in 1992 KTDC, the largest NTEFC, changed its name to into the Korea Technology & Banking (KTB) due to the enactment of the KTB Act administered by the Ministry of Science and Technology. With this, the Korean venture capital companies now were divided into three different types, each administered by a different ministry. This only changed in 1999 when KTB was privatized. Their different charters are illustrated in **Table K2**.

The predictable result of these various charters was confusion and overlap. One reason for the different organizational forms were splits within the government of the role and function of venture capital. For example, the NTEFCs had grown rapidly because of the increasing size of their lending business as the amount of targeted

government funds swelled. This growth was responsible for the 1992 transformation of KTDC into KTB—it had really become a quasi-government development bank. The SMESS venture capital firms were meant to operate like Western venture capital firms and were required to make equity investments in small firms less than five years old. In effect, a government-mandated division of labor was created.

The passage of the SMEES Act sparked the formation of many new venture capital firms. In 1986, there were only the four venture capital firms, by 1990 this had increased to 58 companies. But, affected by a general economic downturn, after 1991 the number of firms declined slightly and then in the mid 1990s a few more were formed so in 1996 there were 62 companies.

The new laws encouraged the formation of new firms, but curiously enough the new laws hobbled the ability of Korean venture capitalists to add value by monitoring and disciplining new firms. The Korean government decided management needed to be protected from its investors. The laws protected management from replacement by investors even in cases where the managers are incompetent. This combined with regulations limiting venture capitalists to less than 50 percent of the total equity. In other words, the venture capitalists have limited leverage over the entrepreneurs (read managers). Obviously, both domestic and foreign investors objected to this requirement. In the U.S., such protection would be inconceivable. Since the traditional "venture capital" firms, simply provided loans, they were unaffected by this requirement. KDIC, the only Korean firm that resembled venture capital as practiced in the U.S., opposed these regulations to no avail. To offset these requirements, KDIC demanded a seat on the board in every investment and a commitment that the company would be taken public after a specified length of time.

Joung-Hyun Cho (personal interview 2001) from KDIC, explained the problem this way, “the traditional Korean entrepreneur typically wants to maintain corporate control. So they favor debt over equity. At the beginning this was a problem. But now they understand that we’re not going to take over their company.” However, Western venture capitalists were not so easily assuaged, Edward Zealy, the president of Rasi Co., which was a venture capital firm incorporated to invest in the Korean start-ups by foreign investors, was quoted in a Korean newspaper as saying, “The performance of funds in Korea has not been good. If investors are dissatisfied

with the management of the venture capital backed firms, they should change the manager or withdraw the invested funds (Chosun Daily News 1994)." Oddly, the Korean government graduated from seeing venture capitalists as government advisors and research funders to investors that should not contribute the firm's formation and growth -- again displaying a lack of understanding of the operational characteristics of successful venture capital.

The slowed growth of the Korean economy and the proliferation of venture capital companies intensified competition. The problems were compounded because the SMEs experienced operational difficulties due to relatively high interest rates and increased costs of operation. So, in the early 1990s there was a wave of bankruptcies. Given this economic environment, venture capital firms became cautious about investing. To counteract this slowdown in investment, in August 1993, the government again revised the SMESS regulations. These changes included an expansion of permissible industries available for investment, an extension of the age limit from under five to seven years old of companies eligible for investment, and the removal of investment ceilings for fund investors. With the 1994 economic recovery and the reduction of regulations, investment once again increased, although it did not reach previous levels.

There continued to be a number of obstacles to success. For instance, the tax regime for venture capital was less desirable than for other financial entities. Limited partnerships received worse treatment than the SMESS Act venture capital firms. With the exception of institutional investors, corporate investors were excluded from the capital gains and stock dividend income tax cuts (Lee, Inje et al. 1997). Moreover, the ability of venture capitalists to conduct management monitoring was still limited.

The sources of capital during this period varied by type of venture capital firm. NTEFCs received their capital from the government. The SMESS Act venture capital firms had to raise money privately. As is true in other Asian countries, pension funds were forbidden from investing in venture capital. By 1996, 28 companies, which were 55 percent of the total of 53 venture capital companies, had formed limited partnerships. To indicate how risk-averse Korean institutional investors were, at that time, foreign investors had contributed 48 percent of the total funds, while Korean institutional investors comprised only 9.5 percent of the total (Lee Inje et al. 1997).

For the venture capitalists, there was little incentive to be aggressive and innovative. The NTEFCs could reap stable income from their loans, while the SMESS Act venture capital firms found it difficult to invest in firms. Despite the changes in the institutional and legal arrangements, in fact, there was little venture capital activity.

Still even in 1996 the regulations governing venture capital remained confusing and frustrating. The Korean government desired the benefits of venture investing, but did not understand the conditions necessary to permit the development of a successful venture capital industry. After two decades of attempting to develop a venture capital industry, by the mid 1990s, the Korean government still had not yet created a legal and political environment conducive to the operation of venture capital. By this time, the Taiwanese venture capital industry had become the most dynamic in Asia, and was actively funding many successful firms. In a wide variety of high-technology industries the Taiwanese economy was clearly out-performing that of Korea except in a narrow swath of products such as DRAMs, cathode ray tubes for televisions and computer monitors, and flat panel displays.

The Growth of Venture Capital from 1986 to 1996

The enactment of 1986 SMESS Act was followed by a rapid establishment of new venture capital firms. To qualify as a venture capital firm under the SMESS, firms were required a venture capital firm to have an initial capital investment of $7 million. In 1991, this was raised to $13 million. Given that this was a significant sum, the most common SMESS Act venture capital firms were subsidiaries of non-financial corporations (69.8 percent), while bank subsidiaries comprised another 15.1 percent, another 5.7 percent were subsidiaries of securities firms and only 9.4 percent were independent. From this it can be concluded that nearly all venture capital was derived from corporate or government monies. The independent venture capital firms that were so important in the U.S., Taiwan, and Israel were largely non-existent.

The Korean government had other policy goals that it placed upon the fledgling industry. In an effort to encourage more spatially balanced economic development, in 1989 and 1990 applications to start a venture capital firm were only accepted from non-Seoul firms. As a result in 1990, 39 firms of the total 53 SMESS Act venture

capital firms were located outside of Seoul (Nam, Sangwoo et al. 1991: 123). This strategy of decentralizing venture capital was supposed to encourage local development. Despite the fact that nowhere in the world is there a record of success of such a strategy. The Korean government paid little attention to lessons from other countries indicating that the normal pattern of venture capital development is in clusters.

These regulations constrained the activities of SMESS Act venture capital firms regarding their investments and types of financing. Moreover, not surprisingly, there were not a large number of good investments anyway. Also, the SMEs that they were investing in were often not so sophisticated technologically or did not yet have marketable products. This meant that even if the firms were successful, it would be a long time before they could be listed on the OTC market. For these reasons, the SMESS Act venture capital firms had earnings that were significantly worse than the NTEFCs, KTB, or the average bank's earnings (**Table K3**). The loan-based NTEFCs performed significantly better than the SMESSs.

In 1991 Korea experienced an economic recession, and the amount of funds committed to venture capital dropped 85.6 percent from a year earlier. The difficult environment continued until 1994 when the economy improved. In addition to the economic improvement, in 1994, there were some important changes in venture capital industry including the emergence of some high-tech small firms, more interest in entrepreneurship, and some financial deregulation.

In 1994, the government changed the SMESS law to allow the chaebols to enter venture capital industry. As a result, the chaebols including Daewoo Electronics, LG Electronics, and Hyundai Security incorporated SMESS Act venture capital firms. One benefit of this is that the chaebol were able to capitalize larger venture capital firms than had been the case earlier. Also, the, SMESS Act venture capital firms tended to raise funds through loans, a strategy that made it difficult to form limited partnerships. Raising funds through loans increased from 8 percent in 1992 to 38 percent in 1997. However, the high interest rates on their loans made it difficult to be profitable. As if things were not difficult enough in 1996, the government acted to prevent inflows of foreign capital, because it believed these were destabilizing. However, this also blocked the ability of foreigners to invest

in venture capital in Korea. This was an important contributory factor to the decrease of foreign capital invested in Korean limited partnerships from 48 percent in 1995 to 30 percent in 1996 (KVCA 1997).

There was also an expansion in the total amount of capital controlled by SMESS Act venture capital firms from $511.0 million in 1992 to $1466.4 million in 1996. The reasons for this expansion was the establishment of KOSDAQ market and by the successes of some small high-technology firms in the information and communication technology sector. Joeng-Suk Koh, CEO of Ilshin Investment said, “From 1996 on, we became conscious of high-tech industry. Because several high-tech firms were successfully listed in KOSDAQ market (personal interview 2001).” Also, in 1996 KTB was especially successful in listing a number of high-tech firms in KOSDAQ market. These environmental changes became an important incentive to arouse interest in venture capital.

Due to legal requirements of the SMESS Act venture capital firms could only invest in equity. However, to evade this requirement, they developed a vehicle termed a “contract investment.” The contract investment resembled a loan. In a contract investment the venture capital companies require a rental fee from their portfolio firm for a prescribed period. After that, venture capital companies can determine whether they will convert their investment funds into stocks or not. If the portfolio firm fails, the venture capital firms can demand the return of a portion of the investment (Hong, Seongdo 1997: 255). This vehicle was very important. For example, in 1996 it was the largest type of financing making up 37 percent of the total investment followed by equity investment (33 percent), loans (17 percent), and convertible bond (13 percent). In 1997, the government prohibited contract investing, because it really was nothing more than a loan cloaked as a payment.

During this entire period, the main sources of venture capital in Korea were corporations, banks, government agencies, and securities firms. The independent or individual venture capitalists found it difficult to raise funds. Given the difficulties, it was too risky for individuals to start a venture capital fund. The major sources of capital in 1996 were corporations (25 percent), government agencies (16 percent), and banks (12 percent). The largest category "other" had 39 percent of the total investments and was largely securities firms.

Due to difficulties and many SME bankruptcies, after 1994 Korean venture capitalists shifted their investment focus from start-up companies to expansion stage companies. So, after 1994, more than 50 percent of the total disbursement were to expansion-stage companies. This was facilitated by the amendment to the SMESS Act extending the permitted investment age in portfolio companies from five to seven years. Investment activity continued to be concentrated in industrial products, electronics-related, and other manufacturing firms.

In many ways, it could be said that the government acted to increase the quantity of venture capital available, however the various rules and regulations did not create an environment that could support a healthy industry. The various rules distorted investment patterns. The misguided nature of the government activities is exemplified by the establishment of the two different types of venture capital firms; with their separate functions. This neither protected investors, improved the support for SMEs, or led to the formation of legal and political environment conducive to investment in entrepreneurship. The four earlier NTEFCs were the most successful because they merely administered the funds the government provided to carry out whatever subsidy policies it developed. In effect, they played the interest rates spreads. In general, the venture capital industry was hobbled by excessive regulation and government interference. The result was that venture capitalists could not experiment and engage in learning about assisting in the new firm formation process.

The Creation of Exit Vehicles: From the OTC to the KOSDAQ

In 1986, the Korean government created the Korean OTC market in a bid to provide a market upon which SMEs could raise capital and investors could exit their investments. In principle, a new stock market with less stringent listing requirements should facilitate these goals. This effort only improved the situation for the SMEs temporarily. The difficulty was that after an initial strong start, the OTC faltered. In the early 1990s, the OTC market faced a number of difficulties. The most significant was a series of bankruptcies by OTC- listed companies that shook public confidence. This frightened investors and drove down prices. Another difficulty was that firms were unwilling to make initial public offerings on the OTC market, because the registration process was onerous. Moreover, once the stock was publicly held, management was no longer protected from its

investors who could now control the board of directors. Yet another difficulty was that OTC-listed companies were at a disadvantage to firms registered on the Korean Stock Exchange. This disadvantage was due to government regulations providing tax reductions and exemptions to firms registered on the Korean Stock Exchange, but not those on the OTC. These difficulties discouraged firms from listing and is borne out by the fact that there were only OTC three initial public offerings (IPOs) in 1988 and four in 1989, and then only one IPO in 1990. Given the obstacles and disadvantages, the lack of offerings was not surprising. By 1991, the turnover rate was very low and there was a general lack of liquidity.

On the other hand, the registration rules for venture capital-backed firms made it easier to list them than any other firms. By the end of 1990, the number of companies registered on the OTC market increased to 77 firms, of which 24 firms were venture capital backed. With the bankruptcies of many SMEs in 1991, the listing requirements were made more stringent. As a result, there was a cancellation of the registrations of many listed firms. From the end of 1992 onward, the number of OTC listings began to increase again because the government, in an effort to create liquidity on the OTC market, required firms wishing to list on the KSE to first list on the OTC market. This increased the number and quality of firms listed on the OTC, but it did not solve the problem of listing the small venture capital-backed firms.

In an effort to overcome the OTC market's difficulties, in July 1996 the OTC was reorganized to roughly parallel the U.S. NASDAQ and renamed Korean Securities Dealers Automated Quotation System (KOSDAQ). The same goals were kept namely KOSDAQ was meant to provide a vehicle for raising capital for SMEs especially those funded by venture capitalists. This was a new bid to increase liquidity and provide venture capital-funded firms better access to capital.

Emergence of a New Entrepreneurial Model from 1996 Onwards

The 1990s were a time of profound change in Korean society. In the early 1990s, working for one of the giant chaebol was the pinnacle of social life. Managers in chaebol received good salaries and were respected in society as a whole. They could reasonably expect long-term employment with regular promotions and increases in salary.

In this environment labor mobility was limited. However, this situation changed rapidly after the mid 1990s. The 1997 Asian financial crisis had a shattering effect on the Korean social order. Major chaebols such as Daewoo, Ssangyong, and Kia collapsed, and the others actively sought to shed workers. In the space of five years, the stable, predictable Korean social order was destroyed.

With this change and the difficult Japanese economic environment, the old Korean strategy of following Japan was shown to be wrong. The success of Silicon Valley attracted Korean policy makers, and it suggested another business model might be more appropriate. Also, by the mid 1990s some high-technology start-ups that had been formed in the early 1990s began to show some success. Two of the most important of these firms were Haansoft Inc. and Medison Co. These became models for a new way of organizing the Korean economy. The founders of these high-tech start-ups had engineering backgrounds. For example, in the case Medison the seven engineers had spun out of the Korea Advanced Institute of Science and Technology (KAIST). The founding CEO of Haansoft Inc., Chan-Jin Lee was a mechanical engineering graduate. Young-Kyong Ahn, the founder of Handisoft Co. was also from KAIST. These successes led to the formation of the Korea Venture Business Association (KOVA) in 1995 to represent these small high-tech start-ups.

Most of these high-tech start-ups were established in Seoul and around Daeduk Science Park and were staffed by professional engineers from the government research institutes (Lee, Jangwoo 2000: 492). This corresponded with governmental policy, which in an effort to promote technology-based start-ups increased financial support for these institutes with the explicit aim of encouraging startups. These efforts were far more successful than earlier ones, and a number of researchers established new firms.

There is also ample venture capital available. For example, Medison Co., which produced electronic medical equipment, received an equity investment from KTDC in 1985. This was an unusual investment because usually KTDC only provided loans. Therefore, the decision to invest in Medison was an uncommon case for the KTDC. The director of the KTDC (present KTB) recalled, "At the time, Minhwa Lee (the founder) who is now CEO of Medison visited us with his doctoral thesis. Lee had profound understanding of financial affairs as well as technology. For us, it was a daring decision to invest in him. (personal interview 2001)." This kind of experience

encouraged Korean venture capitalists to pay attention to CEO's personality rather than on the organizational characteristics of firms.

In 1991, Medison Co. received the first prize in the "Korea Venture Business Prize." And with its listing on the KSE in 1996, KTB received a large capital gain. In another case, Haansoft Inc. established in 1989 successfully captured 76 percent of the market for Korean word processing software. Another firm, Handisoft Co., was founded in 1991 to commercialize Groupware package. These startups provided examples of the viability of another development model.

The development of entrepreneurship in Korea was largely internally generated. However, one important influence on the recent development of venture capital in Korea was the Japanese-born Korean, Masayoshi Son, the founder of Softbank. His success in investing in software and Internet firms and Korean heritage made him somewhat of an icon in Korea. In 1995 he visited Korea to speak about his success and his vision of the opportunities related to the Internet. This helped spark a rush to invest in the Internet in Korea.

Financial Liberalization and Foreign Investment

Financial liberalization also played a role in transforming the environment for venture capital. Of course, it is also true that Korea was extremely slow in liberalizing its financial system. The process began in the early 1980s, when it unveiled its "long-term plan" for the opening of the Korean securities market to foreigners. Only in 1990 was indirect foreign investment in domestic securities permitted. In January 1992, the Korean stock market was for the first time opened to foreigners for direct investment. However, the initial ceiling on foreign ownership of equity was 10 percent of outstanding shares of each listed company. This was raised three times to reach 20 percent in 1994 (Doh, Myungguk 1996). It is fair to say that the Korean government and industry were extremely reluctant to permit foreign investment.

This reluctance can be seen in the mechanisms that were put in place to protect the domestic industrial firms from foreign investors. To preclude foreign control over the management of the Korean companies and force foreign investors to diversify their investments, there were numerous limitations on the holdings of individual

foreigners and the total number of shares that could be held in any single company. Here again, the distorted system of subsidies and regulations made it necessary for the Korean government and chaebols to exclude foreign investors as they would demand an end to the various cross-subsidies and insider deals that allowed the chaebol to maintain control of their far-flung subsidiaries.

This protectionism, of course, had unwanted side effects. One of these was that it discouraged foreign venture capitalists from investing in Korea. The Korean Ministry of Finance adopted numerous rules to ensure that venture capitals are funneled into start-up firms and away from portfolio investments. These rules made investing in Korea less attractive and too difficult. Although the Korean government was trying to woo foreign investment in its small firms by promising to cut red tape, it imposed new regulations that did the opposite. From 1989 to 1994 only twenty-four foreign venture capital investments, for a total of $92.5 million, were made in Korea. It was not until 1993 that Bankers Trust Co. (USA) formed the first foreign limited partnership.

During the early 1990s, foreign investment gradually increased. Then, in 1996 the Korean government imposed a temporary ban on the foreign investment to stanch what the government officials considered the flow of hot money into the country slowing foreign investment. Given the unpredictable regulatory environment, as late as 1997 foreign funds made up only 15 percent of the total venture capital in Korea.

These government policies succeeded in protecting Korean firms from foreign raiders, however they also discouraged foreign venture capitalists from investing in Korea. One result of this protection is that Korean venture capitalists never became part of a network of venture capital professionals that was forming globally. Since foreigners could not invest in Korean deals, there were no opportunities to work together and develop the personal relationships so important for venture investing. Even more significant, is that Korean startups were unable to benefit from the connections that more globalized venture capitalists could provide. The cost of protection was not only a weak, unconnected venture capital industry, but the blocking of foreign assistance to Korean firms that might have had global-class technology, thereby retarding their growth in industries where growth is all-important.

The Recent History of the Venture Capital Industry, 1997-2001

The Asian financial crisis of 1997 and its aftermath profoundly changed the environment for the Korean government. It shattered several conventional beliefs that were important building blocks for the Korean economy. After this financial crisis, Koreans no longer believed that the bigger the firms were, the less likely they were to fail. It also destroyed the unspoken promise of lifetime employment. The crisis challenged the validity of economic model that Korea had followed. Because of this Koreans began to consider other economic models, and the one that was most attractive was typified by Silicon Valley's many startups and abundant venture capital (Chang, Sea-jin 2001).

The crisis also led to an unprecedented liberalization of the Korean financial market and dramatically lowered the value of the Korean firms. For foreign investors, this meant that acquisition of Korean firms was less costly. The result was an increase in foreign investment. After mid 1998 when the Korean economy began to recover, investment in new industrial sectors like software, Internet, and computer industry increased rapidly as Korea was drawn into the global high-technology bubble driven by the commercialization of the Internet.

This interest in other economic models was not only driven by the economic crisis. Already prior to the crisis, in July 1997 the Korean government had enacted the Special Law to Promote the Venture Business (SLPVB) Act to promote innovative small firms. The financial crisis merely accentuated the interest in promoting the development of venture capital. To support the creation of high-tech small firms, the government changed some of its regulations in an effort to emulate the success of the venture capital market in the United States and several other countries. The Korean government believed the core of the success in those countries was related to two features. The first feature was the ability of these innovative small firms to access and commercialize new technologies. The second key feature was the construction of networks between these firms, academia, and financial institutions. To this end, the government provided a specific statutory definition for innovative small firms in 1997, and those that qualified would receive governmental support. Further, the

government drawing upon the Silicon Valley experience decided to create some entrepreneurial regions in Korea. For instance, the government tried to construct a regional network in Daeduk Science Park, which was in a region that already hosted many government supported research institutes and some spin-off firms. To accomplish this the government provided special benefits to Daeduck-area firms including financial aid, tax incentives, and building for a low-priced rent. However, the greatest growth of start-ups was not in Daeduck, but rather in the Kangnam-gu area of Seoul, that is now called Teheran Valley. Here there was little direct governmental involvement. However, it became the center of the venture capital industry and there many innovative small firms emerged in the information and software industry spontaneously. The Korean government launched its own venture capital funds and created a program to provide matching funds for venture capital limited partnerships. This program did assist in catalyzing the establishment of a number of limited partnership.

This was followed by the rapid expansion of the Korean venture capital industry. This was reflected in the explosive increase in KOSDAQ's trading volume and the incorporation of a large number of new venture capital firms (see **Figure K1, Figure K2**). The portfolio of venture capital investments in Korea increased from $3.3 billion in 1998 to $4.7 billion in 1999 to $5.2 billion in June 2000 (SMBA 2001). Korea's economic reform has brought unprecedented volumes of trading to its stock exchange. The exchange lists more than 700 companies, 446 of which showed record profits in the first half of 2000. Operating and ordinary incomes grew by 46.7 percent and 31.3 percent respectively, compared to the same period in 1999 (Kwon, John and Sohn, Charles 2000: 41)

From 1993 to 1999, Korean venture capital firms also changed their operational characteristics. As **Figure K3** shows, the percentage of loans to equity also decreased. In the short space of three years, the Korean venture capital industry came to resemble those in other countries.

There were a number of changes in the Korean political economy that help explain these changes. These include various government measures to support the industry, the crisis' effect of freeing managers and engineers from the safety of lifetime employment, the changing competitive environment, and a change in Korean attitudes toward risk. The boom of the KOSDAQ market in 1999 and 2000 encouraged individual and institutional

investors to invest in equity. Paradoxically, Korea went from the depths of a financial crisis to the euphoria of the new economy in a matter of two years.

This dizzying growth did not provide either the venture capitalists or the firms they invested in with an appropriate infrastructure for surviving the bursting of the bubble. The collapse of the NASDAQ in 2000 and a concomitant decline in venture capital investing globally was mirrored in Korea. In 1999 and early 2000, KOSDAQ grew to become the eighth most highly capitalized stock market in the world and easily surpassing the Seoul Stock Exchange in value (Kt-I dot.com 2000). This was good for the new issues market. There were 11 venture capital-backed IPOs on the KOSDAQ in 1996. This increased to 25 IPOs in 2000. This success of new firms on the KOSDAQ has created an infrastructure that permits venture capitalists to reap capital gains and it supplies venture capital companies with. This bubble collapsed in late January 2000 and by the end of December 2000 KOSDAQ had lost 80 percent of its value. In 2001, it rebounded from its lows, but still had lost three-quarters of its value. This has effectively closed the KOSDAQ as a viable strategy for raising capital and investor exit strategy, in the process it exposed the fragility of the Korean venture capital industry.

With the collapse of these smaller markets worldwide, the question of securing later stages of funding for their investments and the lack of appropriate exit opportunities once again faced Korean venture capitalists. At the current moment it is difficult to predict whether the KOSDAQ is only experiencing a temporary downturn from which it will recover when the market recovers or alternatively that so many investors, individual and institutional, have experienced such a trauma that they will never return to the market. Current discussions of again lowering listing requirements seems especially short-sighted -- a stock market without quality firms is merely creating a legalized form of gambling that will result in yet greater losses and a complete delegitimization of the market and its firms in the eyes of investors.

Recent Changes in the Korean Venture Capital Scene

After the Asian financial crisis, the Korean venture capital industry grew in both quantitative and qualitative terms. This section describes the quantitative growth in terms of the amount of venture capital available and the

trading volume on the KOSDAQ, but more important has been the evolution of the Korean venture capital industry in qualitative terms. However, we must caution that these qualitative changes could be for naught if the current technology slump persists.

Since the Asian financial crisis there has been a dramatic increase in the number of independent venture capital firms and an accompanying relative decline in the number of corporate venture capital subsidiaries. As **Figure K4** indicates corporate subsidiaries declined from 69.8 percent in 1990 to 12.4 percent in 2000, while independent venture capital firms increased from 9.4 percent to 83.4 percent for the same period. Formation of new limited partnerships increased rapidly from 15 in 1998 to 82 in 1999, and to 191 in 2000 (**see Table K4).** This is an indication that independent venture capital as an organizational form may now have become rooted in the Korean political economy.

The buoyant market for venture capital-financed firms favored the SMESS Act venture capital firms and they performed better than the loan-based NTEFC Act venture capital company. This was an important change, because it validated the equity-based investing that until then had been relatively unprofitable. Evidence of this change was the 1999 decision by KTB, which had been an NTEFC Act venture capital firm, to privatize and reorganize itself as an independent venture capital company. With the privatization of KTB, its investment strategy shifted from making loans to investing in equity. Kim, Han-seop, director of KTB said, "from the beginning, KTB (old KTDC) had big assets, because we received loans from the government and IBRD prior to privatization. However, after privatization in 1999, we got our assets by increasing our capital. Now, we have nothing to do with public-based funds and mainly operate through equity investment (personal interview 2001)."

The loosened regulations regarding involvement of the chaebols in venture capital prompted several of them to enter the industry. In 2000, eight of the chaebol-owned venture capital subsidiaries were among the top thirty venture capital firms (SMBA 2001). Their involvement has contributed to a generally increase the in the size of venture capital funds. Since 1999, as in many other markets, the Korean venture capital market has become divided into a few very large venture capital firms and a large number of small venture capital companies. According to SMBA data, 52.7 percent out of the total capital invested was by the 20 largest funds. Many smaller

funds were undercapitalized and since the market difficulties that began in mid 2000, a number of these smaller funds have left the industry.

Not surprisingly, the investments of Korean venture capital firms concentrated their investments in information technology. One reason for this was that government policy encouraged such investment, but even more important was the global enthusiasm for IT investments fueled by Internet boom. The recent collapse in the market for IT firms has prompted some Korean venture capitalists to begin investing in other sectors including the entertainment and biotechnology. This was fueled by Ilshin Investment's successful investments in a clothing company and a firm in the movie industry. This has influenced the investment patterns of other venture capitalists (personal interview 2001). Whether this success is simply episodic or a signal of an entirely new sector amenable to sustained venture capital investment is difficult to predict, but it may be a sign that Korean venture capitalists are developing more discerning investment strategies.

Since 1998 the profitability of venture capital companies improved significantly. The average Internal Rate of Return (IRR) among Korean venture capital companies was said to be over 20 percent for last three years (personal interview with KVENTURE CAPITALA team manager 2001). KTB claimed to have achieved a 75 percent in IRR for five years from 1995 through 2000 (personal interview 2001). Obviously, returns fluctuate with the economic environment. The difficult conditions since mid 2000 have had a significant impact on returns. The most recent data suggest that the annual results for leading venture capital companies in Korea dropped 10 percent in the best case to as much as 90 percent for the first half of 2001. Some of the largest firms experienced the worst results. For example, KTB's results for the first half of 2001 were 89 percent lower than 2000. LG Venture Investment, Hyundai Venture Investment, and Softbank Ventures Korea results for the first half of 2001 showed decreases of 67 percent, 83 percent, and 69 percent, respectively. There is little indication that the results will improve during the remainder of 2001.

Despite these changes, there are still a number of problems that differentiate the Korean venture capital industry from that of some other nations. These problems can be attributed to the rapid growth and lack of experienced personnel. Perhaps, the largest problem has been an inability to recruit and retain experienced

personnel. A general lack of experience among Korean venture capitalists impairs their ability to monitor and advise their portfolio firms. This limits their ability to add value to their investments. In part this is a result of the Korean government's prohibition of investors interfering with management, which naturally inhibits the trial-and-error learning that venture capitalists in other countries experience. This lack of involvement with firm's management means that there is a lack of learning about what makes a good management team. This affects the development of the tacit knowledge so important in judging the true quality of a management team prior to investment. So this inexperience combines with government prohibitions to weaken the investment decision and then to decrease the value added that venture capitalists are able to add after the investment decision.

The suddenness of the high-tech boom created what might be termed "investment panic" conditions during which venture capital funds were formed and began investing frantically. As a result, investments were made without sufficient due diligence and the venture capitalists were so busy making further investments that they were unable to monitor their earlier investments. As in other countries, during 1999 and 2000, the pricing of software and Internet deals spiraled with little attention given to whether the firms would ever become profitable -- it was supposed that the investments could always be sold to the public on the KOSDAQ. In an interview, Jeong-Hyun Cho from Trigem Ventures said, “many venture capital firms were established within these one or two years, and most of these firms were without understanding what venture capital is. Therefore, they invested in many firms without evaluating the value of those firms. And now they have been driven to the wall and cannot escape from the bad exit market (personal interview 2001).” The circumstances for these newly established venture capital firms continued to worsen as of late 2001. Compounding the difficulties of Korean venture capitalists was a legal requirement that they invest a certain ratio of venture capital funds within a given period of time. At a time when venture capitalists in other nations are withholding investment, Korean firms are required to invest regardless of the market conditions.

The Recent Government Policies

In the last four years, the government has loosened regulations to facilitate the growth of the venture capital industry. In August 1997, the government permitted pension funds to invest up to 10 percent of their operating funds in venture capital partnerships. In May 1998, the restrictions on foreign investment in Korean venture capital partnerships were lifted. Also, a series of measures were taken to increase the tax benefits for venture capital partnerships.

Generally, the Korean government's involvement in the venture capital industry since the mid 1990s has been an aspect of its policies for the promotion of the innovative small firms. This was regarded as an urgent and critical problem, prior to the 1997 economic crisis and even more so after it. The Korean government has invested significant sums of capital in trying to create a venture capital industry. For example, the government has provided matching funds to many venture capital companies. The government established Kookmin Venture Fund (1998), Korea Venture Fund (KVF) (1999), and Dasan Ventures (2000) as public venture capital firms with investments of $26 million, $87 million, and $45 million, respectively. These venture funds are meant to support high-tech small firms and local SMEs during the first three years after their incorporation (SMBA, 2001). Additionally, the recent depression in Korean venture capital industry led the government announce that of August 2001 it would invest $300 million funds to resuscitate the venture capital market. However, with the current stock market depression, few venture capitalists have shown much interest in the program.

These actions did revitalize the Korean venture capital industry. However, it also created difficulties. The government's direct involvement in venture capital industry, quite naturally, introduced distortions into the venture capital market and hindered venture capital companies and small innovative firms from developing their independent viability. For example, in October 1997, in an effort to support the venture capital industry the government decided that small firms wishing to take advantage of various financial subsidies and tax benefits had to satisfy one of the four requirements:

1) In the last seven years the company must have received at least 20 percent of its total assets in investments from venture capitalists.

2) In the last seven years the company must have received at least 10 percent of its total equity in investments from venture capitalists.

3) The company must have spent at least 5 percent of the previous year's sales revenue on research and development.

4) The company's main line of business must be in a high technology field explicitly recognized by the Industrial Property Office.

The effect of this regulation is to force small firms seeking government support to offer investment opportunities to venture capitalists. This new legal arrangement could encourage the role and position of venture capitalists. This new arrangement requires that a venture capital company invest 20 percent out of an SMEs' paid-in capital in the first two years, and then increase its stake to 40 percent within the first five years (SMESS Act). There are also restrictions that require that the investments be knowledge-intensive or high technology industries such as energy substitute industry; telecommunication industry; electronics and communication industry; information technology industry and computer software industry (Ko, Haksoo and Shin, H.Y. 2000). One difficulty with this is that it forces entrepreneurs to shape their business to the legal restrictions, rather than try to build the firm's competitive position in the market place. Also, venture capital firms that lack the firm assessment abilities have had a hard time discovering good investments during the allotted time. In this circumstance, venture capital companies were sometimes forced to select some industrial firms that looked reasonable on the basis of a cursory examination. There was insufficient time to undertake adequate due diligence. This was an especially serious problem for the new venture capital firms established in 1999 and in 2000. One result of these government restrictions were a number of failed investments. Here again, the nature of the government subsidies and then restrictions to prevent abuse were too complicated and diverted both firms and investors from their business purpose.

Second, in the case of venture capital the Korean government has continued its predilection for developing policies replete with incentives and subsidies, and then imposing conditions and operational restrictions. For example, the government prohibited venture capitalists from intervening in the portfolio firm's management, after

the owners of small firms asked the government for protection from outside investors' interference. The government's objective was to protect venture capital-backed firms from being the object of "a money game," by which is meant venture capitalists pursuing short-term profits and speculative activity. Naturally, most of venture capitalists find these requirements onerous. Kim, Hanseop from KTB said, “there have been many times the failure of an investment has been because of the restrictions on involvement with management. We supplied one firm with money for the use in technology development. But CEO of that company used the money for acquisition of another firm. In this situation, we did not have any way to control [his decision] (personal interview 2001).”

Another complaint from venture capitalists are the lock-up restrictions that prevent venture capital companies from selling their stocks for a prescribed period after their portfolio is listed in KOSDAQ. This restriction was only applicable to a venture capital company. It did not apply to other institutional investors. Although this was intended to protect of invested firms, it also discouraged the activity of venture capitalists. These rules were loosened by the end of 2001.

Conclusion

The development of Korean venture capital is especially interesting when it is contrasted with those developments in Taiwan. Given that the technical levels in both countries were roughly comparable in the early 1980s, when the venture capital industry in both nations was launched, and, today also remain roughly comparable, the differences are remarkable. In Korea venture capital, after a remarkable burst of growth in the late 1990s, remains weak and continues to be handicapped by an enormous number of government regulations. Whereas today Taiwan, despite a severe downturn, has one of the most vibrant venture capital industries in the world. Of course, at a fundamental level certain aspects of this divergence can be explained by the different industrial structures and NISs in the two nations (Biggart and Guillen 1999). However, such structural explanations also have an element of determinism that does not allow for simple mistakes and strategic errors. We believe it is more plausible to argue that the Korean industrial structure created interpretative frames, which

increased the probability of choosing ineffective and/or unworkable strategies. However, these strategic choices were not predetermined, but emerged because of particular correlation of socio-economic forces that are not irreversible, it is possible to choose new directions.

Let us summarize the strengths, existing and potential, that Korea had for the development of a vibrant venture capital industry. In terms of human resources, Korean universities were highly rated and the research institutes were among the oldest and best in Asia outside of Japan. Korean engineers have a long history of success in the U.S. and Silicon Valley in particular. Surveys indicate that Koreans are entrepreneurial when provided with an opportunity. In regards to technology, Korea, very early, understood the importance of electronics and developed strong capabilities across a number of important sectors. In the early 1990s, it was clear that the Korean electronics industry was technically more sophisticated than that of Taiwan. Though the stock market was undoubtedly considerably influenced by the chaebol, Korea did establish an OTC market in the mid 1980s that could have been useful for the listing of high-technology start-ups. Finally, the government was interested in assisting SMEs in upgrading their technologies and understood the importance of research and transferring technology from public research institutions to the private sector. The government did establish venture capital firms and had sufficient capital to provide early venture capitalists with subsidies. Also, international development agencies were willing to fund private venture capital operations. An observer in the early 1980s would have concluded that Korea had a number of the preconditions necessary for the creation of a viable venture capital industry.

Despite the existence of many of the preconditions for the emergence of viable venture capital industry, there were also many fetters. There can be significant argument about the importance of the U.S. government in the creation of the venture capital industry, but, in the cases of Israel and Taiwan, the government was not only active, but more important, clever, in its involvement. The Korean government, as we have shown, was continuously involved in the evolution of the venture capital industry. However, this involvement was not benign. Involvement begins with creation of structural conditions for entrepreneurship and here the Korean government had all manner of macro- and micro-level policies favoring the chaebol over SMEs. This established

a socio-cultural and economic status hierarchy that discouraged entrepreneurship. Moreover, when the government decided to develop a venture capital industry, it's initial efforts were government-run entities staffed by government bureaucrats -- a surefire guarantee of failure. After the relative lack of success of the early firms, the government passed the SMESS Law in 1986, however a welter of regulations hamstrung these firms, and their returns were dismal. For good measure it also created another group of "venture capital" firms, the NTEFCs, geared toward loaning government monies to startups creating further uncertainty. There were regulations ensuring that venture capitalists could not adequately monitor their firms. In this category are the regulations forbidding the venture capitalists from owning more than 25 percent of the firm. They also forbade venture capitalists from removing managers, thereby inhibiting venture capitalists from providing direction to entrepreneurs, nearly all of whom were first timers. The constantly changing government policies on foreign venture capital guaranteed that the Korean venture capital industry would not benefit from learning from the mature venture capital industries in other countries. It is difficult to entirely comprehend the reasons that the government so consistently and perversely operated to discourage the creation of an environment conducive to the growth and success of venture capital.

In addition to the perverse government policies, Korea had many other attributes that discouraged entrepreneurship and concomitant growth of venture capital. The Korean macroeconomy has been regularly plagued by economic crises that trigger currency devaluations and general uncertainty. For venture capitalists, these crises are difficult, because the stock market usually collapses and exits become difficult regardless of their portfolio firm's situation. In addition to these economic difficulties, until the mid 1990s, one of the most important obstacles was the lack of labor mobility. This meant that individuals with potential businesses were unwilling to leave their employer especially if it was a chaebol. It was even more difficult to secure seasoned executive-level managers. Moreover, because of the lack of foreign firm operations especially those operated by U.S. high-technology firms, there were few available managers that understood the start-up process. This situation meant that venture capital was discouraged and entrepreneurs experienced a dearth of capital.

The early 1990s were difficult for the Korean economy in general and venture capital, specifically. However, at this time a handful of entrepreneurial high-technology firms were formed that would grow and become successful creating role models for yet other entrepreneurs. As important, the crises of the 1990s led to the collapse of a number of chaebol and the destruction of the long-term employment contract, this led to far greater willingness among Koreans to consider a start-up. Finally, the global stock market boom for new issues affected the KOSDAQ positively, and so exit with significant capital gains was possible. This made venture capital investing more attractive and encouraged entrepreneurship igniting a virtuous circle. By all accounts, an observer in 1999 would say that Korea had developed an entrepreneurial culture and a successful venture capital industry.

Since the global collapse of the IPO market and technology stocks, the environment in Korea has become more difficult for start-up firms and venture capitalists. Despite the efforts to deregulate the Korean economy, most international venture capitalists do not see Korea as a good place to invest except in the area of leveraged buy-outs. Also, in contrast, to Taiwanese venture capitalists, the Korean venture capitalists had not spread their risks by investing in the U.S. and other parts of Asia. At this juncture it is fair to say that the Korean venture capital industry will succeed or fail depending upon the fortunes of the Korean economy. 2001 and 2002 will be trying, and survival will not be easy. Almost as worrisome was the possibility that the Korean government would decide to continue intervening to "support" the venture capital industry, if the government operates as it has in the past, this may be more of a hindrance than an advantage.

Hong Kong[42]

Hong Kong's venture capitalists manage more capital than any Asian economy outside of Japan, and it is the regional capital center for all of Northern Asia except Japan. In many ways, Hong Kong venture capital community resembles that of New York City and its emphasis on "financial engineering" and capital "import and export" more than it does Taiwan. Hong Kong does not have any special regulations related to venture capital, but rather has an open, deregulated financial system that is favorable to a wide variety of financial activities. In

[42]Since it is not a nation, for the lack of a better term we refer to Hong Kong as an “economy.”

this respect the financial environment was excellent for venture capital. However, Hong Kong does not have a strong manufacturing or technological base from which one might expect the entrepreneurs to arise. It's major strengths are trading, fashion, entertainment, and finance -- these have not been major fields for venture capital investment, but certainly are industries upon which economic upgrading can be built.

Hong Kong's resemblance to New York City can be seen in four ways: First, in Hong Kong, like in New York City with its Silicon Alley phenomenon, there was a proliferation of e-commerce and Internet startups. As in the case of New York City, many of these have ceased or may soon cease operations. The second resemblance is that Hong Kong is a global-class financial hub. Hong Kong is a global financial hub having not only its own banks like HSBC, but also the Asian headquarters of major global banks such as Citicorp, ING Barings Bank, ABN Amro, etc. The third resemblance is that as in New York City, most venture capitalists are private equity firms or specialize in later-stage investments. The fourth resemblance is that like New York, most of the funds are imported and then exported to other regions. The venture capital funds and firms domiciled in Hong Kong invest their monies throughout Asia.

The most significant difference from New York is Hong Kong's role as a "window on China." Given its first-world infrastructure, transparent rule of law, and excellent global transportation linkages, it is part of China, but not part of China. The second important difference is that many of Hong Kong's venture capital operations are subsidiaries of overseas firms, though there is also an independent indigenous venture capital industry. For the multinational banks, the headquarter offices are in London, New York etc. This means that decision making can be slower due to the necessity of receiving approval from headquarters, and also the offices are constantly vulnerable to change.

The Operation of Hong Kong Venture Capital

Hong Kong has a long history as the premier Asian banking center outside of Tokyo. Moreover, as in the case of London it operates as an offshore banking center (whereas Tokyo almost exclusively serves the Japanese market). This long history of being the center for Asian banking and especially for, what some have termed,

"greater China," defines Hong Kong's role in venture capital. After Japan, Hong Kong has the largest pool of venture capital available in Asia. From 1996 to 1999, the amount of venture capital in Hong Kong nearly tripled from $8 billion to $21.2 billion -- a remarkable growth rate. In large measure, this tracked the growing interest in Chinese economy and the Internet boom.

Hong Kong's real role has been as an exporter of capital to other parts of Asia, especially China. However, Hong Kong is not only an exporter, it is also a major importer of capital. As Table H1 indicates, that during the last three years for which statistics are available, Hong Kong has received in excess of 70 percent of its venture capital from outside Asia and very little has been advanced by indigenous Hong Kong institutions. Moreover, well over 80 percent has been exported to other parts of Asia. Notice that there has been a slight rise in investment in Hong Kong, but still in 1999 only $1.7 billion was invested in Hong Kong. This is likely due to the Internet boom and is sure to have fallen precipitously in late 2000 and 2001. In keeping with Hong Kong's role as a financial center, 33 percent of the total venture capital disbursements in 1999 were to buyouts, turnarounds, and mezzanine financing. Another 28 percent was invested in either seed or early stages (AVCJ 2001: 64).

In 1972 Citicorp Venture Capital established the first venture capital firm in Hong Kong and it continues to operate there to this day. However, prior to 1989 there were only six venture capital separate firms operating in Hong Kong (and two of these were parts of the U.S. insurance firm Prudential). From this small base, the number of funds increased to 165 in 1999 and in early 2000 another 39 fund/firms opened their doors for business. Fortunately, many of those formed in 2000 did not invest in many Internet deals and so may have avoided the worst of the crash. In terms of experience, most of the Hong Kong venture capitalists do not have an operational background; rather they come from financial backgrounds—this is an important difference from Taiwanese and Americans that boast venture capitalists with operational experience. This is not surprising given the venture capital import/export status of Hong Kong.

Exit Opportunities

The Hong Kong Stock Exchange is one of the oldest in Asia, however its listing requirements are too stringent for many start-ups. The other stock market in Hong Kong is the GEM (Growth Enterprise Market), which was especially established to bring start-ups public. The GEM also was meant to list firms from throughout Asia especially China. The GEM presents itself as a "buyer-beware" market that takes little responsibility for the quality of the firms listed. Accusations of loose listing requirements, special treatment, and other less than stringent practices have made the GEM a high-risk, non-transparent environment and frightened away investors. As a result of this and the general collapse of the new issues market, the GEM and the firms listed on it have dropped dramatically during the last year and one-half. Reacting to these difficulties, the magazine AsiaWeek headlined an article on the GEM "World's Worst Bourse?" The managing director of the Carlyle Group was quoted as saying, "It [GEM] has no credibility and no international appeal for IPOs (Chung 2000)."

As with many of the other new stock exchanges established in Asia to provide vehicles for raising capital for small firms, the GEM has been of only limited success and benefit for small firms. This is because most of these exchanges are too small to be effective. In 2001 the GEM's average daily trading value was between $20 and $100 million per day. As of June 2001 there were 83 firms listed. Clearly, with such a low trading values and the relatively small number of firms, the market is largely illiquid. The GEM was established as a vehicle for small firms to raise capital, but because of its various shortcomings, at this point it has had only a minimal impact.

The Role of the Government

The Hong Kong government has traditionally adopted a laissez faire posture toward business activities preferring to encourage economic growth on the basis of strong and transparent regulations and a low taxation regime. This is expressed in nearly every aspect of society and with low taxation the government has more limited resources than most countries. As an example, the Hong Kong government has not had a sustained commitment to building educational and research institutions of excellence. Further, in the early 1980s, when

Hong Kong's manufacturers moved to China and the Hong Kong operations shifted to trading and distribution, the government was not overly concerned. In contrast to Taiwan, the government made no concerted effort to shift local industries to higher technologies and thereby protect its manufacturing base. Hong Kong was content with its role as a trader, entrepot, and financial center. It was only in the 1990s that the government evinced alarm and began to develop policies to counteract the situation.

The first significant action was the 1993 formation of a government-owned venture capital fund, the Applied Research Fund. This program was managed by the Applied Research Council and provided approximately HK $250 (U.S. $32) million in grants or loans to small and medium-sized high-tech firms. The ARF was administered by the government and had a target return of 5 percent (a dangerously low return for a venture capital operation, but, quite typical for lending). According to anonymous sources, it was not very successful. After the Asian crisis, in November 1998 the ARF received a further appropriation of HK $750 million (U.S. $96 million). However, rather than let government officials administer the fund, four fund mangers (Walden Technology Management, AsiaTech Ventures, Softech Investment Management, and HSBC Private Equity Management) were appointed to invest the funds. The mission of the ARF is avowedly public and "is social and economic, not financial, in nature" (Applied Research Fund 2001: 1).

Despite these efforts, the development of a vibrant high-technology community complete with venture capitalists investing in Hong Kong continues to be a project in its infancy. For small firms there are a variety of shortages and difficulties. Office space is expensive, though the government established a Cyberport project to provide incubator space. More significant, are shortages of engineers and a lack of managers experienced in managing technology startups. Thus far proposals such as those advanced by Hong Kong venture capitalists recommending that the government ease immigration for talented "mainland" Chinese engineers have not yet been approved. Here, the goal is to use these immigrants as a substitute for the long-term lack of investment in Hong Kong's research infrastructure. The government must consider whether it is committed to building the technical and managerial base necessary to create a high technology industrial cluster capable of providing significant opportunities for growing a venture capital industry.

Conclusion

Given its history as a financial center and its centrality in the communication and transportation networks of North Asia it appears likely that Hong Kong will remain a powerful venture capital center, though it does not appear as though there will be a strong cluster of startups. This is becoming clear as the Internet Bubble continues to implode. On the longer term there are even greater challenges. Both Singapore and Shanghai have ambitions to displace Hong Kong as the financial center of Asia. Shanghai wants to be the "gateway to China." In Singapore the government is investing heavily to create a venture capital industry. In contrast, Hong Kong has less financial resources and political will to actively encourage venture capital and high-technology entrepreneurship in general. At the moment, Shanghai's ability to replace Hong Kong as a venture capital center seems dubious as it suffers from the infrastructural weaknesses and lack of amenities that plague China, generally. Singapore is not so well situated geographically. However, in combination they might sap Hong Kong of its continuing leadership role.

China

For many, China is the Holy Grail for Asian venture investing. There has been much discussion of China's potential, and numerous venture capitalists seeking investment opportunities throughout China. And yet, few can name many successful venture investments beyond the various Internet firms listed upon NASDAQ and GEM during the Internet Bubble. The actual situation for venture capital in China is most difficult to evaluate and measure—especially since markets have become resistant to listing highly speculative firms. China has enormous potential, but also many pitfalls. Some attributes of the Chinese economy appear to be extremely attractive. China has been growing rapidly, and it has the largest Asian domestic market outside of Japan. In addition, it is rapidly becoming one of the world's largest exporters. It also has a number of very talented scientists and engineers. The government is committed to improving its technology base and opening its market. Moreover, the government has made the establishment of a venture capital community a top priority.

The venture capital industry in China is remarkably volatile. As can be seen in **Figure C1**, the amount of funds raised increased dramatically until 1995, and then plummeted. Similarly, the investments have oscillated violently, reaching between $500-700 million per year from 1994 through 1997. But then investment plummeted in 1998, before increasing once again in 1999. 2000 probably was comparable to 1999, but the collapse of the dot.com boom surely has had a negative effect. In early 2001, there was ample or even excess capital in China, but a lack of promising investments. This is illustrated by the low-level of investment versus the total pool of funds.

The Chinese venture capital industry began in the mid 1980s when the government decided that it should develop high-technology industries. There was a proliferation of state-backed investment operations that invested in new firms. Given the lack of experience, not only by the government officials, but also among the entrepreneurs, all of these efforts failed. One of the most famous of these firms, the China New Technology Startup Investment Company (Zhongchuan) went bankrupt in 1997 and lost at least $3 million, though some believe the true losses may have been as high as $30 million (Oster 2001). Though the government efforts failed, there has been a continuing interest in the possibilities of venture capital investment in China.

The Chinese venture capital industry is geographically clustered. According to the Asian Venture Capital Journal, 49 venture capital firms had 50 offices in China. Beijing had 30 offices, followed by Shanghai with 12, Guangzhou with 4, Shenzhen with 2, and Tianjian and Shanxi had one each. However, undoubtedly this is an undercount as there has been a proliferation of venture capital funds, as nearly every major subnational political jurisdiction has established a fund (see the section on government for further discussion). Investments are more dispersed as venture capitalists mentioned areas such as Wuhan and other cities with good universities as possible sources of deals.

There is no established pattern of investing in China and thus far much of the investing continues to be experimental and ranges from high technology to infrastructure and consumer goods. **Table C1** indicates that the greatest investments have been in infrastructure, consumer products, and transportation/distribution, not areas normally considered for venture capital investment, but given the growth of the domestic market these may be

significant opportunities. An illustration is the Walden International Investment Group's portfolio of Chinese investments (**Table C2**). Most of the investments are in traditional industries, whereas in the U.S. and Taiwan Walden invests, almost exclusively in technology deals. From 1998 to 1999, there was a significant increase in information technology investing probably a manifestation of the Internet bubble in China. Though 2000 statistics have not yet been released it is probable that the amount of investment in information technology continued to grow in 2000, but according to interviews conducted in 2001, this is no longer true.

Technology Investing

Venture capital is best known for technology investing. Some venture capitalists interviewed for this project believe that China has the best university-based high technology in Asia outside of Korea and Japan. This is not borne out in **Table 7**, but most Chinese schools did not participate. The reason some venture capitalists believe in the potential of Chinese universities is that the Chinese government invested significant resources in research in both universities and various government laboratories. Also, the top Chinese universities select students from an enormous pool, and many of these students went on to be very successful in U.S. graduate programs. The most obvious cluster of research institutions and universities is the Zhong Guan Cun district of Beijing, which is close proximity to the top two Chinese universities and various national research institutes. Some have termed this district the "Silicon Valley" of China. **Table C3** illustrates the concentration of top universities in Beijing and China overall. In mid 2001, there was a significant amount of high technology investment being made in Beijing to utilize Chinese scientists especially as software programmers. Interestingly, both Tsinghua University and Beijing University have organized separate venture capital funds in cooperation with San Francisco-based WI Harper deliberately targeted at university-related ventures (ChinaOnline 2001).[43] The other prominent region is Shanghai, which also has a number of excellent universities and a strong manufacturing base. The Taiwanese venture capitalists and technology firms were especially interested in the Shanghai area.

[43] Chinese universities directly control many for-profit firms.

Despite this praise for the technical abilities of Chinese scientists and engineering, China remains a "technology laggard" (Wang 2001). There is another problem, namely even when a Chinese firm has an excellent technology its competitive advantage is difficult to sustain, because in the West the market and technology change so fast that it is difficult for a small firm headquartered in China to sustain its advantage against developed country competitors. This was doubly difficult, because technological standards are largely set outside of China. So a head start can turn out to be a blind alley when the standard becomes established overseas.

There is little consensus as to in which technologies China will excel. To illustrate, venture capital in Sweden is concentrated in wireless, in India it is software and software services, in Israel the fields are software especially cryptography, and Taiwan draws upon it's strength in manufacturing and some IC design. In China, there is no consensus or even suggestions as to which sectors seem most promising. Different venture capitalists mentioned different technologies including contract software programming, optical components, IC design, and foundry services. Uncertainty prevails.

Government

Venture capital has governmental support at the national, provincial, and municipal level. The situation is complex and difficult to fully comprehend. What is clear is that the various levels of government are searching for ways to promote venture investing. However, many obstacles to creating a viable venture capital community are linked to much larger political and economy policy. For example, the non-convertibility of the reminbi is a fundamental economic policy as are rules on foreign investment and ownership. So policies toward venture capital must be developed in an institutional context that permits only a limited amount of maneuverability.

For any government deciding the best policies to encourage the growth of venture capital is difficult at best. This section does not examine Chinese government policies for the encouragement of venture capital in detail and the following discussion draws heavily upon Lo (2000). While the Chinese government intends to encourage venture capital, many of its laws discourage small firm formation. These include regulations on the minimum capital size of RMB 10 million to be considered a company. There are exceptions for technology-based firms, as

they require only RMB 100,000, however as Lo (2000) points out the average salary of a Chinese engineer is RMB 2,000 per year. The legal system contains many other provisions that by commission or omission retard entrepreneurship and thereby the formation of an active venture capital industry. One of the most significant of these is the prohibition or restrictions on the ability of investors and founders to dispose of their shares on the open market after an IPO. So, in many ways, the legal and corporate governance system in general is not prepared to allow the routinization of a venture capital sector.

China is a capital-poor country today so foreign venture capital could be very important in creating a venture capital industry. Moreover, the government has expressed support for foreign venture capital investment. However, the difficulties for foreign firms are probably even greater than for domestic firms. There are many obstacles. One method for investing in a Chinese portfolio is through a Chinese-foreign Equity Joint Venture, however this is a cumbersome and requires approval from the Ministry of Foreign Trade and Economic Cooperation -- an approval that may not come quickly. This is the favored mechanism for investment, but can be particularly problematic when problems arise (see below for an example). The other possibility for foreign venture capitalists would be to invest directly in a Chinese limited liability corporation. The difficulty here is that the law is vague on the legality of such an investment (Lo 2000). If everything operates according to plan there will be minimal difficulties, it is when difficulties arise that legal clarity or, at least, a transparent process for settling the difficulties is necessary. At this point, both methods are not so attractive to venture capitalists. Foreign investors are also limited into which industries they can invest, however the prohibited categories are general and vague, thus increasing uncertainty, diverting investor attention to discerning the government's position, and raising the financial and temporal cost of investment. Finally, the government controls the ability of Chinese firms to list on overseas markets and limits the range of potential acquirers –further limiting exit for founders and investors.

In addition to its legal involvement, government entities in China are actively involved in venture capital investing. By one estimate, governmental monies make up over 80 percent of the total venture capital investment

(UltraChina.com 2000). Other estimates are lower.[44] In general, the national government has resisted committing its own resources. But, in late 1999, the Chinese Ministry of Foreign Trade and Economic Cooperation announced that it was establishing a venture capital fund. This was the first national-level venture capital fund (ChinaOnline 1999).

Subnational government entities have been much less reticent. Many municipal and provincial governments see venture capital as an economic development strategy. Though recent, the scope of sub-national involvement in the encouragement of venture capital investing is broad. Using publicly available English-language sources, seven provinces and eight cities were identified as having established some sort of local venture capital fund (**Table C4)**, and there is reason to believe that there may be more that were not discovered. If the history in the U.S. is any guide, then the efficacy of these efforts is open to doubt (Florida and Smith 1993). The local governmental efforts most likely to be successful will be those located in regions that already have successful entrepreneurial firms and traditions of informal support for new ventures.

There has been a significant effort to sort out the legal system for venture capital, however the situation remains confusing. Shenzhen has promulgated a set of rules for venture capital, however their status as law is unclear. Some have argued that China should encourage the establishment of private venture capital firms by authorizing them to raise capital by selling shares to the public and/or issuing bonds. Also, it is argued that the government should set up various insurance schemes for venture capitalists. It is believed that this would accelerate the privatization of venture capital (UltraChina.com 2000).[45] However, such policies are not guaranteed to be successful or risk-free.

Improving the environment for venture capital will require rethinking some of the central tenets of the way the Chinese government controls the economic environment. For example, simplifying the environment for

[44] This estimate is the actual dollars invested and not how much might be available. Private investors have been more cautious in investing. The Asian Venture Capital Journal estimates 12 percent of the funds are from the government. This does not include a further 18 percent furnished by the nationalized banks. The AVCJ total also includes the large foreign private equity funds.

[45] There are only a very few cases in which the listing of venture capital firms' shares has operated well. In most cases these publicly held venture capital vehicles result in significant losses for investors, and their investment records are usually abysmal.

foreign venture capitalists would also be part and parcel of simplifying the environment for foreign investors in general. Allowing stock option plans for start-ups would likely be part of a more general creation of stock option plans. Similarly, removing restrictions on share sales by insiders would almost surely require an improved and more transparent stock regulatory system modeled after the U.S. SEC. Thus, improving the environment for venture capital also implies decisions about the future direction of the economy and the industrial structure.

The Difficulties[46]

Despite the promise and an entrepreneurial fervor, there are obstacles. These are not surprising, but they will retard development and lead to a "China discount," i.e., a potential return that must be greater or a correspondingly lower valuation to compensate for risks that are beyond the normal venture investing risks. Jonathan Zhou (2001: 16) of Fangda Partners described the situation for investing in China thus "the uncertainties of [the] Chinese legal framework may not be changed in the near future, which will unavoidably increase difficulties for international private equity and venture capital investors targeting the Chinese market…Investors should be aware of these risks." One possibility is that domestic venture capital investors will be more successful than the international ones. Despite the hailing of China as a huge new investment opportunity, few investors were able to provide details of successful investments beyond the various Internet investments such as Sina.com, NetEase.com, and Sohu.com that went public on the NASDAQ and are now close to delisting.

The case of Sina.com seems almost a textbook on the difficulties that can be experienced in China. Sina.com was listed in 2000 on the NASDAQ, but it has had great difficulty making money. Notice the venture capitalists DID successfully exit the firm, however the investors were less successful as the stock listed in May 2000 at $20 per share and spiked to as high as $50 per share (intraday high), before beginning an uninterrupted slide to the $1.26 per share on September 3, 2001. Walden Ventures was the U.S.-based venture capital firm that led the deal. By June 2001, the Sina.com board members meeting in California deposed one of the founders and the chief executive officer, Wang Zhidong. However, this process, which is quite routine in the U.S., was very

[46] This section owes much to discussions with Arthur Wang. However, all statements and conclusions are those of Martin Kenney only.

complicated in the case of China, because the Chinese firm was a Chinese-foreign equity joint venture. When difficulties arise, because of the complicated nature of these joint ventures, the board of directors of the foreign owner can have trouble exerting control over its Chinese entity. The cross-border regulatory and legal issues create even greater problems than are normal especially when the management and the board of directors find themselves in disagreement (Pottinger 2001a; 2001b).

The difficulties in China exist in nearly every aspect of the new firm formation process. The first set of difficulties involves the political environment. This begins with a general political risk and extends to issues such as China's ability to secure most favored nation status from the U.S. and entrance into the WTO. Failure of either of these would contribute to a general air of malaise and uncertainty among investors. Similarly, the uncertainty caused by the disputes with Taiwan hinders investment from Taiwanese manufacturers and venture capitalists. Finally, China's disputes with Japan create uncertainty, because of Japan's role as a large investor and market. The international climate affects not only foreign venture capitalists, but also domestic venture capitalists because of their need to list their investments or sell them to foreign investors.

The external risks are accompanied by various internal risks. The Chinese economy is in the process of being transformed from one guided by state planning to one that is market driven. This process has been relatively smooth thus far. However, a leadership change, a miscalculation, or even a simple cyclical downturn could interrupt the current process of liberalization. There is also no guarantee that the government will remain vigilant against inflation. For example, if faced with a recession, the government might encourage inflation as a countermeasure. Finally, there are the government's difficulties with the large state-owned enterprises that are running large deficits and pose a continuing threat to the stability of the financial and political systems. Internal policy therefore could contribute to a less positive environment for the growth of venture capital. There are other less foreseeable risks, such as, hypothetically, the government decreeing that all software firms must reveal their source code. In other words, there are still concerns about stability and predictability of the general Chinese political economy and even specific measures.

Another bundle of concerns can be summarized as issues of transparency and the rule of law. Even where laws have been properly drawn up, it is uncertain whether the rules will be enforced and obeyed. For example, the idiosyncrasies of enforcement in the various regions and municipalities can frustrate investors. At times, there has been corruption at the local level forcing investors to make extralegal payments. Despite central government efforts to control corruption, it continues to be endemic creating uncertainty and raising costs.

The government's policies and regulations are not the only difficulty in investing in China. There are many non-governmental concerns. As mentioned earlier, a number of venture capitalists said that they would rather invest in U.S.-trained entrepreneurs, because they better understood the venture capital process. However, there are only a few competent U.S.-trained entrepreneurs in China. Two venture capitalists thought that Chinese entrepreneurs often have a very short-term outlook and treat the venture capitalists' investments as a "gift," thereby exposing the investor to a classic "principal-agent" problem. This is not entirely surprising, as it will require some time before Chinese entrepreneurs are educated to the behavior patterns of a "bankable" entrepreneur — but for investors this is an immediate problem.

Investing in China is also handicapped by a lack of experienced professional management talent. Most persons in leadership positions are accustomed to a socialist environment. One might expect the multinational firms operating in China to be a reservoir of talent. However, these subsidiaries are, for the most part, either sales and marketing organizations or manufacturing operations, neither of which provide the multifaceted experience required of a senior manager hired to pilot a startup through its early years. Taiwan overcame this problem by enticing Taiwanese immigrants back from the U.S. where they had gotten such experience in Silicon Valley, and there was also a part of Taiwanese managers in the multinationals. At this point, few Chinese have progressed to such high levels in the U.S., so there is no large pool of expatriate managers. This contributes to a difficulty in assembling a management team, and this will continue to be an obstacle.

As mentioned earlier, exit from Chinese investments is difficult especially for international investors. Trade sales are possible, though if it is to another Chinese company it could be difficult to remit the currency abroad. If the firm is sold to a foreign firm, then, with approval from the government, payment can be made in a foreign

currency. In the case of an IPO on the Chinese stock market, the situation is far more complicated due to rules regarding liquidation of shares after listing because the stocks that can be traded are confined to those held by the public.

The other exit strategy is to list on overseas markets such as the Hong Kong GEM or the NASDAQ. These exits are made problematic by the fact that Chinese firms going public in foreign markets require permission from the Chinese Securities Regulatory Commission and, if they are information technology firms, from the Ministry of Information (UltraChina.com 2000). After receiving government permission, these stock markets can be utilized, however there are difficulties with both options. First, the Hong Kong GEM is thinly traded so a complete exit is difficult and most overseas investors would not want a GEM stock distribution. Second, in the case of the NASDAQ Chinese stocks are not so favorably received, because very few have done well for investors.

A second board located in Shenzhen is due to be opened in 2001, and it might create a viable domestic exit opportunity. However, the opening has been delayed repeatedly. In late May 2001, the Chinese government again postponed the opening (Reuters 2001), because of fear that it would become a weakly traded, illiquid market resembling the Hong Kong GEM or the Singapore SESDAQ. This would make it an unattractive exit vehicle. Thus there is a dilemma, a strong Second Board would provide venture capitalists another exit vehicle, but a weak board would not provide any benefits and would open an opportunity for abuse.

More important than a Second Board would be a smooth functioning, well-regulated stock market. There is a perception among many investors that the Chinese stock markets are organized to systematically favor "government companies and powerful market speculators (Leggett 2001: C1)." Manipulation and insider trading results in a loss of faith in the stock market, and contributes to a reluctance among both the Chinese public and foreign investors to invest. Such weak stock markets are ineffective at raising capital. So for China it is important to ensure that its stock markets are fair, transparent, and smoothly functioning. According to the Wall Street Journal, the government is aware of the need to take measures, but has not yet implemented them (Leggett 2001: C12).

Despite the promise of the Chinese market, there still are serious problems confronting venture investors. If the Chinese government continues on its present trajectory, then the situation for venture capital should improve. However, there are many risks and dangers that currently make investors wary of over-committing to China. China is a classical greed-fear situation. There appear to be significant profits to be captured, but the risks are very large and many of them are inherently uncontrollable.[47]

Conclusion

The consensus is that China is the most important location for venture investing in the future. Having said that, there appear to be a large number of strategies for investing in China -- a situation that says either there are many opportunities or that nobody is quite sure what will work. Let us briefly outline the opportunities: First, the Internet received massive investment in 1998 and 1999, but in 2000 it dropped dramatically even in areas such as broadband access. It was Internet-related firms that were the most successful venture capital-backed Chinese startups that were listed on the NASDAQ. The collapse of the Internet sector took firms such as Sohu.com and Sina.com with it, so those unable to go public are all adrift. Second, there was significant investment in technology-based ventures attempting to commercialize university or research institute inventions. These are concentrated in Beijing and Shanghai, but there also have been investments in other regions such as Wuhan, Tianjian etc. Third, there are opportunities to fund firms aiming to undertake contract manufacturing for the global market. Taiwanese venture capitalists are especially interested in such opportunities. Fourth, there are an eclectic set of opportunities that range from infrastructure building and manufacturing facility expansion to retail and distribution development. These investments are predicated upon the faith that China's economy will continue to expand rapidly.

The Chinese environment is not yet sufficiently mature and stable to be a termed a "favorable" climate for venture investing. Venture investing is still a new practice, and there are only a few examples of successful exits with returns of 10 times or greater. To improve the situation the government must consider dismantling the

[47] For venture capitalists, the greatest fear is of problems that are entirely out of control such as government policy changes etc., because no action of theirs can rectify the problem.

barriers that are amenable to government action. But other barriers may only be overcome by the routinization of the venture capital investment process whereby all of the parties learn-by-doing. Ultimately, the survival and growth of venture capital in China is predicated upon having a steady flow of successful investments.

Singapore

Venture capital in Singapore is, almost entirely, a creation of the government. For the government, the establishment of a venture capital industry is part of an overall strategy aimed at moving its economy into higher value-added segments. In pursuit of this goal, the Singaporean government has undertaken a number of measures to encourage the establishment of a venture capital industry. The most striking measure and the one that will receive the most attention in this report is the investment of over $1 billion of government monies in domestic and foreign venture capital firms. Overall, the Singaporean government has been very active in establishing an environment conducive to the growth of venture capital and high-technology entrepreneurship.

Singapore has some significant advantages. It has a technology/manufacturing base in high technologies, especially hard disk drives.[48] It also has semiconductor foundry capacity in the form of Chartered Semiconductor. This technical base creates a foundation for the emergence of technically and managerially competent entrepreneurs. This contrasts sharply with Hong Kong where there is a weaker technical base and concomitantly far fewer technology-based investment opportunities. But it is not only the business opportunities, Singapore has experienced managers and engineers with close relationships to Silicon Valley. They are familiar with technological developments there and have significant expertise in high-technology manufacturing. In this way, Singapore resembles Taiwan more than Hong Kong. However, since Singapore is a small country with 4 million inhabitants, there will not be a sufficient number of startups to support a venture capital industry. To help alleviate this problem, Singapore liberalized its immigration laws to attract immigrants with technical expertise.

Singapore has invested in technical research institutions and its universities in the hopes of creating entrepreneurs (**See Tables 7 and 8**). The most striking of these is Kent Ridge Digital Laboratories (KRDL),

[48] For a discussion of the hard disk drive industry in Singapore, see McKendrick et al. 2000.

which was the result of the 1998 merger of the government-sponsored Institute of Systems and the Information Technology Institute. KRDL has already yielded seventeen spin-offs (KRDL 2001).[49] Finally, Singapore has had a few successful technology-based startups, the most famous of which is Creative Technologies.

History

In 1983, Boston-headquartered Advent International formed the first venture capital fund in Singapore, South East Asia Venture Investment (SEAVI) with investment from the IFC. In 1985, Advent International subsumed SEAVI. Advent International/SEAVI was moderately successful and continues to operate to this day. The venture capital industry in Singapore grew only fitfully, and only in 1993 was the Singaporean Venture Capital Association (SVCA) formed. In 2001 the SVCA listed 21 full members.

In 1996 the Stock Exchange of Singapore opened the SESDAQ, which had less stringent listing requirements. As of late 2000, SESDAQ listed more than 60 firms with a combined capitalization of over $2 billion, in other words, it was a relatively small and illiquid market. As a comparison, there are approximately 400 firms listed on Singapore's main board. So, SESDAQ does offer an exit strategy, however the illiquidity makes it only marginally attractive. In this sense, though it is possible to list and trade a security, the SESDAQ has not attracted much attention. Singapore firms have also listed on the NASDAQ, for example, in 1999 there were two listings and a further two by mid 2000 (AVCJ 2001:155). Since then there have been no more NASDAQ listings. The limited number of listings of Singaporean firms provides some indication of the overall number of investment opportunities.

The most significant Singaporean venture capital firm is Vertex Management, which is a spin-off from Singapore Technologies (ST), a former government-owned industrial conglomerate. ST began informally investing in startups in 1983-84, as a strategy in ST's search to find new technologies and business opportunities. This then evolved into a somewhat more formal effort that from its inception considered the U.S. the target market (Hock 2001). In 1988, Vertex was separated from ST and established it's headquarter in Singapore, but

[49] Here again, the contrast with Hong Kong, which has yet to assemble an indigenous base of expertise, is striking.

with a mandate to invest globally especially Silicon Valley. Vertex has been quite successful and has expanded. In 2001, it had offices in Singapore, Beijing, Hong Kong, Israel, London, Silicon Valley, and Taipei. Despite this global presence, Vertex's investments are concentrated in a few nations; the U.S. receives 41 percent of its total investments are in the U.S., 21 percent in Europe and Israel, another 15 percent in China, and 10 percent are in Singapore (Vertex Management 2001). Vertex has far more investments abroad than in Singapore and is the only indigenous Singaporean venture capital firm with a significant global presence, though Singapore Telecom does make venture capital investments abroad.

The Singaporean Government's Role

With the partial exception of Vertex, the drive to create a venture capital industry is linked to Singapore's efforts to establish a high technology industrial base that is independent of the MNCs. Further, it parallels the Singaporean goal of displacing Hong Kong as Asia's international financial center. To further these goals, the government has undertaken a number of programs.

In 1999 the Singaporean government launched its Technopreneurship Program, which is a massive effort meant to encourage high-technology entrepreneurship. The program contained a large number of initiatives, though this report only examines those directly related to the creation of a venture capital industry. For the venture capital industry, the most important feature of the Program was the Technopreneurship Investment Fund (TIF) that received U.S. $1 billion to invest in venture capital funds.[50] The monies were to be managed by TIF Ventures and the Government Investment Corporation (GIC). There were three sub-funds. The first sub-fund was broad-based and received $500 million to attract venture capital firms to Singapore using investment. The second sub-fund was the strategic fund and it invested in venture capital firms around the world in an effort to establish relationships and seek knowledge transfer. The third sub-fund was the Early Stage fund. This sub-fund was meant to invest in Singaporean seed stage firms and to develop venture capital funds willing to invest in the early

[50] TIF is a spinout from the National Science and Technology Board.

stages. This included direct support for startups and support for business angel schemes (Technopreneurship Singapore 2001).

The scale of TIF's investments were remarkable, as the government announced 45 different investments. **Table S1** some of these investments.[51] There was a wide geographical diversity in these investments. The headquarters' countries for firms receiving funds included Canada, England, France, Germany, India, Israel, Sweden, Taiwan, the U.K., and the U.S. In effect, every country with a venture capital industry is represented. In addition to diversifying risks, as a limited partner in so many places the Singaporean government can collect information about and secure access to venture capitalists globally. Often, in return for the investment these firms agreed to open offices in Singapore, though this decision seems to have been based upon the venture capital firm's relative power in the relationship.

The government has actively altered laws and regulations to foster venture capital. For example, in 1999 the government announced changes in bankruptcy laws, employee stock option plans, and the tax system to encourage venture capital investing. Singapore took a more proactive approach than Hong Kong, which favored venture capital, but did not actively create an environment that would encourage venture capital's growth. These different strategies are not surprising and are linked to the two very different national systems.

In addition to the willingness to invest and the creation of an attractive regulatory regime, the government has promoted Singapore's centrality in Southeast Asia and attempted to fashion a role as a "gateway to" India. Here, it wants to draw upon Singapore's excellent telecommunications and transportation infrastructure. Also, Singapore's transparent and efficient legal and financial infrastructure encourages the establishment of regional headquarters facilities. For the last four decades, Singapore has been a regional headquarters for foreign multinationals operating in Southeast Asia, and this will be true for venture investing. However, in contrast to China, Southeast Asia has only a limited number of opportunities and thus is not so significant.

[51] Because of the general lack of information and secretiveness on the part of TIF, we can only verify that these investments have been made by the Singaporean government, however some may not have been from the TIF program. Moreover, for many we are missing basic information.

Much in the same way as Hong Kong venture capitalists use their relationship to China, Singapore offers itself as an attractive offshore site for investors in India. The gateway-to-India strategy is potentially much more interesting than to Southeast Asia, because in India especially Bangalore and Hydrabad there are many investment opportunities (on Indian venture capital, see Dossani and Kenney 2001). Geographically, Singapore is the closest country to India with an advanced developed country legal and financial regime, excellent infrastructure, and a business-friendly climate. This makes it a desirable homebase for Western expatriates and as a regional headquarters. Even though Singapore is approximately 3,000 miles from India, Singapore Airlines offers daily flights to Bombay, New Delhi, Calcutta, and Chennai. Moreover, venture capitalists traveling from the U.S. West Coast to India often stop in Singapore. For business in North Asia Singapore is distant, but for India it is strategically located. Also, Singapore can draw upon its ethnic Indian community to cement relationships. The TIF funded at least one Indian venture capital fund, Jumpstartup. Still, it is too early to be certain how successful this gateway-to-India strategy will be. However, even if it adds only a little to the Singaporean venture capital industry it could be an important boost.

The venture capital available in Singapore has grown dramatically. Moreover, the Singaporean government's emphasis on building up its human capital through improving its universities and research institutes and the encouragement of selective immigration should further enhance the number and quality of opportunities. However, there are some potential dark clouds. The largest of these is that the Singaporean government invested heavily in venture capital at its peak. Moreover, these investments were often in venture capitalists emphasizing the Internet and telecommunications, two areas that have experienced a severe downturn. Some or even much of Singapore's investments may be lost. Further, if there are insufficient investment opportunities, then the foreign venture capitalists located in Singapore might decide it is too costly in terms of overhead and their offices could be closed.

Conclusion

Singapore has undertaken an ambitious and far-reaching plan to establish a venture capital industry. The effort resembles its earlier efforts in other industries. It has actively worked to attract foreign firms through investment and altered it legal environment to facilitate their operations. It has sought to encourage high-technology entrepreneurship in Singapore, even while it uses its infrastructure to create a favorable homebase for venture capitalists investing not only in Southeast Asia, but, more important, for international investors in India. This "market" enlargement strategy indicates a recognition by policy makers that Singapore's market is not sufficiently large to support a vibrant venture capital community.

The Singaporean effort to establish a venture capital industry is perhaps the most impressive in Asia. It combines various supply-side measures in terms of encouraging high-technology entrepreneurship from its universities and research institutes and its willingness to invest to attract foreign venture capitalists. It also invested in domestic venture capital firms to create a local venture capital pool. Moreover, though the SESDAQ is a weak exit market, Singapore continues to support it, thus trying to build demand for initial stock offerings. Finally, it has altered the legal environment to encourage the venture capital process. This is in addition to the already well regulated financial system that is accompanied by transparency and an absence of corruption. In summation, Singapore has made a promising start at creating a vibrant, self-sustaining venture capital community, however the long-term success of these efforts probably is predicated upon establishing itself as having a sufficiently good deal flow to justify a large venture capital community.

The Other Venture Capital Industries Malaysia, the Philippines, Thailand, Indonesia, and Vietnam

Each of these countries is missing either one or usually more than one precondition for the emergence of a successful venture capital industry. In each case, their venture capitalists are handicapped by some combination of a relatively weak industrial base, weak research (and, in some cases, teaching) universities, a problematic political structure, and/or a weak financial system. Despite the similarities, there are also differences. Malaysia, Thailand, and the Philippines have some activity and deal flow. In contrast, Indonesia and Vietnam have few

deals and only small venture capital industries. For all of these nations, establishing a thriving venture capital industry will require significant micro- and macro-organizational changes.

Malaysia

Of this group of Southeast Asian nations, Malaysia has the greatest concentration of venture capital, the most supportive government, and the most significant base of electronics expertise. Since 1972, when Intel opened an chip assembly and test facility in Penang, venture capital-financed Silicon Valley firms have operated factories in Malaysia. So, in relative terms, Malaysia had an advantage of close connections to Silicon Valley. From this one might expect that Malaysia would have been able to attract foreign investors and nurture a flourishing domestic venture capital industry. However, this has not occurred.

The Malaysian venture capital industry was established in 1984 with the formation of Malaysian Ventures Std. Bhd. by the Singaporean firm Southeast Asia Venture Investment (SEAVI), which was a joint venture with Advent International. According to Boocock (1995: 380) Malaysian Ventures had intended to invest in electronics, plastics, and ceramics, but ended up investing in "more conventional resource-based ventures in, for example, rubber products and furniture." Today, Malaysian Ventures/SEAVI has one partner in Kuala Lumpur, but the investment decisions are made in Singapore. The only other major international venture capital firm operating in Malaysia is a branch of the Walden Group, BI Walden Management. It has three funds in Malaysia with a total paid-in capital of approximately $26 million. Gradually, other venture capital funds were formed, and in 1999 there were 28 venture companies operating in Malaysia. The Malaysian Venture Capital Association was established in 1995 and by 2001 had grown from 13 to 15 members.

The total capital available was $667 million in 1999, which, though substantial, was small compared to the more wealthy nations in Asia (**see Table 1**). The sources are revealing as 45 percent came from government agencies, 30 percent from corporations, 17 percent from banks, and 5 percent from insurance companies (**Table O1**). Since the government controls the largest banks and many of the corporations, its role is probably even larger (AVCJ 2001: 122). Moreover, these percentages do not include the large loan and grant programs for small

and medium enterprises managed by the government. In effect, the government's presence is pervasive. From the perspective of a Western venture capitalist based in Singapore, Malaysia suffers from the government crowding out private investors (personal interview 2001). In addition to providing capital, the Malaysian government also offers tax incentives for venture capital investors, however Boocock (1995: 381) reported that his survey of venture capitalists indicated that they did not even bother to claim them, due to the bureaucratic difficulties. Given the government support for startups, venture capitalists in Malaysia concentrate upon financing later-stage firms to lower risks.

The investment decisions by venture capitalists are also affected by the pro-Malay ethnic policies that in 1995 required that non-Malay firms listing on the Malaysian stock exchange be significantly diluted. This policy is meant to discourage entrepreneurship by Malaysian Indians and Chinese. An unintended consequence of this might be an incentive for entrepreneurial non-Malays to form their ventures abroad. During our interviews throughout Asia, we found that a number of entrepreneurs and venture capitalists abroad were born in Malaysia. These individuals could be transformed into an asset, if they could be convinced to return or even to assist in creating a more favorable environment.

There are significant obstacles to the growth of venture capital in Malaysia. Though the infrastructure is quite good, government policies have been more mixed. For example, the government decision to impose foreign capital controls in 1997-1998 discouraged foreign investors including venture capitalists (AVCJ 2001: 118). Paradoxically, the government efforts to encourage entrepreneurship also created problems. For example, government programs to provide easy capital to startups has had the effect of crowding out private investors. This would not be such a problem except that government monies also distorted entrepreneurs' perceptions. A second problem was the existence of various ethnic affirmative action programs that channel investment not necessarily toward the best deals, but rather had a social welfare goal. The U.S. history indicates that programs with ulterior motives, such as channeling investment toward certain groups or regions as was the case of ill-performing Minority Enterprise Small Business Investment Corporations (MESBICs) in the U.S. or the various state and local venture capital programs targeted not solely at capital gains, performed marginally at best (Florida and Smith

1993). These institutional obstacles retarded the success of indigenous venture capital and discouraged foreign investment.

For foreign venture capitalists, it is necessary to receive permission from the government to make investments. One venture capitalist based in Singapore said in an interview that they had examined a deal in Malaysia, but that the approval process was so slow and cumbersome that they decided it was not a productive use of their officers' time and abandoned the deal. Given that most venture capital firms are more constrained by time more than money, time-consuming bureaucratic approval processes definitely discourage venture capitalists. Moreover, as venture capitalists discuss these difficulties among themselves, a nation receives a reputation that is difficult to overcome in the future.

The final obstacle to the emergence of a vibrant venture capital community in Malaysia is quite simply a lack of investment opportunities. Even though, there are many Silicon Valley firms operating in Malaysia, there have been only a limited number of spin-offs (Jomo et al. 1997). Moreover, the Malaysian universities are not so highly rated and have not been the source of many spin-outs. One venture capitalist, based in Singapore believed that Malaysian universities were not as good as Singapore's and that this was one of the reasons that there was little happening in Malaysia in terms of startups (Name withheld). In any country, the lack of investment opportunities is the one fact most likely to stifle the development of a venture capital community.

In 1999, the largest numbers of venture capital recipients were in the light manufacturing, electronics, information technology, and heavy manufacturing industries. The outcomes of Malaysian investment are difficult to measure, as there are no performance measures, though in most nations government over-involvement has rarely led to success. One possible measure could be the number of firms listed on the MESDAQ, the newly formed exchange with looser listing requirements for smaller companies. As of March 2001 there were three firms listed.

Malaysia has some of the attributes necessary to establish a venture capital community. However, there are also many obstacles. In contrast to the Singaporean and Hong Kong governments, the Malaysian government seems to work at cross-purposes when it comes to venture capital. Given the difficulties of creating a venture

capital community and the government's contradictory policies, Malaysia is likely to have only an occasional deal. However, Malaysia has some attributes that, in the proper climate, could encourage the growth of a venture capital sector.

Philippines

The Philippines is the nation that best exemplifies how a relatively attractive set of attributes can be entirely vitiated by a chaotic environment and corrupt government. In human resource terms, especially in software programming, connections to Silicon Valley, and English language capability, the Philippines exhibits strengths. However, the obstacles are so daunting as to deter all but the most intrepid venture capitalists from making investments. Thus it is not surprising that the venture capital available for investment is only $292 million, one of the smallest amounts in Asia. Given the recent political turmoil, it seems likely that venture capital investing will have decreased during 2000 and 2001 from its already low levels.

The Philippines was remarkable for how limited government efforts and support were. For example, in 1999 corporations were the source of 61 percent of the venture capital, banks and insurance firms contributed 15 percent each, while the government provided only 4 percent. Forty-five percent of the available venture capital came from outside Asia, 40 percent from within the country, and the remaining 15 percent came from other countries in Asia (AVCJ 2001: 151).

The beginnings of venture capital in the Philippines are hazy. For example, Glen (1997) found that the first effort by the IFC and local investors to establish a venture capital firm in the Philippines occurred in 1977, but failed. In the early 1980s, the "government established 17 bank-related 'venture companies'," that combined public and private monies, but their investment activity was confined to loans to the small and medium-sized firms Venture Capital Journal 1983: 4; Arana 2001). At the time, a U.S. delegation visited the Philippines for two days and was "particularly impressed with the similarity to the early stages of our [U.S.] SBIC development (Venture Capital Journal 1983: 5)." Today, all of these early firms have been closed or are inactive (AVCJ 2001: 147). The first true venture capital fund was the Philippine Venture Capital Fund (H&Q PV1) raised in 1989.

The IFC, ADB, the British Commonwealth Fund, the German Development Fund, and various private and public investors committed a total of $15.4 million, and Hambrecht & Quist Asia Pacific managed it. The return to H&Q PV1 in peso terms was 17 percent per annum and 11 percent per annum in U.S. dollar terms (Glen 1997). Though this was not an adequate return by U.S. venture capital standards, it was sufficient to prompt H&Q to raise $15.8 million for a second fund (H&Q AP2) in June 1995 from multilateral and bilateral public organizations. H&Q AP2 had an estimated return as of early 1998 of approximately 15.5 percent per annum. In 1998, H&Q raised its third fund for the Philippines again drawing upon the global community. The IFC also invested in two other funds specializing in the Philippines, Walden Asian Bank Ayala Ventures raised in 1995 and the All Asia Growth Ventures I also raised $20 million in 1995 (Joseph 1998). Despite these efforts, there are only 22 venture funds operated by 14 companies in the Philippines and a total of 60 professional venture capitalists.

Venture capital investments in the Philippines were quite eclectic in 1999 with the greatest concentration was in consumer-related areas (AVCJ 2001). The more interesting opportunity relates to the fact that Philippine universities have trained a large number of undergraduate software engineers who speak English well and have a cultural affinity to the U.S., but this human capital is largely underemployed. This technical workforce could be mobilized as contract programmers, especially since these well-trained programmers receive wages roughly comparable to similarly skilled Indian programmers. In fact, the antivirus software firm, Trend Micro has a headquarters in Manila dedicated to developing antivirus software. And yet, despite the global shortage of software programmers and good skills, there have been only a few venture capital funded software startups.

In contrast to Taiwan and, to a lesser degree, Singapore and China, the Philippines has not had an active practice of drawing upon immigrants in the U.S. and, especially, Silicon Valley to assist the nation in building stronger linkages. There are a number of individuals of Filipino extraction such as Diosdado Banatao, a serial entrepreneur and venture capitalist, who could be key interlocutors between the U.S. and Philippines. Such a strategy could accelerate the building of organizational linkages and be of great benefit in transferring technology.

At the moment, the government is preoccupied by other issues and may be incapable of creating the environment necessary to foster a normally functioning venture capital community.

The Philippine Stock Exchange (PSE) does provide an exit for firms, however the market is extremely volatile with stocks capable of dropping or gaining 30-40 percent in a single day. Further, the PSE is almost totally opaque. This lack of stability and trustworthiness makes it difficult to take a firm public. For example, in 1999 there were only two IPOs (AVCJ 2001:147). For this reason, PSE is unsuited for listing fledgling firms and raising development capital. The alternative exit strategy is to use either other regional markets or the NASDAQ. Mergers are also difficult, because few Western firms wish to purchase firms headquartered in the Philippines. Thus exit is quite difficult.

So, the Philippines has some of the human resources assets, both at home and in Silicon Valley, necessary to create a technology complex with a venture capital component. However, the political economic conditions are daunting, as the unsettled climate unnerves foreign investors and constantly threatens fledgling businesses dependent upon stable environments. As in most of the other nations in this group (the exception being Malaysia), corruption is a serious problem that inhibits business and adds to uncertainty. Given this environment, there may be some successful venture capital investments, but the steady, sustained pace of investment necessary to create a venture capital community seems unlikely in the medium-term future.

Indonesia, Thailand, and Vietnam

Venture capital in all three of these nations is even more limited. The financial, economic, political, legal, and social conditions make the operation of a venture capital firm difficult and the creation of a community of venture capitalists virtually impossible. These countries are characterized by widespread poverty, weak educational systems even for the elite, inconsistent regulations combined with endemic corruption, and tenuous linkages with the world financial community. The educational systems are not up to the standard of Singapore, Malaysia, or those of northern Asia. Not surprisingly, venture investing in these three nations has been stagnant, and cannot be expected to grow significantly in the near-term. In the future the situation in Vietnam might be

assisted somewhat by overseas Vietnamese willing to invest. However, any expectation that this might occur soon seems premature.

From 1997 through 1999, the amount of venture capital in Indonesia actually decreased, in Vietnam it stagnated in dollar terms, and in Thailand it has dropped steadily since the Asian financial crisis. The number of professional venture capitalists in all three nations was low. Vietnam stood out because agriculture/fisheries, construction, financial services and travel/hospitality were the largest categories of investments. In Indonesia agriculture was also an important investment category. In Thailand the investments varied widely with the largest category being Consumer Products and Services. In other words, the investment profiles for all of these nations indicate that there are few competitive strengths and/or truly attractive fields for venture capital investment.

Exits are difficult and in Vietnam they are nearly impossible -- the Vietnamese stock market was only formed in mid-2000. Moreover, Vietnam limits foreign ownership of a Vietnamese firm to no more than 30 percent meaning that a foreign venture capital firm cannot take a large enough stake to make the investment worthwhile (AVCJ 2001: 191). Listing on the Indonesian or Thai markets makes only slightly more sense, as both markets are thinly traded and not transparent. Thus there are no palatable exit strategies except, perhaps, listing in other regional markets or the NASDAQ, though these outlets are likely to be only open to the most established firms.

In these countries, the environment for venture capital is difficult. Indonesia has been in near constant political turmoil since the Asian financial crisis and this has been accompanied with attacks upon the more entrepreneurial classes. Thailand has been more stable than Indonesia politically and financially, but still has had much turmoil. The Vietnamese government has still not fully decided on the role of private (and especially foreign) capital in its economy. Given this litany of difficulties, any discussion of venture capitalism seems premature. These nations also have little high-technology economic activity and weak universities, thus truncating the opportunity for technology-based spinouts. Given this situation, Indonesia, Thailand, and Vietnam offer little opportunity for a venture capital community to become established and self-sustaining in the next five years.

6. General Recommendations

Each nation is unique and therefore general recommendations always suffer from a lack of specificity, however there are some general lessons that are suggestive:

1. Venture capital will have great difficulty in thriving in economies plagued by political turmoil and endemic corruption.
2. Foreign venture capitalists should be encouraged to invest and they must have currency convertibility.

   2a. National venture capitalists should be encouraged to partner with foreign venture capitalists and to invest in venture capital centers such as the U.S., Israel, or Taiwan as part of a learning experience and to spread risk.
3. Policies that do not explicitly encourage the private sector to invest in and manage venture capital firms will almost surely lead to failure.

   3a. The incentives must be structured to permit the venture capitalists (and entrepreneurs) to become wealthy.
4. Government-operated venture capital firms will nearly always fail, and often will crowd out private sector initiatives.
5. Nearly all of the "new" markets in Asia are thinly traded and illiquid. Moreover, financial disclosure and transparency is low. Unless a powerful regulator such as the U.S. SEC is empowered to prosecute fraud and other financial crimes, these markets will not ever become good vehicles for capital raising (exit is a SECONDARY phenomenon).
6. It is nearly always a mistake for the government to mandate investment fields, geographic regions for investment, specific deadlines, or various other performance parameters for venture capitalists. This prevents experimentation and concomitant learning.
7. Government regulations preventing the venture capitalists from undertaking their monitoring and control function such as limitations on the percentage of firm equity they hold or their ability to replace management will create moral hazards and prevent the evolution of a healthy relationship between the entrepreneur and venture capitalist.

8. Banks cannot and will not be able to perform the venture capital function. They should not be forbidden from investing in venture capital, but they should not be provided with incentives to undertake such activities.
9. Laws concerning venture capital should be adjusted to mirror those in the U.S. or Israel (roughly the same as the U.S.). Taiwan would also be a good model as its structures might closer approximate those of other Asian nations.
10. Successful entrepreneurship should be praised as an aspect of trying to shift the culture toward a high valuation of entrepreneurship. Also, bankruptcy laws should be revised to be less punitive and the stigma of failure in ventures should be ameliorated where possible, so that the social barrier to entrepreneurship is lessened.

Government Policy Recommendations

Recommendations for government policy for such a broad spectrum of nations is, at a minimum, ambitious and each country must consider it's comparative advantage. It would be impossible for Hong Kong to adopt a Taiwan strategy, because their initial endowments are so different. In terms of first principles, it is necessary for governments to have stable economies, stable currencies, minimal corruption, good educational systems especially higher education, and reasonable financial markets (here they need not be too developed, but they must be capable of developing). In many of these nations, the government must be actively involved in clearing away obstacles to entrepreneurship and venture capitalism as a practice, i.e., protection of management against investors, discouragement of merger and acquisition, an inadequate legal system etc. The creation of improved conditions can be phased, but it must be ongoing and should be clearly articulated. As the venture capital industry matures, it should become integrated into the policy-making process.

The successful creation of venture capital in Taiwan and Israel was dependent upon government action. However, in each case the government was careful to ensure the role of the private sector through its understanding at the outset that the goal was for it to gradually reduce it's role. In Taiwan the incentive was the 20 percent tax rebate for investments. Moreover, in the initial stage, foreign firms were invited to participate, and,

though only a few did, they were critical as knowledge transfer agents. The Israeli government had a different strategy. It provided an investment of $8 million or 40 percent of the total committed capital) to various Israeli investment institutions that were able to partner with an established foreign venture capitalist willing to invest in Israel. In both cases, the government created very strong incentives for private sector players to invest in venture capital. The government programs reduced the risk to investors, while permitting them to capture the potential benefit. Thus, risk was not eliminated, it was merely mitigated, while the reward was increased. With these types of government involvement, unsuccessful venture capitalists could be culled, while the successful ones entered a virtuous circle of self-reinforcement encouraged by their success. In both cases, the foreign venture capitalists were encouraged to participate.

Thus the government has an important role to play in sparking the birth of a venture capital industry. However, this role must be understood to be temporary and designed so that it can be temporary. Moreover, the strategy should be to alter the risk-reward calculation, but not eliminate it. The government should not eliminate the possibility of failure. Moreover, the rules should be as simple and transparent as possible consistent with the government's objectives. Systems that encourage micro-management by government bureaucrats or that aim to encourage the venture capitalists to undertake financial activities for purposes other than maximizing their capital gains from equity investments will likely result in failure or the development of risk-averse venture capital industries such as those of Korea and Japan.

7. Conclusions

Venture capital in Asia roughly tracks the various economies in Asia and its character resembles its host country. The Asian venture capital industry can be divided into four groups: Japan/Korea, Greater China (Hong Kong, Taiwan, Singapore), China, and developing Asia (Indonesia, Malaysia, Philippines, Thailand, Vietnam). Each political economy thus has a venture capital industry that is shaped by the local economy. Obviously, within each grouping the nations differ significantly, also. But, at this moment the three places where the venture capital industry has some resemblance to that in the U.S. are Taiwan, Singapore, and Hong Kong. In the case of the first

two, there has been a conscious effort to link closely with the U.S., and Hong Kong's venture capital industry draws upon its role as a global financial center, thereby resembling New York City.

For the other nations, creating a viable venture capital community will be more difficult. On the surface, given the relative absence of corruption, minimal social turmoil, and linkages to Silicon Valley, Malaysia would seem to be the most likely to develop a successful venture capital industry, however it suffers from financial uncertainty, racial cleavages, an emphasis on the national language to the exclusion of English, and government over-involvement in the economy. The Philippines also would seem to offer promise especially given its relatively well-trained software programmers, close connections with the U.S., and low wages, however like Thailand and Indonesia the unsettled political, economic and social climate make investing risky.

Korea and Japan, at this time, are more likely to be attractive to private equity for buy-outs, acquisitions, and expansion types of investment. However, with sufficient deregulation and transformation of the equity and labor markets a Silicon Valley-like venture capital industry could emerge. Probably today Korea is closer to making this transition, but there can be no doubt that were Japan to become more entrepreneurial, given the level of technical expertise existing in its population, it would become attractive for venture capital.

China is the most fascinating country. It has an abundance of possible opportunities in the following sectors:

1) Firms established to meet domestic demand, often in a joint venture with a foreign firm having a strong brand.

2) Infrastructure investment especially in the telecommunications.

3) Establishing contract manufacturing operations for the export market.

4) High technology startups drawing upon Chinese engineering talent from universities and research institutes.

There are many venture capitalists, foreign and domestic, that are investing in China using a wide variety of strategies. Moreover, government authorities at every level are attempting to fashion a legal, political, and social environment conducive to venture capital. And yet, there are many obstacles to the development of a vibrant venture capital community, and some of these are not easily addressed, because obstacles threaten central tenets

of the operation of the Chinese economy. These include currency convertibility, lack of good exit vehicles, corruption, a lack of transparency, and foreign economic relations especially accession to the WTO, to name the most salient.

There are also some more general issues that concern every nation in Asia. The first is the concern with creating "exits" as the way to encourage venture capital. Nearly every country has created a new stock market or section with loosened listing requirements. However, nearly all either began with low liquidity or after the bursting of Internet Bubble dropped so precipitously that they now suffer from low liquidity. With such low liquidity, these new markets actually do not offer exit paths.

One possible solution would be to merge all of these markets into a regional market, thereby creating greater interest in them. The obstacles to such a pan-Asian market are probably insurmountable in the near-term. It might be possible to begin a process of creating greater harmonization of standards by supporting meetings among regulators, accountants, and stock market officials throughout Asia in an effort to create greater understanding. These might create a path-dependent dynamic that could result in greater harmonization and a gradual spread of standards. Here Japan might be able to take the lead and it would certainly receive support from the other Asian nations.

Today, pan-Asian venture capital really does not exist. There are only a few firms such as Walden, WI Harper, H&Q Asia Pacific, and possibly Vertex Management that operate throughout Asia. The Asian Venture Capital Journal serves all of Asia. Then there is another group of Greater China investors, but the Asian venture capital industries remain separated by languages, customs, and laws. There may be a benefit to the constitution of an Asian Venture Capital Association as it would provide venture capitalists from throughout Asia an opportunity to network and begin lobbying for a more transparent and harmonized legal and regulatory environment for venture capital throughout Asia. Here the notable success of the European Venture Capital Association seems an apt example.

The nations that have been most successful in creating a venture capital industry are those with the closest "human" ties to the U.S., namely Taiwan and Singapore. Also, these nations have largely adopted the U.S. model

with specific changes to suit their environment. In each case the governments developed policies that singled out venture capital as an important, but not the only, aspect of their efforts to mobilize entrepreneurship. These nations can be seen as models for the effective building of strong industrial clusters.

There can be no doubt that the U.S. venture capital model has worked well in the past, and has been successfully transferred to certain nations. However, it likely is not a model for all nations, either East Asian or in other parts of the world. Unfortunately, few other models have proven to be strong substitutes for creating a high technology-based entrepreneurial environment. Thus far there have not been other successful hybrid models -- venture capital seems to be a very fragile institution that does not hybridize well. Of course, venture capital and high technology entrepreneurship are not the only ways to develop as Japan and many other developed nations have shown.

Despite the many obstacles to creating a vibrant venture capital community in the nations of Asia, during the last two decades there have been continuing efforts and the industry has taken root, especially in North Asia, Hong Kong, and Singapore. 2000 and 2001 have been difficult years for venture capital globally, and the environment may continue to be negative for quite some time. For those nations that have only recently developed U.S.-style equity-based venture capital, their entire venture capital industry may fail due to the severity of the downturn. Unfortunately, there may be little governments can do to protect venture capital from failure. However, the venture capitalists and national venture capitalist communities able to survive without becoming wards of the government will be poised for growth during the next recovery.

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