# Entrepreneurship in Japan: A Data Report

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**Introduction**

Institutional and legal barriers are commonly cited to explain Japan's consistent ranking, by the Global Entrepreneurship Monitor study [1], as the economy with the lowest amount of entrepreneurial activity among OECD nations. Long seen as an innovative economic engine – it remains one of the most prolific nations in terms of awarded patents and R&D expenditures - Japan has been reckoned to be a peculiar case in the literature of innovation and entrepreneurship.

In contrast to the Silicon Valley model and other clusters in Scandinavia and Israel, observers often credit Japan's innovation level to the strength of its large companies.[2] Institutions such as cross-shareholding, the keiretsu system of vertical and horizontal inter-firm relationships, the high cost and immobility of labor and capital, and cultural aspects are frequently cited to explain the reported low level of innovative entrepreneurship and a reported paucity of global new industry altering products. [3] [4].

Partially to reverse this perceived state of entrepreneurial affairs, legal and institutional reforms were legion in Japan during the decade of financial reform of 1995-2005. [5] The innovation strategies of Japanese firms during the pre-bubble decade were predicated on three institutional supports: long-term business relationships, a main bank supervised corporate governance system, and labor market stability via lifetime employment. Subsequently, after a series of legislative reforms and a period of bank instability, these institutional bases became obsolete and firms sought new strategies for profit maximization.

New economic strategies made it more imperative for firms to focus on the most profitable lines of business in the most value added phases of the value chain. One consequence of this new focus was the continuing move of manufacturing to outside of Japan, implying further alteration of strategies for Japan's companies. We suggest that Japanese firms have responded by product innovations and entrepreneurship in new industries that rely on the strength of human capital development strategies that worked well during earlier eras of strong economic growth. Further, a combination of government policies aimed at empowering the market and fostering new company formation, and the desire to emulate the rapidly rising equity values in the US NASDAQ market, have resulted in new firms that create creative business process and product innovations.

This report, using cross-sectional data of over 55,000 new Japanese corporations founded from 1998 through 2008 and provided by Teikoku Data Bank, across all industrial

classifications, will examine the idea that institutional reform may be decisive in emergent firms becoming increasingly able to succeed while supplanting incumbent firms in Japan thereby creating a potential scenario for employment growth.

**Japan and Entrepreneurship**

Japan is often reckoned by observers to be a unique case. The innovation and business dynamic, while studied intensively during the 1980's, has been supplanted by studies of Japan's economic malaise and recovery potential. [6] The entrepreneurial dynamic of Japan, and indeed of small companies there in general, are incompletely accounted for in the studies of what came to be know as Japan Inc. Recently, however, a new stream of scholarship has emerged examining a potentially transformed business logic after Japan's protracted recession in the 1990's. Notably, in her recent book, Schaede (2008) asserts that Japan has passed a "strategic inflection point" describing a broad array of economic, organizational and legal trends that may have altered the business and social logic of Japan. Following Schaede, in this report we want to examine the entrepreneurial dynamic in Japan *after* this strategic inflection point.

Entrepreneurship rates in Japan declined steadily after the recovery from the Pacific War effects, a decline that persisted through the 1990's. [7] The consequent relative scarcity of entrepreneurialism in Japan - continuing through the asset bubble of the 1980's - was examined by Harada in 2005, who argued that institutional factors favoring investment in large company assets lowered the rate of SME (small and medium enterprise) formation which was exacerbated by the recession starting in 1990, [8]. Genda and Kamabayashi examined the secular declining trend in self-employment in Japan, and concluded that the declining opportunities in areas distant from the major population centers reduced the overall rate of entrepreneurship. They found, in particular, that declining income potential for the working spouse of an entrepreneur, along with declining entrepreneurial opportunity outside of the major population centers opportunity - from demographic changes - were causative in the suppression of startup activity.

The persistent decline in Japanese asset values during the 1990s engendered much policy, legal and corporate strategic responses. As the Japanese economy reached its nadir after the collapse of its asset bubble in 1990, the economic developments affected the strategies of many Japanese firms. Assessments of Japan's entrepreneurial and innovation structures increasingly became the subject of re-examination. A broad business and policy

criticism arose during the prolonged post-bubble recession that the legal and informal institutional architecture of Japan was no longer relevant to a new economic logic in a globalized setting with important rising Asian competitor countries,[6]. New laws affecting the formation, financing, and exit or dissolution of firms were legion in the wake of the main body of reform. [3] A table of the legislative changes is presented below, (TABLE 1).

| Capital Deregulation |
|---|
| • 1997, allowing pension funds to invest in VC; tax benefits for angel investments<br>• 1998, creating limited partnerships for VC firms; law to redirect METI resources to new companies; allowed stock "swaps" to facilitate acquisitions<br>• 2003, capital requirement for new corporations lowered from Y10million to Y1 |
| **Corporate Structure Reforms** |
| • 1997 mergers and acquisitions simplified, holding companies allowed<br>• 2000 new rehabilitation bankruptcy procedure; less "at risk" in bankruptcy; simplified division divestiture<br>• 2002 permitted limitation of director's liability<br>• 2003 corporate governance reform, committee system created<br>• 2005 accounting and reporting reforms<br>• 2007 triangular mergers allowed |
| **Labor Mobility** |
| • 1997 Stock option plans created; private employment agencies allowed<br>• 1999 foreign workers admission liberalized<br>• 2002 stock option plans liberalized |
| **University- Industry Linkages** |
| • 1998 National universities allowed to establish TLO's and own patents<br>• 1999 Private firms allowed to own IP created in universities<br>• 2000 Rules liberalized to allow faculty at national universities to depart to start ventures without loss of tenure. |

Table 1

Regulatory and legislative changes of this magnitude can be associated with changes in practice and the outcomes of business activities. It is well known in academic literature that new firms and new business strategies often find their genesis in the wake of formal changes to regulatory rules or legal ecologies. For example, the legal liberalization of licensing and importation requirements for wines and spirits in Japan during the 1990's resulted in the formation of hundreds of wine importing companies in that period. Moreover, recent literature on institutional processes informs us that the practices of economic agents are altered in the wake of formal legal and regulatory changes. So, we expect some effect to be

evident given the breadth of changes in the legal environment surrounding entrepreneurship that occurred in Japan in the period 1995-2005.

Our dataset consists of financial, demographic, and legal organizational data, comprehensive over all industries, on over 55,000 operating Japanese corporations founded during the years 1998-2008. The data was collected by Teikoku Data Bank, http://www.tdb.co.jp/, a business information collection service company. TDB collects data on all Japanese firms in furtherance of its business credit ratings service. Among its proprietary databases, this study uses data from TDB's COSMOS 2 database of corporate information. The COSMOS 2 database consists of all corporations organized under Japanese law from January 1999 through December 2008 and consists of 155,022 companies.

In order to examine emerging firms, we further refined the database by selecting only companies organized as: normal corporations, (*kabushiki kaisha* 株式会社), special non-stock issuing corporations (*tokurei yugen kaisha* 特例有限会社, limited partnerships (*goshi-kaisha* 合資会社 and *godo kaisha* 合同会社), general partnerships, (*Gomei kaisha* 合名会社 ), and non-profits. In addition, to ensure we analyzed only emerging firms we selected firms that had no outside corporate ownership. These criteria reduced our dataset to 42,228 companies. We eliminated 126 companies that were new bank holding companies as they were legal constructs adsorbing recapitalized old banking companies during the bank restructuring efforts, [9]. An additional 4,327 firms were eliminated for the dataset because they did not contain market rank information. The eliminated firms were distributed uniformly across industries and capital size and should not introduce bias. After these eliminations, 37,771 firms remained in our dataset.

Each record contains data fields that we classify into four groups: identification and structure, financial, market position, supplier base, and founder demographics.

*Identification and structure* – fields in this category define the company, its organization, industry (by SIC code), and legal form.

*Financial* – fields in this category define sales, profitability, initial capital, debt-equity ratio, employees. The data in the financial fields are limited to three years of history at most, (2006, 2007, 2008)

*Market Position* – fields consist of company rankings – both national and prefectural – in terms of sales within an industry.

*Supplier Base* – the top ten, in terms of purchase volume, suppliers to each firm are listed,

*Founder Demographics* – fields in this category include the founder's gender, age, education, title, address and birthplace.

Futrther, we classify firms as either tech or non-tech by their membership in the industries listed below. We make note that these classifications differ from common classifications found, for example, in the Kaufmann survey.

| SIC Category | Description | Dataset |
|---|---|---|
| 28 | Chemicals | Kauffman, STAJE |
| 35 | Industrial Machinery | Kauffman, STAJE |
| 36 | Electronics (incl. Semiconductors) | Kauffman, STAJE |
| 38 | Instruments, Test Equipment | Kauffman, STAJE |
| 372 | Aircraft | STAJE |
| 376 | Guided Missiles, Spacecraft | STAJE |
| 737 | Software, Data Processing (incl. ISP's) | STAJE |
| 871 | Engineering Service | STAJE |
| 873 | Research Centers | STAJE |

In this report, we review common measures of new companies and company growth, as well as demographic dimensions of entrepreneurs. This report presents data on new firms in Japan after the reforms as well as some recent data on venture capital financing in Japan as well as data on innovation in Japan. It is hoped that the data presented will clarify the status of new and innovative firms and strategies in Japan to be used in the formulation of policy responses.

We present selected data in three sections:

I. New Company Data
    a. Character and Industries
    b. Performance
    c. Demographics
    d. Perceptions
II. Innovation
    a. Patents by Industry

I. NEW COMPANY DATA

Character and Industries

- New, independent, companies formed at a consistent rate (fig. 1), bankruptcies are also steady and at a significantly lower rate than U.S. firms (fig. 2).

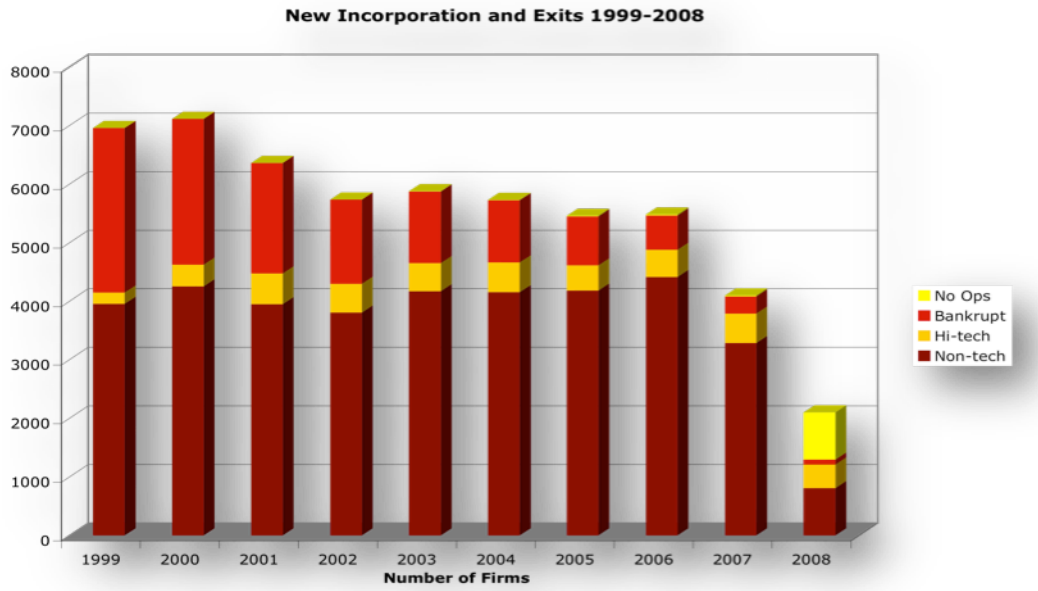


Fig 1

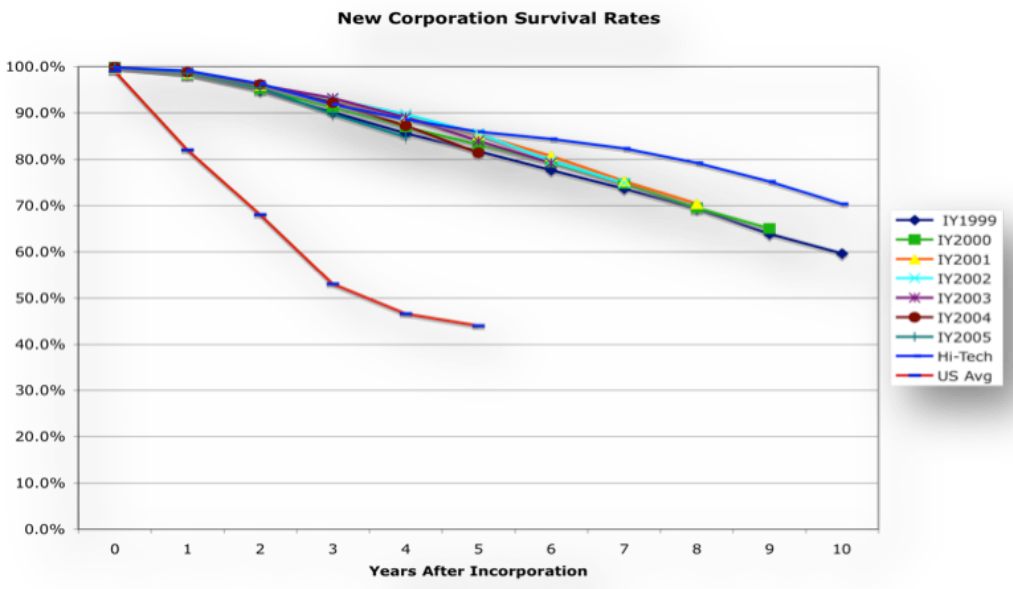


Fig. 2

- New independent firms are formed in locations roughly in proportion to the population distribution, (fig. 3).

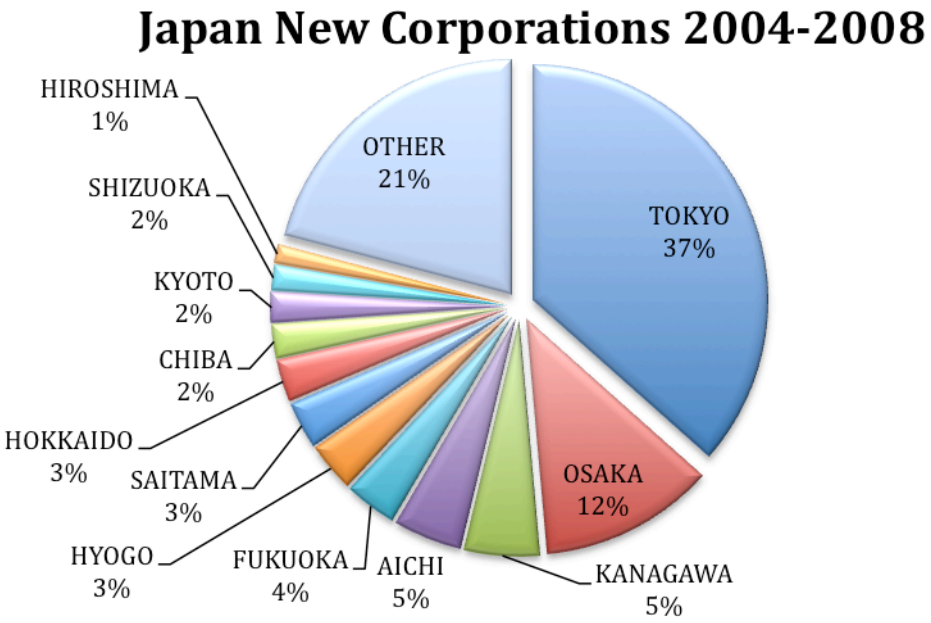


Fig. 3

- However, high-tech firms are formed predominantly in Tokyo, far above the population proportion, (fig. 4).

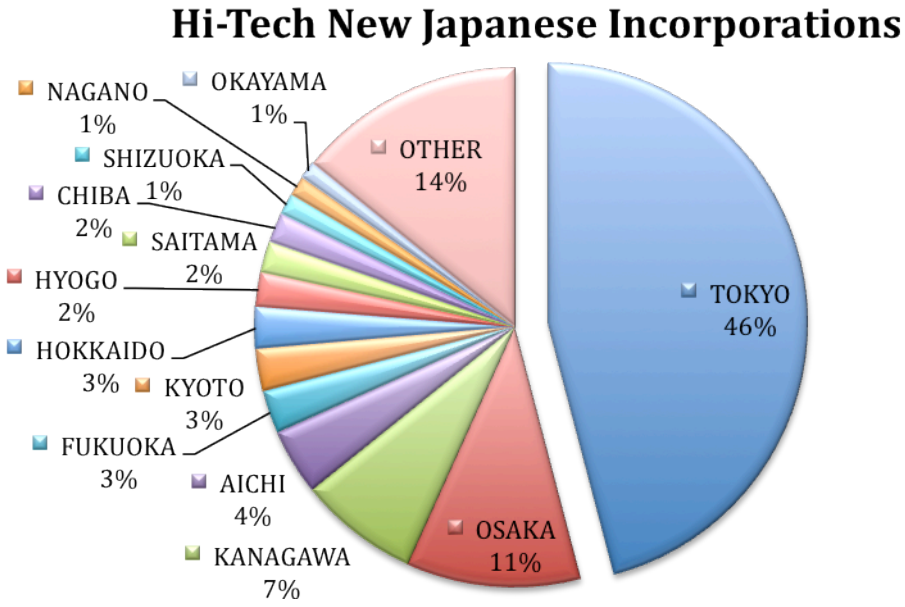


Fig. 4

- New, independent firms form predominantly in the wholesale trade, real estate and construction, and customized software and business services, (fig 5)

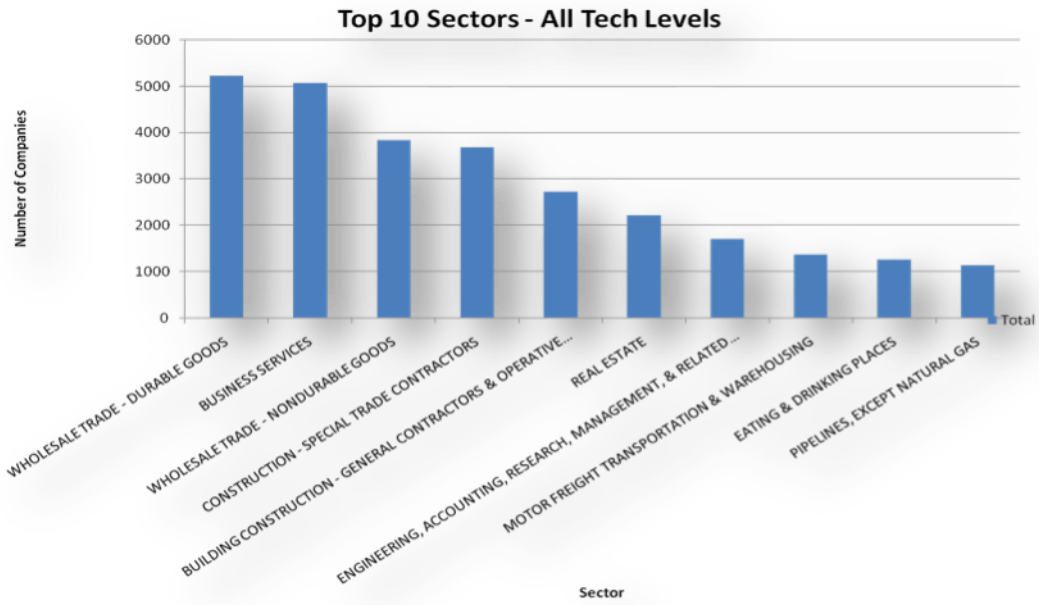


Fig 5

- New technology firms in Japan are dominated by software (custom and packaged), electrical components, and industrial technologies, (fig 6).

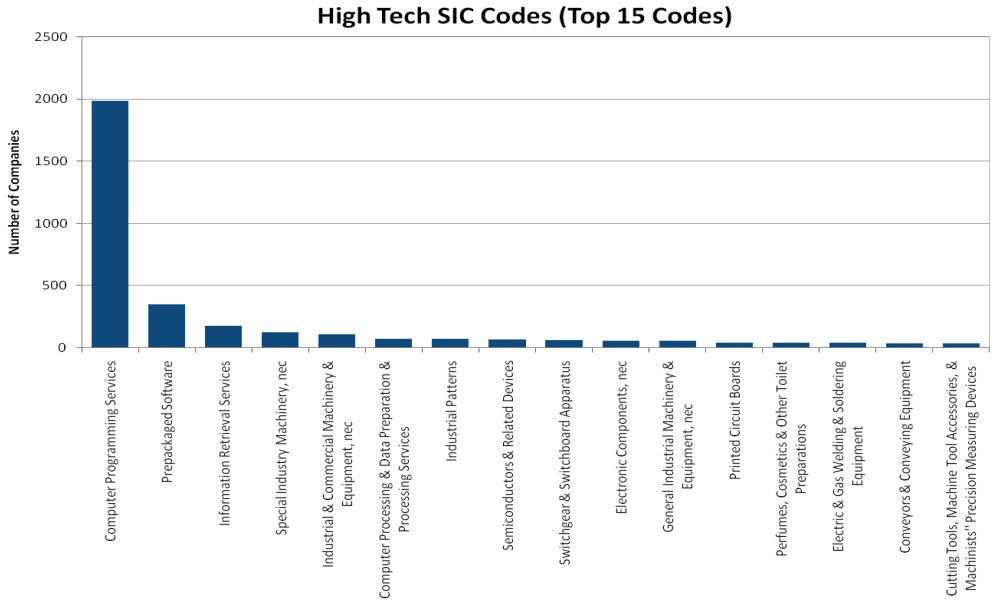


Fig 6

- By revenue volume, the top ten industries for the formation of new independent companies is presented in Table 2:

| |
|---|
| 1. Chemicals and Chemical Processing (incl. pharma) |
| 2. Amusements (Movies, Parks) |
| 3. Insurance |
| 4. Wholesale, non-durable |
| 5. Retail Stores |
| 6. Stock Brokers |
| 7. Marine Transport |
| 8. Motor Vehicle Parts |
| 9. Hotels |
| 10. Non-metallic mineral processing |

Table 2

- The proportions of firms starting in various industries is reasonably constant over the data period.

Distribution of Starts (Corporations) by Industry Code

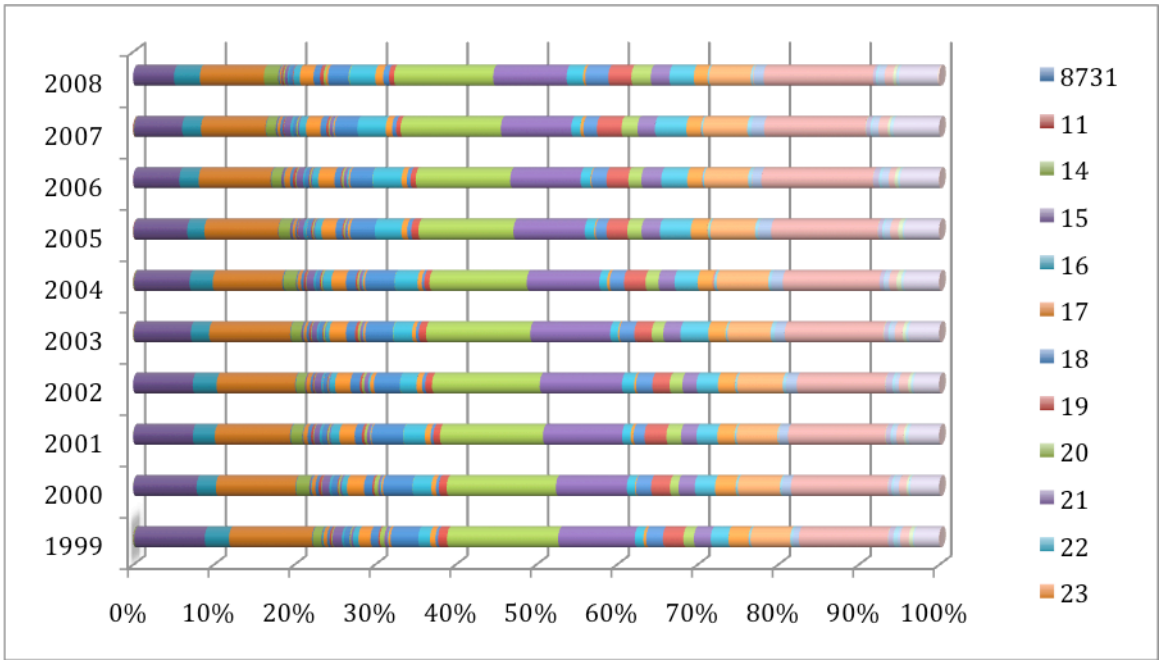


Fig 7

b) Performance

- The new, independent corporations employed approximately 500,000 of the Japanese workforce in 2008 and are concentrated in the same sectors as in fig. 5, (above). The greatest gain in employment were from firms founded during the period 1999-2003.

- Revenue Trends
    - Sales growth for new independent companies totals about 7% of GDP and sales gains were concentrated in the Transportation Service and Chemical industries in recent years.

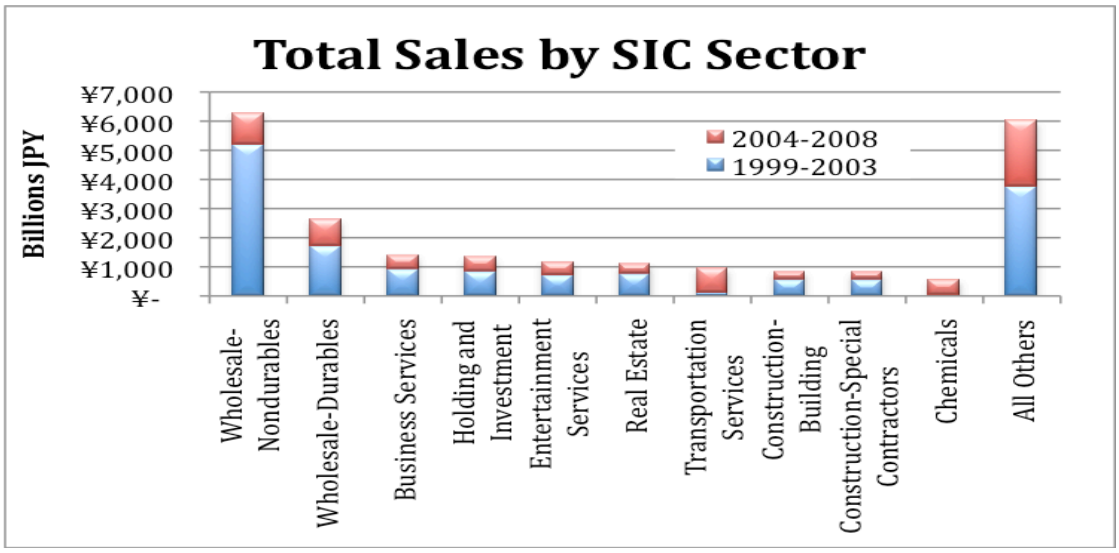


Fig 8

During the Japan, Inc. era, it is suggested that a business advantage accrues to the incumbent firm. Institutional and organizational structure and complementarities, unique to Japan, seemed to operate to empower incumbent firms in opportunistic market niches thus reducing the potential of entrants and creating a stability of firms in a technical market not in evidence in hi-tech industries in Silicon Valley.[7]

Figure 9 shows that, at least after the reforms post 1997, new firms, on aggregate and by industry, grow – in terms of their percentile market rank -to average industry size by their second or third year and average 70% percentile industry sales after five years or so.

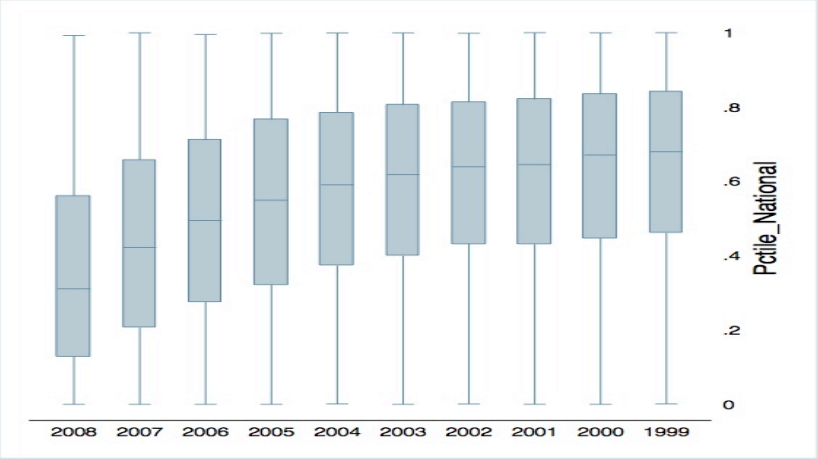


Fig 9

- Some new corporations come to be the largest firms in their industries within a few years of founding, seeming to contradict the common wisdom:
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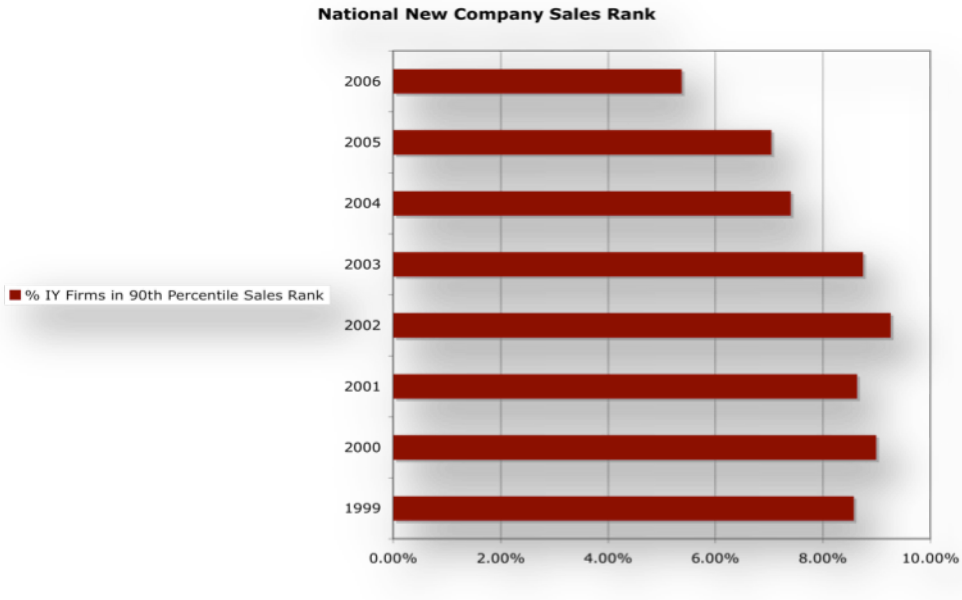


Fig 10

- Among hi-tech companies, some corporations, founded since 2004, have become quite large in terms of sales, particularly in electronic and industrial equipment industries:

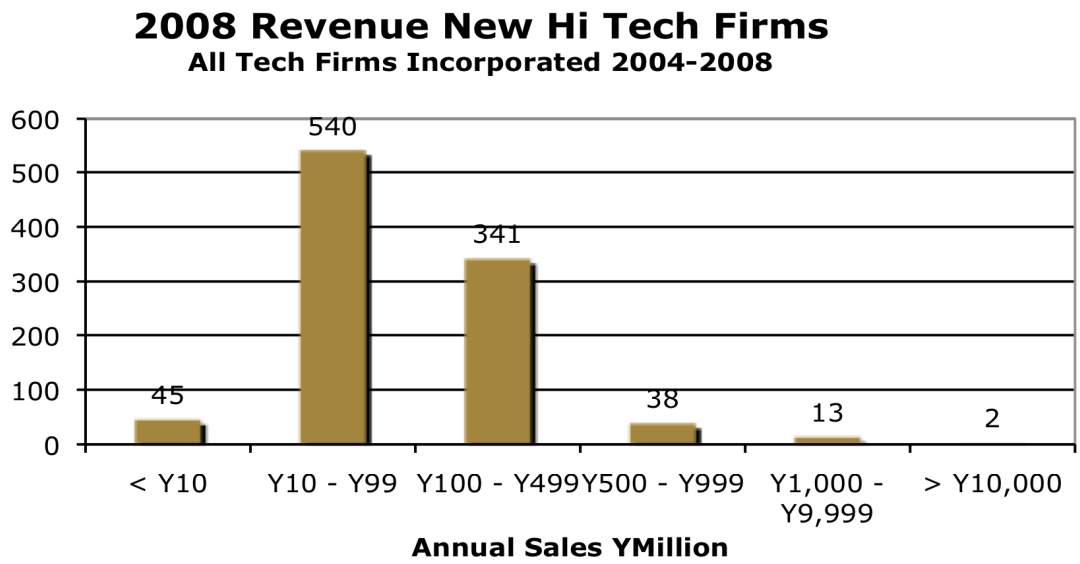


Fig 11

- Main banks were the institutional pillars of large Japanese corporations before 1990, and their subsequent reorganization weakened them with a consequent partial unwinding of their structures: cross-shareholding declined, and the keiretsu lessened in importance. Since economic forces of new firm survival, in addition to the momentum forces inherent in innovation processes, combine with large company institutional changes, we hypothesize that new firms will exhibit lesser degrees of common supplier bonds than were engendered in the older system. Figure twelve examines the proportion of supplier sharing within a bank cohort among new corporations. Except in the real estate business, we find little evidnce of supplier linkages or legacies.

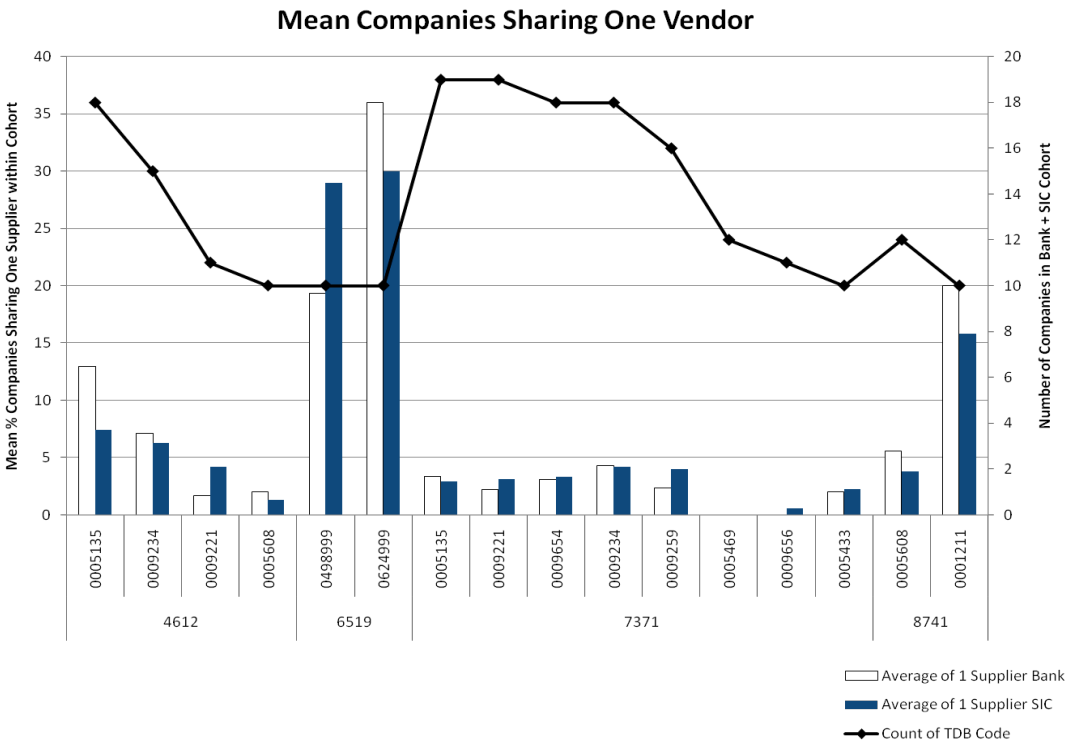


**Fig 12**

## Demographics

- The average age of a founder of a new corporation in Japan is about 40 years old, fig 13, women new company CEO's are younger and about 4% of the total (red):

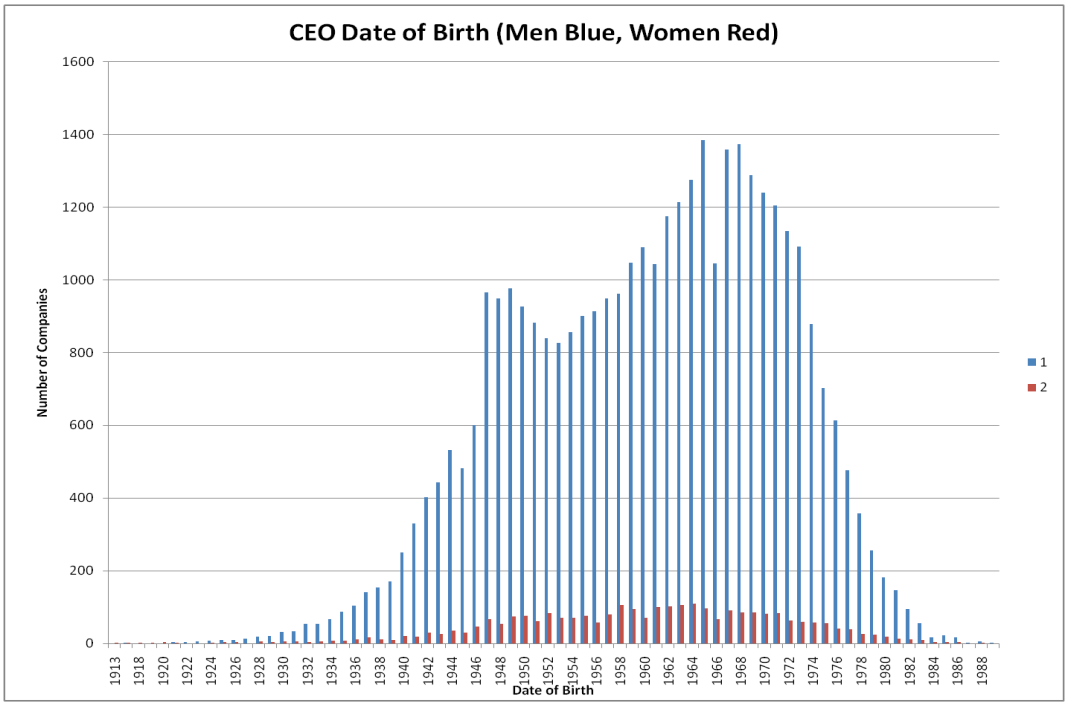


Figure 13

In the relatively rigid labor markets of Japan[6], and declining opportunity for self employment in Japan, [10] , we argue that the supply of entrepreneurs, not embedded in static organizations or searching for opportunity will increasingly be women and younger. There is increasing evidence, that women in particular are entering ICT and Internet businesses at a greater rate since the barriers to entry are low and capital requirements are minimal. [11] Our data, figure 14, indicates that firms led by women have higher median sales:

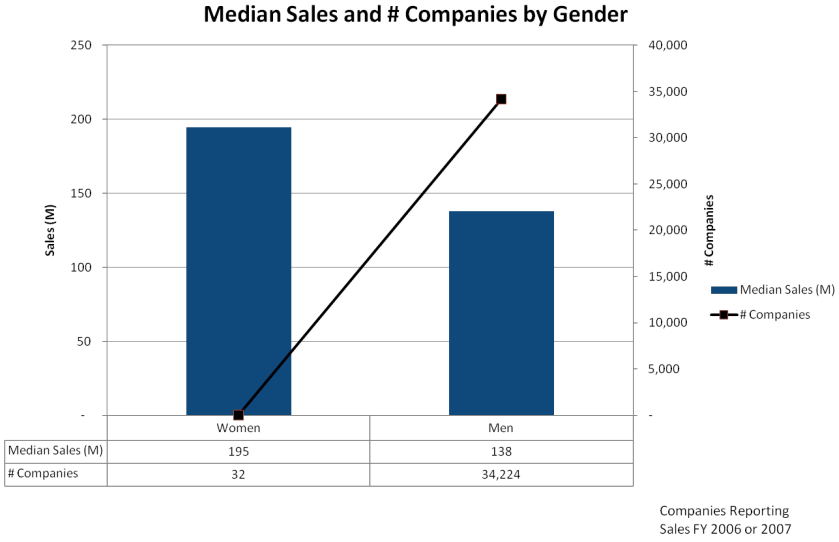


Fig 14

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- Women led companies also have much more variable market rank levels measured by percentile ranks of sales (women are coded as 1 in the chart below):

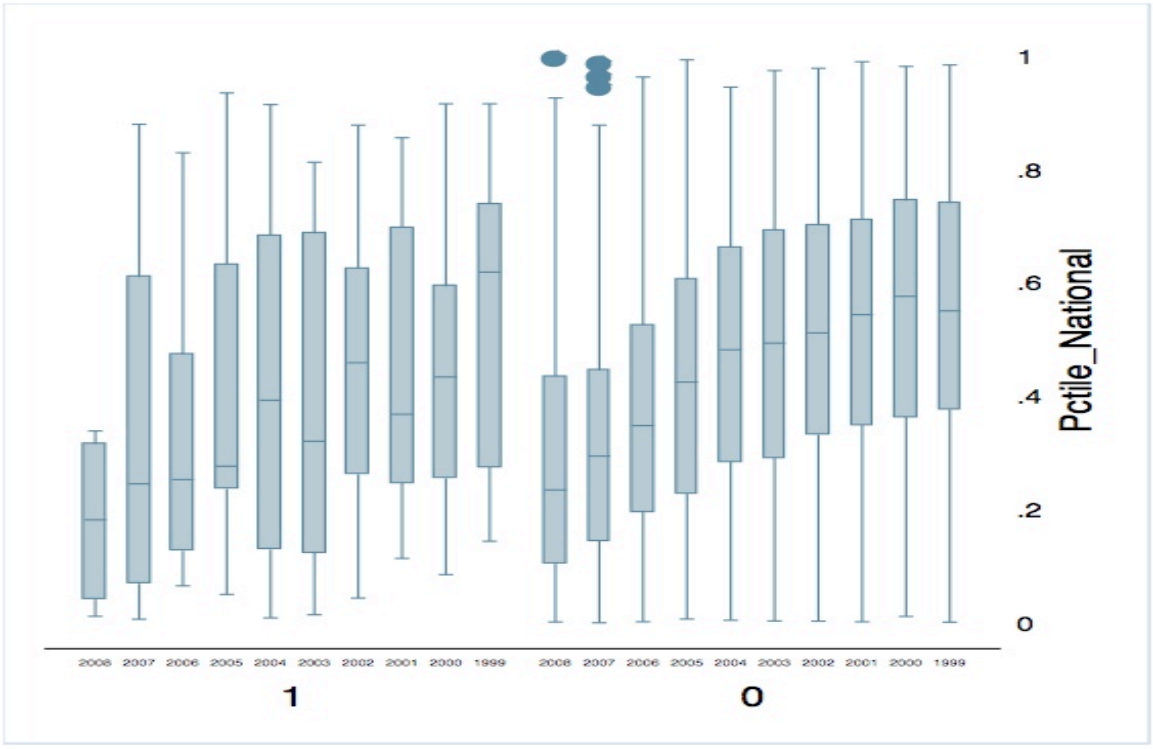


Fig 15

- The CEO's of new Japanese firms hail from some of the largest universities in Japan. But the second largest university producer of technology CEO's are universities overseas, fig 16.

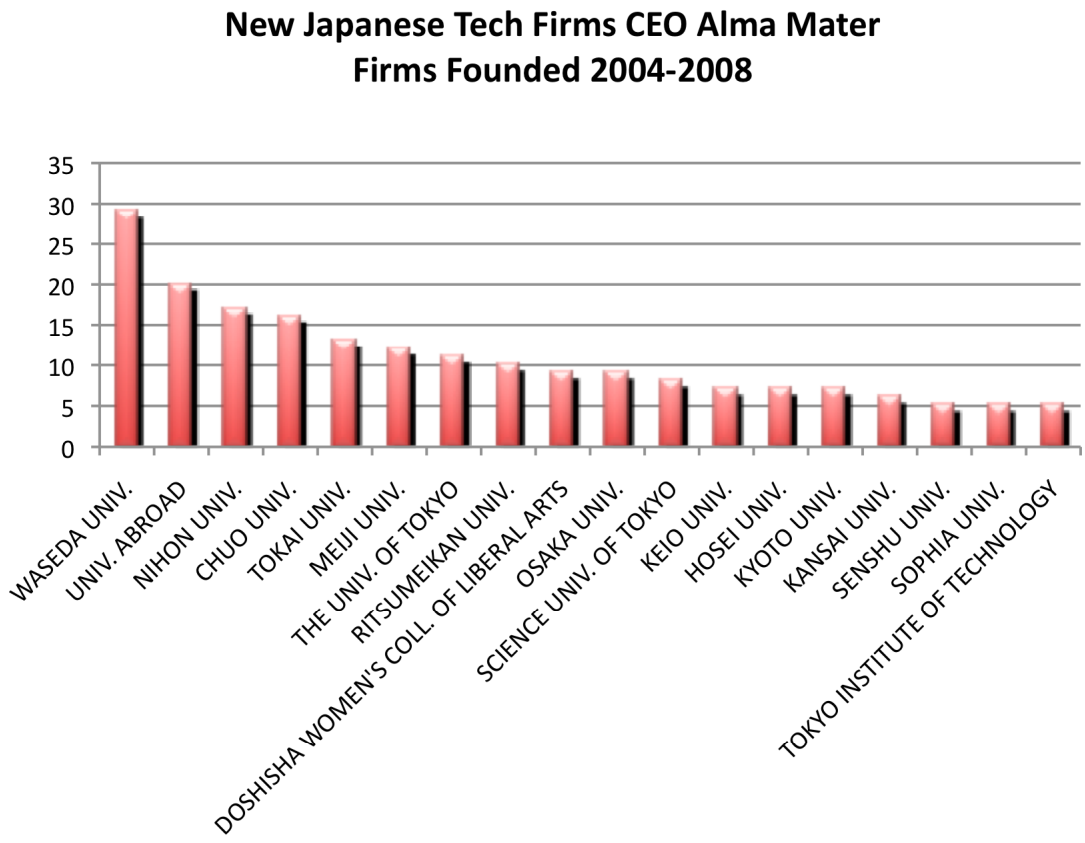


Fig 16

- When these counts of new corporation technology CEO's are normalized to find the rate at which Japanese universities graduate technology entrepreneurs, the alma mater ranking changes suggesting an advantage from relatively smaller, technical universities in terms of technical entrepreneurship:

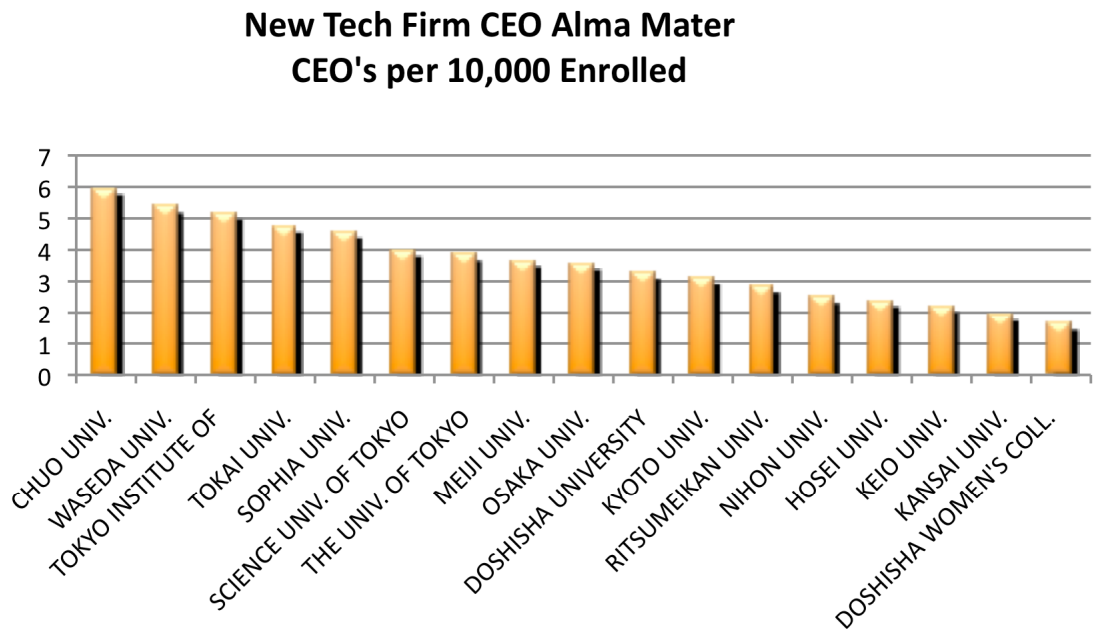


Fig 17

**INNOVATION LEVEL[12]**

- A narrative exists in the poular press that Japan has fallen behind other countries in terms of innovation. The data, however, particularly in new industries, suggests otherwise. Japan leads Asia in terms of U.S. patents:

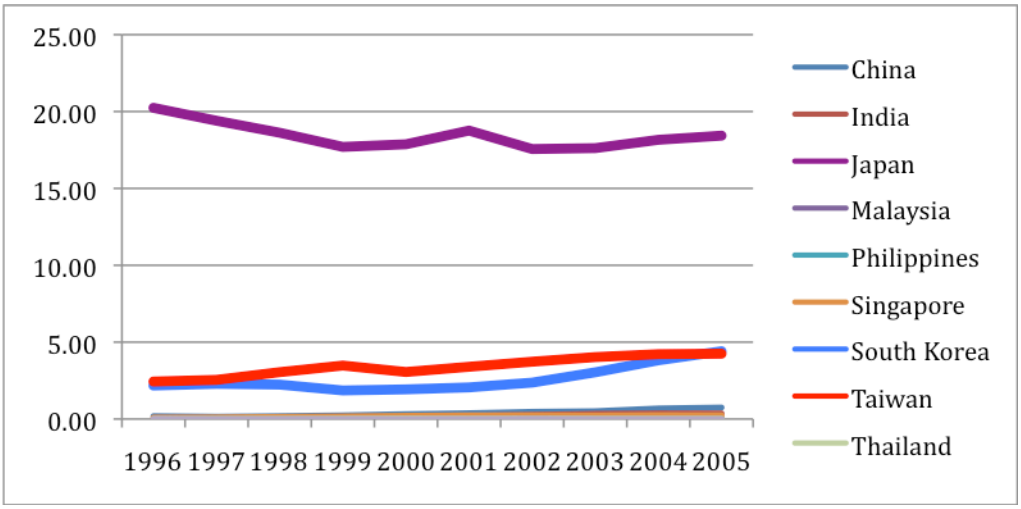


Fig 18

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- Morover, Japan leads in terms of patents, in advanced industries:
    - Biotechnology

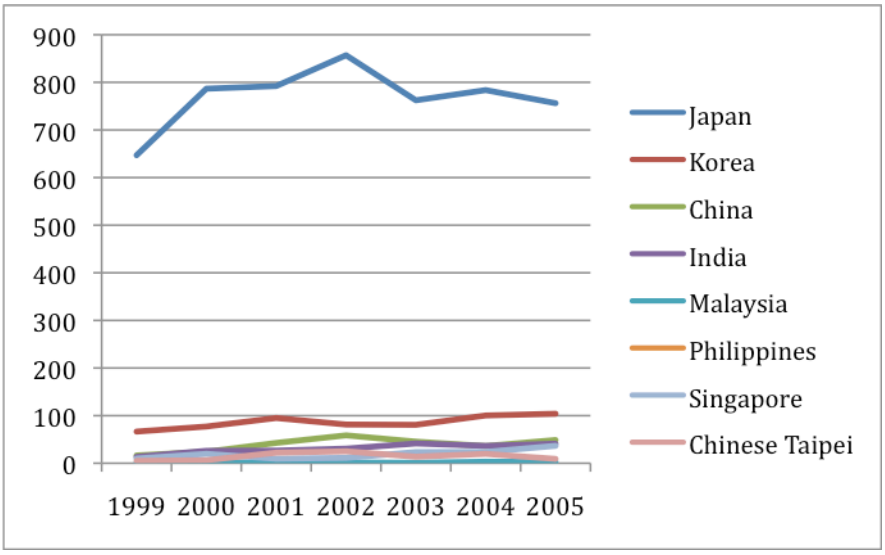


Fig 19

    - Internet and Communications

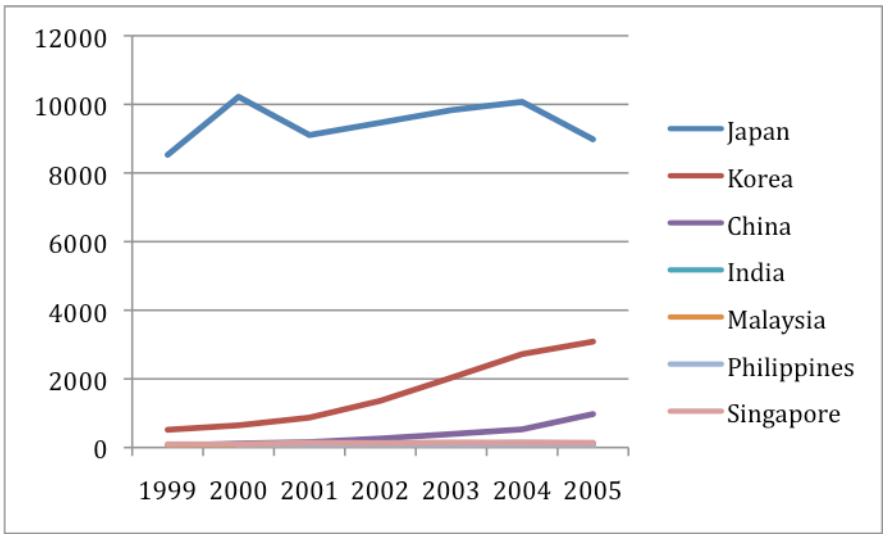


Fig 20

- Renewable Energy

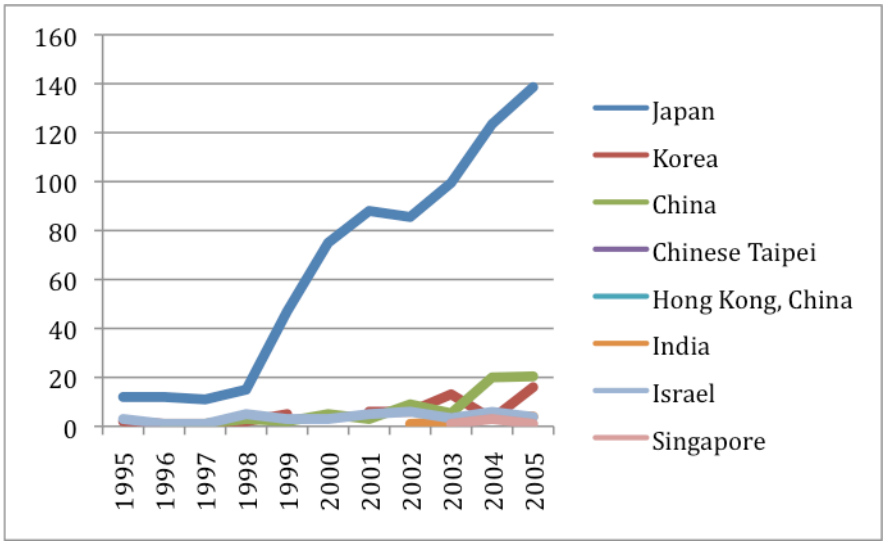


Fig 21

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**DISCUSSION**

In contrast to the evidence presented in this report from new company data, earlier observers had differing views of the potential for new companies in Japan. Chandler, in a description of the worldwide electronics industry, discusses the organizational advantages of large Japanese firms to the detriment of SME's. In his view, established Japanese firms' advantages in organizational learning and networking allow them to develop and commercialize new technologies faster and more effectively than firms in other advanced economies. Moreover, he argued that those advantages overrode the usual advantages of startups' agility by suggesting that incumbent firms in Japan block the entry of new ones,[13]. So, in the pre-reform Japan, the expectation should be that incumbent firms prevent market incursions by emerging firms resulting in the equilibrium that Chandler's arguments, repeated by many in Japan, implies.

The data presented here does not agree with that view. Our data indicates that as companies are founded more recently, after institutional reforms are legislated and embedded, their rate of market penetration in terms of percentile rank increases beyond an average size. This is counter to the expected static situation. In the static case, firms take some quantity of time to play out their innovation and market strategies to succeed. Thus, in the static case, we expect firms to gradually approach the average ($50^{th}$ percentile) rank. Instead, we find rapid growth of new firms to above average sales percentiles. We do not attempt to explain this, but our results are consistent with several arguments that might account for this.

First, from the institutional perspective, new institutional rules - such as ease of company formation, supporting entities, changing financial alternatives for growth, and altered exit payoff through reformed public markets, and merger and acquisition laws - can combine to create a new equilibrium where firms can enjoy faster growth trajectories. Second, from a resource-based view, it may be that with effective reforms less resources are expended on startup organizational issues and more resources can be devoted to gaining market share. Third, it could also be that industries in Japan are pulverizing which would make a static sales level appear to gain in market rank. But there is little evidence of that and the data is across many industries. Alternatively, new firms could be increasingly started in industries that present better opportunities for market penetration. However, that suggest that there is a regular diversification of entrepreneurial opportunities that are evident to agents over the ten years of study, which seems unlikely, and the data in the TDB dataset show an even distribution of industries across the years of data.

Our study also suggests that women led firms have better success in term of market rank percentile and sales level than male led firms. We theorize that women might find complementarities with the software and internet economy, [11], and that these complementary startup ecologies provide another rich area of research for scholars of both business and Japanese culture to explore.

Thus, while market rank percentile is not a direct measure of market share, the counter-intuitive result that more recently founded firms find greater market penetration suggests the possibility of rich research to find causal effects. Implied in the observed relative success of new firms, especially technological firms, it may indeed be that Japan has passed a strategic inflection point.

1. *Global Entrepreneurship Monitor*. 2009, Babson College.
2. Suzuki, K., S.-H. Kim, and Z.-T. Bae, *Entrepreneurship in Japan and Silicon Valley: A Comparative Study.* Technovation, 2002. **22**: p. 595-606.
3. Rowen, H.S. and A.M. Toyoda, *From Keiretsu to Startups: Japan's Push for High Tech Entrepreneurship*, in *Japan Political Economy Workshop*. 2002, Walter Shorenstein Asia Pacific Reseach Center: Stanford University.
4. Dujarric, R. and A. Hagiu, *Capitalizing on Innovation: The Case of Japan*, in *Harvard Business School Strategy Unit Working Paper No. 09-114.* . 2009.
5. Schaede, U., *Choose and focus : Japanese business strategies for the 21st century*. 2008, Ithaca, N.Y.: Cornell University Press. ix, 291 p.
6. Vogel, S.K., *Japan remodeled : how government and industry are reforming Japanese capitalism*. 2006, Ithaca: Cornell University Press. 250 p.
7. Chesbrough, H., *The organizational impact of technological change: a comparative theory of national institutional factors* Industrial and Corporate Change, 199. **8**(3): p. 447-485.
8. Harada, N., *Potential Entrepreneurship in Japan.* Small Business Economics, 2005. **25**: p. 293-304.
9. Hoshi, T. and A.K. Kashyap, *The Japanese Banking Crisis: Where Did It Come from and How Will It End?* Macroeconomics Annual, 1999. **14**: p. 129-201.
10. Genda, Y. and R. Kambayashi, *Declining Self-Employment in Japan.* Journal of the Japanese and International Economies, 2002. **16**: p. 73-91.
11. Griffy-Brown, C., *Women, technology and entrepreneurship*, in *Graziadio Business report*. 2007, Pepperdine University.
12. Hoetker, G., *"Wounded goose?" Japan's place in Asia's innovation ecosystem*. 2008, University of Illinois.
13. Chandler, A.D., T. Hikino, and A. von Nordenflycht, *Inventing the Electronic Century: The Epic Story of the Consumer Electronics and Computer Industries*. 2001, New York: Free Press.