

Innovation Drivers

High-Value Collaborative Ties Between Japan and the San Francisco Bay Area

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The following brief reflects themes developed at a 2014 symposium organized by the Bay Area Council Economic Institute and sponsored by Union Bank. Sean Randolph, President and CEO of the Bay Area Council Economic Institute, developed the analysis with the Institute's Vice President Tracey Grose and support from Research Associates Saori Hamidi and Alex Foard. Contributors included Patrick Bray, PacificVision Partners; Michi Kaifu, ENOTECH Consulting; Aiko Fushida, KDDI America; Mitch Kitamura, Draper Nexus Ventures; Kevin Kuhn, Mitsubishi Corporation (Americas); Austin Noronha, Sony Corporation of America; Kenji Kushida, Stanford University; and John Thomas and Rochelle Kopp, board members of the Japan Society of Northern California.

ECONOMIC TIES between Japan and the San Francisco Bay Area date back 150 years, to when the first diplomatic mission from Japan to the United States arrived in San Francisco. Since then, both Japan and the Bay Area have developed into two of the world's leading technology hubs.

Today, much attention is understandably focused on the Bay Area's business ties with fast-growth economies such as China. The Bay Area's relationship with Japan has developed deep roots, however, based on technology, established partnerships, and younger enterprises that provide new vehicles for high-value collaboration. This foundation and complementary economic strengths are reflected in a Memorandum of Understanding, signed in September 2014 by California Governor Jerry Brown and Japan's Ambassador to the United States, for cooperation in the fields of climate change, renewable energy, zero emission vehicles, electric vehicle charging, and water management. In an October 2014 implementing agreement, the

Governor's Office of Business and Economic Development (GO-Biz) and Japan's New Energy and Industrial Technology Development Organization (NEDO) agreed to conduct a feasibility study for an electric vehicle charging demonstration project in California.

Changes in the Japanese Economy

Japan's economy expanded strongly following World War II. Focused primarily on exports, it saw annual growth of 10 percent from the 1950s through the 1970s. However, by the 1980s this favorable dynamic began to shift with the emergence of an economic bubble driven by rapidly rising equity and asset prices. Before the bubble, on May 1, 1984, the Nikkei Index closed at 9,940 points. Five and a half years later, on December 1, 1989, it closed at 38,916 points. Three years later, by July 1, 1992, the Nikkei Index had fallen to 15,910 points. This contraction was followed by a period of slow growth (the "lost decades") that continued until only recently. Annual economic growth averaged 0.9 percent and government debt—spurred by stimulus spending on infrastructure—grew to 183.5 percent of GDP in 2009. While domestic growth slowed, exports continued to fuel the economy, and even with the stagnation that prevailed, in 2013 Japan remained the world's third largest economy and a major global market with per capita income of \$38,492.

Since the election of Shinzo Abe as Prime Minister in 2012, Japan has pursued new

policies designed to jolt its economy into higher growth. The "three-arrow" economic plan includes accelerated investment in IT and other infrastructure, an annual inflation rate targeted at 2 percent (to address deflationary risk), and economic reform measures that include business tax cuts. Other goals include the advancement of women in Japan's labor market, particularly in management. In parallel, the Bank of Japan is pursuing a policy of quantitative easing similar to the Federal Reserve's recent strategy in the United States.

In some respects, Japan's economy has responded. Asset prices have risen, with the Nikkei doubling from October 2012 to November 2014 to reach a seven-year high. Unemployment, already low at 4 percent, has fallen to 3.6 percent. Wages and corporate profits are rising. SMBC Nikko Securities Inc. reports that net income at the country's major corporations rose 69 percent to record levels in FY 2013–14, with net income from major manufacturers growing 116 percent. However, the threat of deflation, a concern in recent years, remains worrisome, with the core inflation rate hovering at or below 1 percent—well under the 2 percent target.

As Japan's consumer electronics giants have lost ground in global markets, other forms of manufacturing (including precision equipment and the production of intermediate products such as electronic components) are staging a comeback. Other progress has been made in reforming corporate governance and agriculture, and the door to accepting more foreign workers may be opening. What happens next will be impacted by tax policy. In April 2014, Japan raised its VAT for the first time in 17 years, from 5 percent to 8 percent. The subsequent drop in GDP has been largely attributed to a related drop in consumer spending. In response, another VAT increase to 10 percent that was planned for October 2015 has been put on hold.



Trade, Investment and Invention

Japan and the Bay Area are strongly linked through trade. Japan is California's fourth largest trading partner behind Mexico, Canada and China. Exports to Japan account for 7.6 percent of California's exports worldwide, and California imports more goods from Japan than from any country in the world except China. In the Bay Area, Japan is the top destination for exports and the third largest source of imports through the Port of Oakland. Goods being traded are at the high end, with imports led by transportation equipment and exports led by computer, electronic, and agricultural products.

Japan's status as a global partner is evident when measured by business presence. Japan accounts for the largest number of foreign business affiliates in the Bay Area, estimated at 444 in 2013 (by Uniworld Business Publications, Inc.). For Bay Area companies, Japan ranks as the number three worldwide location for business affiliates (after the UK and Canada). In 2013, there were 601 affiliates of Bay Area companies in Japan. Much of this cross-investment is designed to access local markets, but many affiliates focus on high-value R&D.

According to a survey conducted periodically (most recently in July 2014) by JETRO (Japan External Trade Organization) and the Japanese Chamber of Commerce of Northern California, there has been strong growth since 2010 in the number of Japanese companies operating in the region—to as many as 719.

Flows from Japan represent a significant share of overseas financial investment (primarily private equity) in the region, totaling \$350 million in 2013. Global private equity flows to the Bay Area totaled \$8.1 billion in 2013, with \$4 billion coming from Europe and \$220 million from China.

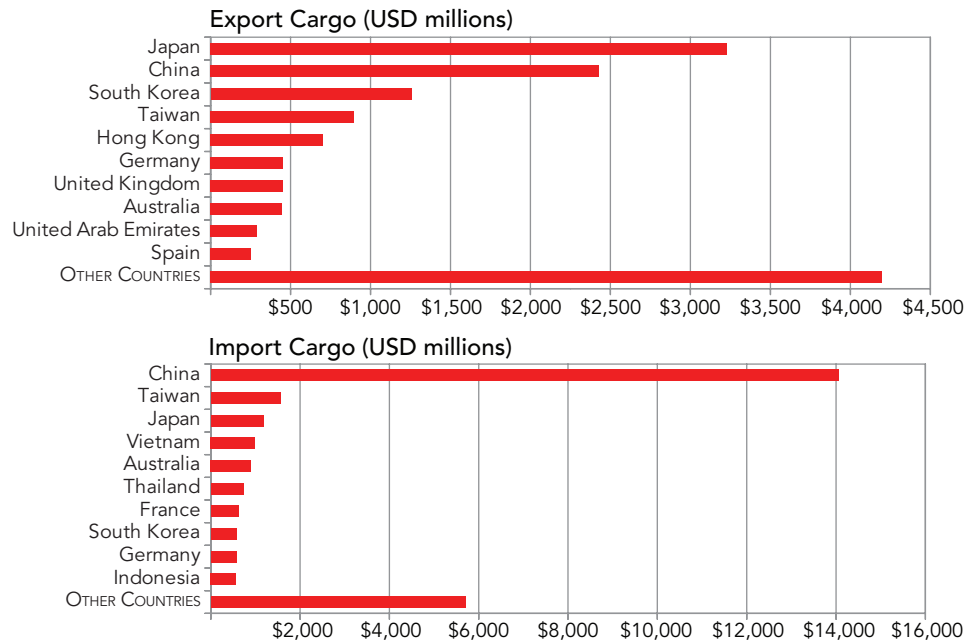
Collaboration includes co-invention. As a global innovation center, the Bay Area accounts for 15 percent of US patent registrations. Increasingly, the new ideas codified in and protected by such patents stem from collaboration between individuals from different countries.

By this measure, Japan is the Bay Area's most significant innovation partner.

The 4,713 patents registered with both a Bay Area and a Japanese co-inventor since 1999 account for 15.1 percent of the total patents registered with foreign co-inventors over the same period. In November 2014, Thompson Reuters ranked Japanese companies ahead of

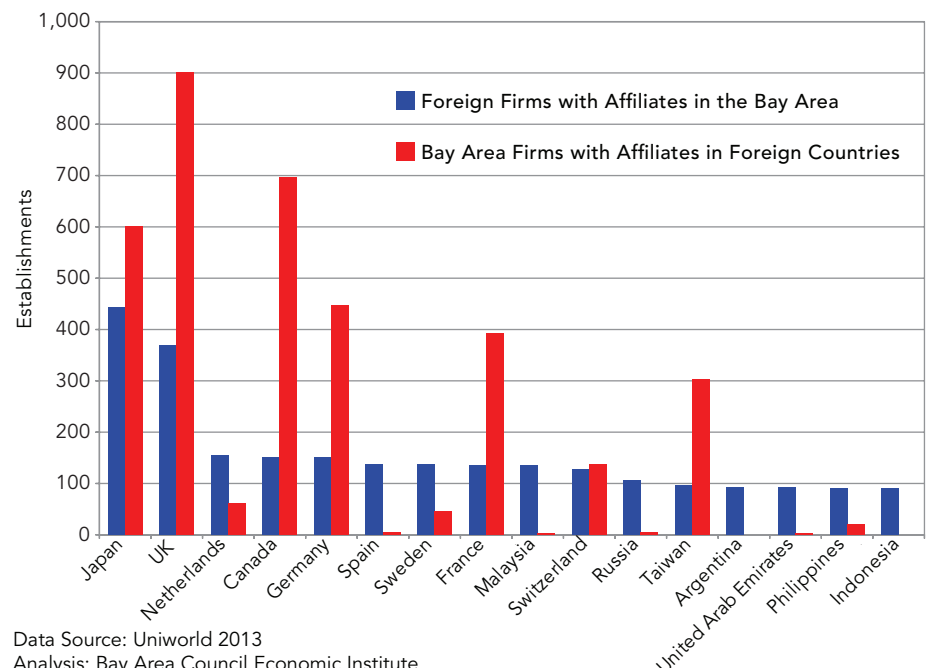
US companies in innovation, with 39 versus 35 companies making the Global 100 Innovators list. Measures included published patents worldwide and the influence of a company's patent portfolio. In the US, 10 Bay Area companies made the list.

2013 Port of Oakland Trading Partners by Value



Data Source: Port of Oakland
Analysis: Bay Area Council Economic Institute

Foreign Affiliates in the Bay Area and Bay Area Affiliates Abroad



Data Source: Uniworld 2013
Analysis: Bay Area Council Economic Institute

Sourcing Innovation

As the Bay Area's status as a center for global innovation has grown, large and small companies from around the world have come to the region to find partners, connect to emerging technologies and develop new business models. Japanese companies are among them.

For Japanese and many other large companies (including US corporations), stand-alone, in-house R&D has often achieved only modest results compared to more nimble start-ups. In response, some businesses are shifting their R&D strategies to identify early-stage companies they can

partner with, acquire, or invest in, often through dedicated venture arms.

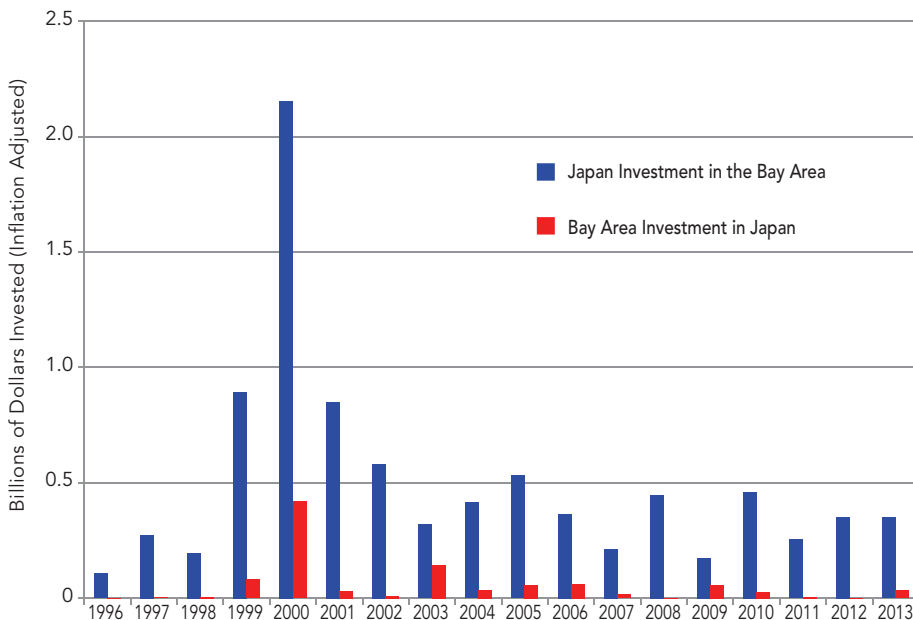
In 2013, the Bay Area received 41 percent of all US venture investment. The region's status as the world's leading center for venture investment attracts large numbers of emerging companies, creating a rich pool for multinationals to explore. This—and access to leading companies and university research—is drawing Japanese companies to the Bay Area from a broad range of industries.

Large companies are leading. Sony has a particularly strong presence in Silicon Valley. Its gaming business unit, Sony Computer Entertainment America, has its headquarters in San Mateo. Other groups such as Sony Mobile Communications (formerly Sony Ericsson Mobile Communications) and Sony Network Entertainment are also in San Mateo, and Sony Electronics has a presence in San Jose. A distinct group, Sony Growth Ventures and Innovation, works to identify technology trends and new opportunities for business partnerships. This includes US-based start-ups, incubators, and accelerators, as well as innovation units at large corporations.

Other large companies, such as Mitsubishi Corporation (Americas) and Itochu, have also established a presence in the region to track technology trends and develop partnerships. DENSO, a supplier of advanced automotive technology, is expanding its Silicon Valley presence as a way to support its in-house R&D with ideas and technologies sourced from Bay Area start-ups. This strategy mirrors other global automotive companies with Japanese roots, including Toyota, Honda and Renault-Nissan, who have established presences in Silicon Valley to better understand how information and other technology will impact the future of the automobile. Both Toyota and DENSO are major sponsors of San Jose's new cleantech innovation and commercialization center, Prospect Silicon Valley.

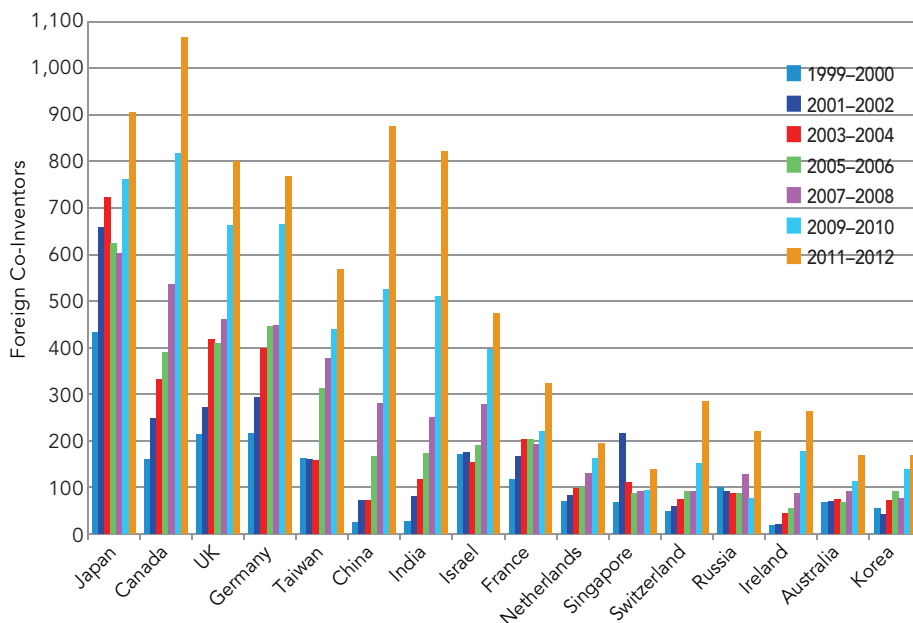
SoftBank, a leading telecommunications company, is partnering with Bloom Energy, a Silicon Valley fuel cell energy start-up, to bring clean fuel cell energy to Japan at a time when the country is transitioning away from nuclear power.

Investment Flows Between Japan and the Bay Area



Data Source: US Patent and Trademark Office
Analysis: Bay Area Council Economic Institute

Patents with Bay Area and Foreign Co-Inventors by Country



Data Source: US Patent and Trademark Office
Analysis: Bay Area Council Economic Institute

Pushing into the US telecommunications market, SoftBank acquired 72 percent of Sprint for \$21.6 billion dollars in July 2013. SoftBank subsequently leased 240,000 square feet of office space in San Carlos, to be occupied by 800–1,000 workers. The company joins other leading Japanese telecommunications service providers NTT DATA and KDDI America that have expanded or established a technology footprint in the region. In April 2013, the NTT Innovation Institute was established in Palo Alto as a research and development arm of NTT Group to develop and commercialize advanced technologies in the fields of communications and telecommunications services.

While many well-known Japanese companies established presences in California in the 1980s and 90s, they have been joined more recently by a host of new companies, such as Rakuten, DeNA, and GREE, that are household names in Japan though less known locally. Rakuten (often described as the Amazon of Japan) in particular has been going through an acquisition streak. After acquiring Buy.com in 2010, Rakuten recently acquired Internet messaging application Viber and bought San Francisco-based online rebate site Ebates for \$1 billion.

Structural shifts in Japan's economy since the 1990s have put pressure on its traditional system of lifetime employment with major companies. With slow economic growth, there is growing interest in entrepreneurship and the formation of new companies. As this happens, the focus of Japan's economic ties with the Bay Area is broadening to include more early-stage

enterprises (such as SmartNews, a news discovery site that raised significant venture investment from Silicon Valley and recently opened an office in San Francisco; Gengo, a web translation company that recently opened an office in San Mateo; and Cerego, a web learning platform company that has also established a Silicon Valley presence).

The Bay Area has attracted an active Japanese investment capital community, including corporate venture capital firms such as Mitsui Global Investment. The support network for start-ups also includes the Silicon Valley Japanese Entrepreneur Network (SVJEN), the World Innovation Lab (one of Japan's largest VC funds which helps start-ups grow in both the US and Japanese markets and focuses on merging the Japanese corporate mindset with the Bay Area's culture of innovation), and JapanNight competitions (San Francisco-based competitive showcase events giving Japanese entrepreneurs exposure to funding opportunities to "go big beyond Japan"). On the government side, JETRO has launched the Silicon Valley Innovation Program (SVIP), an initiative to help Japanese start-ups, that cooperates with Bay Area incubators and accelerators including NestGSV, and US MAC (US Market Access Center).

Emerging Bay Area companies are also establishing a presence in Japan, including Square, Box, Zendesk, Tesla, Super Micro Computer (a producer of high-efficiency servers), data security firm v Armour, NeoPhotonics (a supplier of optical components, modules, and

subsystems for high-speed communications networks), energy data analysis firm Opower (which is headquartered in Virginia but has a substantial Bay Area presence) and Bloom Energy. In November 2013, Bloom Energy announced the completion of the company's first international project at SoftBank's M-Tower in Fukuoka. Salesforce.com has made large inroads in Japan as well, including adoption of its CRM platform by Japan Post, Japan's partially privatized postal service.

Joint ventures and partnerships are growing, as are mergers and acquisitions (such as the merger announced in July 2014 of Applied Materials with Tokyo Electron Limited to form a new company named Eteris). New opportunities for technology collaboration are emerging across a range of industries, including information and entertainment systems, robotics, agriculture and food, renewable energy, and automobiles, as exemplified by the Silicon Valley R&D presence of Renault-Nissan related to telematics (technical advancements for communications and safety) and mechatronics (the integration of sensor technology).

Large Japanese companies, long present in the region, aren't going away. To succeed in today's global business environment, however, many will need to move toward more open innovation models. The Bay Area is playing a significant role in that process. As small but growing companies come more to the fore, Japan's economic relationship with the region will continue to shift, with a greater emphasis on emerging business models and collaborative innovation.



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