

# San Jose Mercury News

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June 21, 1998

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**HOT BUTTON: THE INCREASING ROLE OF SKILLED IMMIGRANTS**

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## A VALLEY ASSET

**Chinese, Indians creating business, jobs, wealth as successful entrepreneurs**

BY ANNALEE SAXENIAN

Silicon Valley is known as the home of the IC, or integrated circuit. But when local technologists say "Silicon Valley is built on ICs," they refer not to chips, but to Indian and Chinese engineers.

Skilled immigrants are one of Silicon Valley's most important but least recognized assets, and their significance has increased dramatically in the 1990s. More than one-third of the engineers and scientists in the region's technology workforce are now foreign-born, mostly of Asian descent. These immigrants bring more than scarce technical skills; they are also starting businesses in record numbers and building valuable economic ties to growing regions in Asia.

Highly skilled immigrants are often viewed as a threat by native-born workers. In reality, Silicon Valley's new immigrant entrepreneurs are creating businesses, jobs and wealth. Research funded by the Public Policy Institute of California indicates that in 1996, 1,786 Silicon Valley technology companies with \$12.6 billion in sales and 46,000 employees were run by Indian or Chinese executives.

Moreover, the pace of entrepreneurship among local immigrants is increasing rapidly. While Chinese or Indian executives, are at the helm of 13 percent of the Silicon Valley technology businesses started between 1980 and 1985, they are running 27 percent of the more than 4,000 businesses started between 1991 and 1996.

The Chinese and Indian-born founders of technology companies that have gone public over the past decade--including Pehong Chen of BroadVision, Inc. in Redwood City, Lenny Liu of Opti, Inc. in Milpitas and Prakash Agarwal of Neo-

**WANNA TRADE LUNCHES?  
VINDALOO FOR MOO SHOO?**



magic in Santa Clara--typify Silicon Valley's new breed of immigrant entrepreneurs. Unlike traditional immigrants who start low-productivity businesses such as restaurants, laundries and sweatshop manufacturing, Pehong, Liu and Agarwal are technologically savvy professionals operating in the most advanced and globally competitive sectors of the economy.

Traditional immigrant entrepreneurs typically mobilize social and economic resources from their ethnic communities and create self-contained enclaves with minimal connections either to the rest of the domestic economy or to their home countries. While ethnic groups like Monte Jade and the Indus Entrepreneurs remain sources of capital, skill contacts and advice for high-tech immigrants, these executives are simultaneously integrating into the mainstream economy and building distinctive economic links back to their home countries.

Rather than creating the isolated China towns of their predecessors, these transnational entrepreneurs provide a crucial source of regional advantage to Silicon Valley by facilitating two-way flows of capital, skills and information across the Pacific.

The experience of Taiwan is illustrative. In the 1960s and 1970s the relationship between Taiwan and the United States was a textbook relationship between the Fast World and Third World. U.S. businesses invested in Taiwan primarily to take advantage of its low-wage manufacturing labor. Meanwhile, the best and the brightest Taiwanese engineering students came to the United States for graduate education and created a classic "brain drain" when they chose to stay and pursue professional opportunities.

This relationship has changed dramatically. By the late 1980s,

Taiwanese engineers began returning home in large numbers, drawn by active government recruitment and the opportunities created by rapid economic development. At the same time, a growing group of highly mobile engineers began to work in both the United States and Taiwan, commuting across the Pacific regularly. Typically Taiwan-born and U.S.-educated engineers, these entrepreneurs have the professional contacts and language skills to function fluently in both the Silicon Valley and Taiwanese business cultures and to draw on the complementary strengths of the two regional economies.

KY. Han is typical. After graduating from National Taiwan University in the 1970s, Han earned a master's degree in solid state physics at the University of California-Santa Barbara. Like many Taiwanese engineers, Han was drawn to Silicon Valley in the early 1980s, and worked for nearly a decade at a series of local semiconductor companies before joining his college classmate and friend, Jimmy Lee, to start Integrated Silicon Solutions Inc. (ISSI) in Santa Clara. After bootstrapping the initial start-up with their own funds and those of other Taiwanese colleagues, they raised more than \$9 million in venture capital - all from Asia.

Han and Lee mobilized their professional and personal networks in both Taiwan and the United States to grow ISSI. They recruited engineers in their Silicon Valley headquarters to focus on research and development and product design and development, and they lined up manufacturing partnerships with Taiwan's state-of-the-art semiconductor labs and incorporated in the Hsinchu science-based Industrial Park outside of Taipei to oversee assembly, packaging and testing.

By 1995, when ISSI was listed on Nasdaq, Han was visiting Taiwan at least monthly to monitor the firm's manufacturing operations and to work with newly formed subsidiaries in Hong Kong and mainland China. Finally, he joined thousands of other

Silicon Valley "returnees" moved his family back to Taiwan. Han still spends an hour each day on the phone with Lee and returns to Silicon Valley as often as 10 times a year. Today, ISSI has \$110 million in sales and 500 employees worldwide, including 350 in Silicon Valley.

The growing integration of the technological communities of Silicon Valley and thousands of other Hsinchu offers substantial benefits to both economies. Silicon Valley remains the center of new product definition and developer of leading-edge technologies, while Taiwan offers world-class manufacturing flexible development and integration, and access to key customers and markets in China and Southeast Asia.

Taiwan has also become a significant and fast-growing source of capital for Silicon Valley-based start-ups. Unlike the arms-length and top-down technology transfers between large firms that characterized the relations between Japan and the United States in the 1980s, the Silicon Valley-Hsinchu relationship consists of formal and informal collaborations between individual investors and entrepreneurs small and medium-size firms, as well as the divisions of larger companies located on both sides of the Pacific. In this complex mix, the rich social and professional ties among Taiwanese engineers and their U.S. counterparts are as important as the more formal corporate alliances and partnerships.

Silicon Valley's immigrant entrepreneurs are subject to a regulatory mindset designed to manage the perceived threat of cheap labor. The U.S. public policy debate should recognize skilled immigrants for what they are major contributors to the health and dynamism of the U.S. economy.

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