

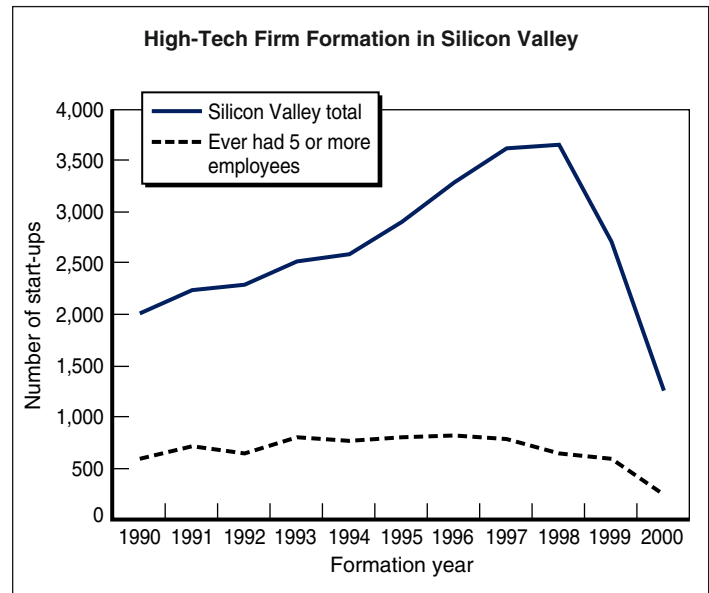
The Dynamics of Silicon Valley

Silicon Valley is home to the most dynamic industries in the California economy. These industries—the high-tech sector—are driven by innovation, and each new wave of innovation is usually led by creative entrepreneurs starting new firms. After great economic success in the 1990s, Silicon Valley is now enduring a deep recession. To better understand the region's past successes and future prospects, Junfu Zhang, in *High-Tech Start-Ups and Industry Dynamics in Silicon Valley*, examines firm formation, growth, mortality, and migration in the 1990s, analyzing how the region's economy evolves and operates through these dynamic processes. The one constant in Silicon Valley is that it is always changing. The author stresses that Silicon Valley's greatest asset is its ability to reinvent itself and that the secret of the region's success lies in the institutions that enable the changes.

Study Findings

New firms are important for Silicon Valley. A multitude of small firms coexist with larger firms in the region, and each year many new firms are founded, which collectively represent a major force in the economic dynamics of Silicon Valley. For example, firms founded after 1990 created almost all of the job growth experienced by Silicon Valley between 1990 and 2001. Successful start-ups have remade and will continue to remake Silicon Valley.

Start-ups in Silicon Valley have quick access to venture capital. Start-ups in the region consistently attract a large amount of venture capital. On average, it takes 11.6 months for Silicon Valley's start-ups to complete their first round of venture financing—five months faster than the national average. Quicker access to capital is found in every major industry in Silicon Valley. This gives new companies in the region a head start over their counterparts in the rest of the country—an important advantage in high-tech industries that advance at a very fast pace. This first-mover's advantage implies that start-ups in Silicon Valley have a better chance to survive, all else equal.



More than 29,000 high-tech firms were founded in Silicon Valley during the explosive growth years of Internet technology. About one-fourth of these firms employed five or more people.

Established firms in Silicon Valley spin off more start-ups than firms in other parts of the country. Compared to their counterparts in such high-tech centers as Boston, large companies in Silicon Valley have more employees who leave the firm and start their own venture-capital-backed businesses, opening new markets and creating more jobs.

Firm relocation is not a serious problem. More establishments move out of Silicon Valley than move in. However, they tend to remain close to Silicon Valley, relocating to such places as San Francisco. In terms of those moving across state borders, Silicon Valley does see a net job loss, because more jobs are relocated to other states than are relocated to Silicon Valley from outside California. However, firm relocation involves a relatively small proportion of the labor force. Firm birth and death cause much more turbulence than firm relocation.

Successful firms in Silicon Valley are branching out.

Established firms in Silicon Valley frequently set up branches elsewhere. For many large high-tech companies headquartered in Silicon Valley, the employees within Silicon Valley itself represent only a small proportion of the firm's total workforce.

The high-tech sector is subject to rapid structural change.

The high-tech sector consists of a number of different industries, which follow different dynamics. The fluctuation of the macroeconomy often affects each industry differently; and technological innovations in different industries—the drivers of growth in those industries—do not arrive simultaneously. Thus, at different points in time, the “hot spot” of growth may appear in different industries. This implies that a dynamic labor force is necessary to help the region's economy adapt to structural changes.

Policy Recommendations

Silicon Valley today faces more competition than ever from other high-tech regional economies, both domestic and international. Supportive policies have been implemented in metro areas all over the country, seeking to gain a bigger piece of the high-tech economy. How to keep Silicon Valley growing is a big challenge for California's policymakers. This is especially true today, with the valley struggling through a recession.

Policies directly related to Silicon Valley include federal government R&D spending and immigration policy, state government R&D spending and education policy, and local government land use policy. In addition, governments need to help in other areas where the private sector lacks the capability to solve certain problems, such as building infrastructure and preventing further energy crises.

The author suggests a number of specific recommendations for policymakers:

Promote technological innovation. University research has always been a major source of innovation, and state government should continue its strong support to research universities. Large budget cuts for the University of California would severely affect the prospect of the high-tech sector off campus. The California delegation in Washington, D.C., should

place a high priority on securing research and development dollars for California from the federal government.

Encourage firm founding. Job creation in Silicon Valley is primarily achieved by new firms. State and local governments should help create a favorable atmosphere for such firms. Offering tax breaks, opening industrial parks, building high-tech incubators, and providing seed capital for commercialization of research are widely used policy levers. Continuously improving quality of life in Silicon Valley and the Bay Area as a whole is also crucial for the vitality of the high-tech economy in this region.

Look beyond Silicon Valley. State and local policies should take into account connections between Silicon Valley and the rest of the state economy. For example, many people who work in Silicon Valley live a considerable distance from it, seeking more affordable housing. Thus, housing development and transportation policies in neighboring Bay Area cities can help solve Silicon Valley's housing problems. State government could provide incentives for large firms to set up their manufacturing or distribution arms within the state, and local governments could be more proactive in accommodating businesses branching out from Silicon Valley.

Maintain a dynamic labor pool. Some high-tech industries are subject to explosive growth, creating a high demand for certain types of technical workers within a short period of time. For example, employment in the software industry in Silicon Valley increased from 48,500 to 114,600 between 1990 and 2001. Whether Silicon Valley can evolve rapidly hinges upon whether its labor force can quickly upgrade its skills or meet completely new demands. Employers in Silicon Valley accomplish this by recruiting new talent not only from local universities but also by hiring skilled immigrants, who have played an important role in Silicon Valley's growth. The immigrant pool has proved to be a major source of innovators and entrepreneurs. Immigrants also provide a large reserve of high-quality engineers and scientists ready to satisfy sudden surges of demand in certain industries. State government in cooperation with federal authorities should keep the door open to international talent, both at local universities and in the high-tech industries. This has emerged as a particularly crucial issue because immigration policy has now entered the equation of homeland security.

This research brief summarizes a report by Junfu Zhang, High-Tech Start-Ups and Industry Dynamics in Silicon Valley (2003, 136 pp., \$12.00, ISBN 1-58213-074-4). The report may be ordered by phone at (800) 232-5343 [U.S. mainland] or (415) 291-4400 [Canada, Hawaii, overseas]. A copy of the full text is also available on the Internet (www.ppic.org). The Public Policy Institute of California is a private, nonprofit organization dedicated to independent, objective, nonpartisan research on economic, social, and political issues affecting California.

PUBLIC POLICY INSTITUTE OF CALIFORNIA

500 Washington Street, Suite 800 • San Francisco, California 94111

Telephone: (415) 291-4400 • Fax: (415) 291-4401

info@ppic.org • www.ppic.org