

Global Silicon Valleys? First, Kill All the Subsidies

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Many countries are envious of Silicon Valley, the world center of the computer, software, and Internet industries. Other nations have decided to use subsidies to encourage the growth of their own high-tech clusters. However, after observing Silicon Valley during many years with the Hoover Institution at Stanford University, I have become convinced that dynamic industrial clusters require a flexible economic environment, not government industrial policy.

Silicon Valley started in the 1950s with a modest plan by Frederick Terman, a farsighted dean of Stanford's Engineering School, to create an industrial park on unused Stanford land. A few companies accepted the offer, but the area was still sleepy and unimpressive when I first visited in the early '60s.

The region took off in the 1970s with the development of the personal computer by Apple Computer Inc. and others, and it has exploded since then with the creation of the Internet and the enormous demand for software. Silicon Valley now employs more than 1 million people, almost 40% of whom have at least a bachelor's degree, and more than a third are foreign-born. They are attracted by the good jobs and by the early access to frontier developments in the high-tech field.

The Valley is loaded with startups and former startups such as Intel Inc. and Cisco Systems Inc. Venture capitalists invested more than \$6 billion in 1999 in new or young Valley companies, and 77 companies had initial public offerings, mainly related to the Net.

Faculty and graduates of the strong science and engineering departments of two nearby universities, Stanford and the University of California at Berkeley, have been leaders in forming dynamic startups. While good universities may be necessary to develop these industrial clusters, they are not sufficient. Other regions with strong engineering schools, such as the University of Illinois at Urbana, do not have many high-tech companies. Whatever got Silicon Valley going, its advantages in attracting quality labor and venture capital multiplied as the region grew. A large pool of engineers, scientists, and software experts are available to both new and old companies. Talented individuals flock to the region not only because of generous stock options and decent pay, but also because they know they can find good jobs there if their employers fail. So while job changes are common, unemployment rates are extremely low.

Innovations and other new developments spread rapidly in Silicon Valley, in part by employees who change jobs. As Alfred Marshall, a great British economist of the late 19th century, recognized, when companies in related industries locate near each other, "the mysteries of the trade become no mysteries; but are as it were in the air." This

makes it difficult to keep secrets, but companies do get early access to innovations by neighbors.

ROADBLOCKS. The Valley's labor flexibility indicates that nations that want to encourage high-tech clusters should make it easy to hire and lay off workers rather than mandate substantial severance pay or legislate limits on hours worked. Companies have stronger incentives to hire more workers if they can reduce payrolls easily when demand falls.

The U.S. has relatively few obstacles to starting new companies, raising private capital, or going public. It also lets key employees be hired with potentially valuable stock options that limit a startup's out-of-pocket expenses. Although several countries have begun to reduce the red tape that hampers the formation and financing of new companies, most have a long way to go in appreciating and encouraging entrepreneurial activities.

Reducing artificial obstacles to startups is far different from the generous subsidy programs begun recently by Germany and other countries desperate for more dynamic economies. Subsidies generate "safe" startups that appeal to bureaucrats, not market demand. The tremendous spontaneity found in Silicon Valley could never be reproduced through bureaucratic hothouse support.

The Valley grew over time with little help from government. In fact, the major attempt to help actually hurt the region. The U.S.-Japan Semiconductor Agreement of 1986, which imposed "antidumping" restrictions on imports of semiconductors from Japan, slowed the shift toward software and other higher-valued-added products and services. It is unlikely that high-tech industrial policies by other nations will be any wiser than America's.

Where dynamic industrial clusters locate is part luck and part accident. But Silicon Valley's history indicates that top universities, flexible labor and capital markets, and limited regulatory obstacles to entrepreneurship all help.