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A Strategic Overview of the Silicon Valley Ecosystem: Towards Effectively "Harnessing" the Ecosystem:

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7. Roles of Government

Examining the role of the government in Silicon Valley is important when we consider potential policies for Japan to encourage the development of an innovation based economic growth. Studying the role of universities is also important because Japanese companies can potentially derive benefits from working with Silicon Valley universities such as Stanford and UC Berkeley. Moreover, the current government of Japan lists university reform as one of the policies to promote innovation in Japan.

7.1. Which Government?

The most crucial points in understanding the roles of government in Silicon Valley is that there is no "Silicon Valley" government, and *Silicon Valley was **not** created by strategic government policy*. Instead, it developed organically. This does not automatically mean that particular characteristics of Silicon cannot be duplicated elsewhere. However, it does mean that there is no particular set of "best practice" strategies that built Silicon Valley, which can be directly imported by other governments.

The key insight into the government and policy environment of Silicon Valley is the US government's federal structure, in which states policy over a variety of areas can differ considerably from one another.

7.2. Federal Government and California State

The role of the US Federal government in funding has already been explained above. An important facet to emphasize is that the major research programs by the US government, through institutions such as the National Institute of Health, National Science Foundation, and the military, have exerted substantial influence on the trajectory of scientific inquiry, and therefore the areas in which Silicon Valley has turned its attention. Universities have played a crucial role in transforming government investments into scientific knowledge, which is then taken by industry and applied towards commercial ends.

The two most significant **federal government** policy shifts that were critical preconditions for the growth of Silicon Valley venture capital were the relaxing of pension fund investment targets and a drastic lowering of the capital gains tax. These were outlined above as well.

The *capital gains tax* was lowered from 49.5% to 28% with the 1978 Revenue Act. The early venture capitalists and American Electronics Association strongly supported this bill.

The *relaxation of ERISA (Employment Retirement Income Security Act) restrictions* in 1979 by the US Labor Department under the "prudent man rule" allowed corporate pension funds to invest in venture capital, which was among the riskier asset classes. Pension funds quickly became the prime funder of venture capital, rising from 100-200 million USD per year in the 1970s, to over 4 billion by the late 1980s.[1]

Other federal government programs such as the H1 *visa* program, a non-immigrant visa allowing US employers to temporarily hire technical skilled workers has facilitated bringing foreign talent into Silicon Valley. The cap for visas was increased significantly in 2000 with the American Competitiveness in the Twenty-First Century Act of 2000. It allowed the government to overshoot the cap by 20 to 30 thousand people, and increased the cap to 195 thousand between 2001 and 2003. It also provided an exemption to the cap for universities, non-profits, and government research organizations. Critically, a statute in the act allowed the sponsor of the visa or the employer to change. The visa provided a three-year term, extendable until six years with some exceptions.

Figure 16. H-1B Applications Approved by the US Citizenship and Immigrations Services

Year	Initial Applications	Renewals+Extensions	Total Granted
1999	134,411	na	na
2000	136,787	120,853	257,640
2001	201,079	130,127	331,206
2002	103,584	93,953	197,537
2003	105,314	112,026	217,340
2004	130,497	156,921	287,418
2005	116,927	150,204	267,131
2006	109,614	161,367	270,981
2007	120,031	161,413	281,444
2008	109,335	166,917	276,252
2009	86,300	127,971	214,271
2010	76,627	116,363	192,990
2011	106,445	163,208	269,653
2012	136,890	125,679	262,569

Source: USCIS

Japan ranks eighth among H1-B recipients' countries of birth, although the high percentage of Indian-born workers at 58% in FY2011 and 64% in FY2012 makes up a far larger

[1] Kenney, M. and R. Florida (2000). Venture Capital in Silicon Valley: Fueling New Firm Formation. Understanding Silicon Valley : the anatomy of an entrepreneurial region. M. Kenney. Stanford, CA, Stanford University Press**:** 98-123, Rao, A. (2013). A History of Silicon Valley: The Greatest Creation of Wealth in the History of the Planet, 2nd Edition.

number than Japan's 1.2% and 1.0% percent of total recipients. With visa problems cited as one of the hurdles for Japanese businesses and entrepreneurs building physical presences in Silicon Valley, negotiations to increase the allocation of H1-B visas to Japanese may be a reasonable lobbying effort for the United States' closest security strategic ally in the Asian region.

Figure 17. H1-B Petitions Approved by Country of Birth, FY2011, 2012 (% of total)

Rank	Country of Birth	FY 2011	FY 2012
1	India	58.0	64.1
2	China	8.8	7.6
3	Canada	3.5	3.0
4	Philippines	2.8	2.0
5	South Korea	2.5	1.7
6	United Kingdom	1.7	1.3
7	Mexico	1.3	1.2
8	Japan	1.2	1.0
9	Taiwan	1.1	0.9
10	Pakistan	0.9	0.8
11	Germany	0.8	0.7
12	Turkey	0.8	0.7
13	Brazil	0.7	0.7
14	Nepal	0.6	0.6
15	Venezuela	0.6	0.6

Source: USCIS Characteristics of H1B Specialty Occupation Workers

California does not provide a low-tax environment. Forbes ranks each state annually using indicators including business costs, quality of labor supply, regulatory environment for business, economic climate, growth prospects, and quality of life. While some of these indicators are subject (especially if quality of life does not include weather, which is quite mild and popular in Silicon Valley), "business costs" are revealing. The report notes that California's economy is $2.2 trillion, which would be the 8th largest in the world, and it comprises 13% of the US economy. Its ranking for cost of doing business is 46 out of 50 states, with 10% higher costs than the national average. Growth prospects, however, ranked at 3rd. (The two highest ranking states for growth prospects were Texas and North Dakota, largely based on the shale gas boom that was continuing at the time of the latest survey in 2014). California's overall ranking was 36 out of 50 states. Thus, if Forbes' indicators are reasonable, *Silicon Valley's success is despite a relatively high tax burden and cost of doing business*. This focuses our attention even more on the factors that do make Silicon Valley the origin of wave after wave of the world's innovation.

Figure 18. Forbes' "Best States for Business" California Rankings

	Business Costs	Labor supply	Regulatory environment	Economic Climate	Growth Prospects	Quality of Life
California	46	28	43	26	3	25

Source: Forbes, http://www.forbes.com/best-states-for-business/

Given the importance of state-level legal structures in the US federal system, the role of state-level policies and judicial decisions can significantly influence the regulatory environment. This is particularly true for *non-compete agreements, where California state law, supported by California courts, make provisions facilitating worker mobility*.

Non-compete agreements are often deployed by employers who wish to protect their intellectual property. They can potentially limit the mobility of workers through the fear of possible lawsuits. However, interestingly, non-compete agreements in the US are not governed by any federal law, making state-level legislation and judicial decisions the key factors for the effect of these agreements. California is one of a few states that specifically prohibit non-compete legislation.[2] Moreover, California's protections are particularly strong, with its Business and Professions Code including a provision saying that "every contract by which anyone is restrained from engaging in a lawful profession, trade, or business of any kind is to that extent void." This provision actually originated in 1872, very early in the state's history (California became a state in 1850, only three years before Admiral Perry's black ships arrive in Edo Bay). Yet, this provision was tested in and affirmed in numerous court cases, including one in 1998 that declared invalid the non-compete agreements of other states, and again in 2008.[3]

In fact, one of the historical developments that contributed to Silicon Valley being a center for innovation owe significantly to California's legal environment. The modular design of the IBM System/360 mainframe computer, introduced in 1964, enabled people to leave IBM to develop components that would plug into and be compatible with the S/360. IBM employees were initially fearful of legal action by IBM, but in California they were safe to pursue new businesses that relied upon their expertise gained at IBM, and working knowledge of the S/360. This helped the computer industry develop in Silicon Valley.[4]

Based on data from 1994-2001, researchers have found a California effect of high job mobility for certain IT industry jobs rather than only a Silicon Valley effect, suggesting state-level influence on software engineers' job mobility.[5] The same study with more recent data would be interesting.

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[2] Other states include Alaska, Connecticut, Minnesota, Montana, North Dakota, Nevada, Oklahoma, Washington, and West Virginia.

[3] These cases were the 1998 decision of Application Group, Inc v. Hunter Group, Inc. and 2008 California Supreme Court decision on Edwards v. Arthur Andersen.

[4] Baldwin, C. Y. and K. B. Clark (2000). Design rules. Cambridge, Mass., MIT Press.

[5] Fallick, B., C. A. Fleischman and J. B. Rebitzer (2006). "Job-hopping in Silicon Valley: Some evidence concerning the microfoundations of a high-technology cluster." The Review of Economics and Statistics **88**(3): 472-481.

7.3. Local Governments

As discussed earlier, the region's borders are not clearly defined, and they span multiple counties and cities. This directly affects infrastructure such as transportation and housing—mostly negatively. Many areas that try to build their own "[placename] Silicon Valley" tend to begin with the infrastructure of transportation, housing, and recently "smart city" infrastructure with intelligent electricity grids and a variety of IT-enabled infrastructure.

The broader Silicon Valley ecosystem, in contrast, suffers from a lack of public transportation infrastructure, overloaded highways, uncoordinated restrictions on housing supply, and zoning that makes it prohibitively expensive for much of the middle classes to live in the high growth areas—*it is **not** the product of successful urban planning or and industrial zone*.

The Bay Area's public transportation network was not created by industrial policy per se, but was rather the product of a series of political compromises. The rail system BART (Bay Area Rapid Transit) is the best—and most unfortunate—example of this. Planning began in the early 1950s, with plans to seamlessly connect the entire Bay Area from San Francisco to San Jose on both sides of the bay in a large loop, including San Francisco International Airport, Oakland Airport, and San Jose International Airport, were vetoed by local politics. The counties initially participating in the planning involved included Alameda, Contra Costa, Santa Clara, San Mateo, and Marin. Critically, Santa Clara County exited in 1957, followed by San Mateo in 1961. Santa Clara's elected official were reportedly upset that the first stage of construction did not cover the entire county, but ended in Palo Alto, with extensions in the subsequent stages. San Mateo's exit was reportedly partly influenced by a real estate agent who convinced county supervisors that the train line would decrease potential property values along a newly constructed freeway. Although Marin County, across the Golden Gate Bridge from San Francisco, had voted for part with almost 90% of voters supporting it, the exit of San Mateo led to a major decrease in the tax base of BART—its critical funding support—making Marin county too expensive to connect BART. Marin therefore exited in 1962. As a result of failure to coordinate the adoption of BART across these separate counties, BART operated for almost 30 years without connections to the San Francisco International airport, limiting its usefulness. In the 1990s, although Santa Clara County passed sales taxes to extend a different light rail system to Fremont, extension across the bay was ruled invalid, and a different measure that passed to extend BART into Santa Clara County was later canceled.[6] The BART was also built with a proprietary rail gauge and electrical and control systems that differed from all other US systems, making system maintenance and upgrades costly.

The main public transportation system linking the heart of Silicon Valley and San Francisco is the Caltrain train system, which connects San Jose to San Francisco. Operated by a different public entity from BART, Caltrain runs only once an hour during non-peak hours and on weekends. It does not connect to BART in San Francisco. It also does not connect to the US long distance train line Amtrak, which connects the Bay Area to California's capital Sacramento, and beyond.

[6] (2005) "History of BART to the South Bay." San Jose Mercury News.

The point is these illustrations is to show that Silicon Valley suffers from lack of coordination among different local governments, whose potentially beneficial function of providing efficient public transit systems has been a failure. Many outsiders who view the current situation assume that this reflects American culture of preferring cars to mass transit, but this is not the case. Santa Clara county residents did pass measures that were voted upon by the general public to increase taxes to improve the public transit system, but the counties were locked into political decisions reached in the 1950s and early 1960s in a decentralized manner.

As a result, companies such as Uber appeared in order to fill much needed demand for people to move easily around the Bay Area without their own car. The fact that Uber's 2014 revenue far exceeded that of the entire taxi industry in previous years suggests that rather than replacing existing demand for taxis, Uber is fulfilling untapped demand by users in search of an easy and relatively low-cost transportation solution.

Further evidence of the lack of coordination among counties and exploding demand in Silicon Valley include the housing situation. The area near Google headquarters in Mountain View, for example, has ordinances that prevent the rapid construction of new housing. Since public transportation was unreliable and the rapid growth of Google led to massive traffic jams in the area, Google began to use its own private buses to bring employees from San Francisco, Oakland, and other Bay Area locations to allow employees to be productive while commuting to work. However, the fact that these buses sometimes used public bus stops in San Francisco, and that the high incomes of Google employees and other tech firm workers were rapidly pushing up housing prices in San Francisco, which also had zoning and construction permit issues severely limiting the speed of new housing construction, led to a number of public protests. Thus, the rapid growth of Silicon Valley firms and their efforts to work around the lack of local government support and coordination has severely affected the local communities.[7]

With housing among the highest in the country, San Jose has been home to what most US media call the largest homeless encampment in the US.[8]

Thus, on the one hand, while Silicon Valley success has been remarkable, it was not the result of strategic local government policy. It should be thought of as the forces that made Silicon Valley so successful were *despite the considerable disadvantages of lack of local government coordination and strategy*; therefore analyzing the ingredients that make the ecosystem successful become all the more important.

[7] Hogan, M. (2014) "Living in a Fool's Paradise." Boom: A Journal of California **4**.

[8] Fernandez, L. and N. Miranda. (2014). "Nation's Largest Homeless Encampment, "The Jungle," Dismantled." Retrieved January 20, 2015, from http://www.nbcbayarea.com/news/local/Game-of-Whack-a-Mole-Homeless-Upset-to-be-Evicted-by-Police-From-The-Jungle-in-San-Jose-284745461.html.