Betting on the Source of Innovation: Why is it that leading high technology states in the US have low high education access and degree completion rates?

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It’s a basic premise of postmodern economic thought: promoting innovation and high technology (HT) entrepreneurship is the route to a competitive economy and, more broadly, prosperity for all. But does it?

The United States is arguably the leading HT nation, with the greatest concentration of HT businesses and employment, buttressed by the productivity of its universities and burgeoning tech industries, the availability of venture capital, conducive tax policies, and a wave of government funded initiatives.

A look at leading HT states tells a nuanced story. These states rely heavily on their university sectors and a highly educated workforce, yet they are increasingly importing talent while neglecting investment in the education and skills of their native population.

California, Texas, Michigan, New York, and Illinois constitute the top five states in total HT employment. California and Michigan had relatively high rates of HT employment in relation to their total employment (12.6% in Michigan and 10.8% in California). Each of these states also has relatively high poverty and unemployment rates, low high school graduation rates, and low higher education access and bachelor degree completion rates when compared to other states.

California, for instance, ranks number one among the states in total HT employment, and 6th in HT employment as a percentage of total employment. But it also ranks only 39th in the percentage of the population above the poverty line, 41st in high school completion rates, and ranks among the bottom ten states in the production of bachelor degrees among eighteen-to-twenty-four-year-olds.

Among the other states with high concentrations of HT sector employment, Texas is ranked even lower in bachelor completion rates, and Florida, Illinois, and Michigan are ranked 39th, 28th, and 22nd, respectively. New York ranks considerably higher, but this reflects in part a large influx of out-of-state students to the state’s large collection of private institutions.

Yet California and most of these other states have a relatively high percentage of their population with bachelor degrees and a high percentage of computer scientists, engineers, and professionals and skilled workers in the life and physical sciences as well. What is happening here?

Most HT-intensive states have been increasingly importing the skilled professional workers they need from other states and other nations. Overall, higher education access graduation rates in the US have been stagnant, with some evidence of actual decline among the traditional college age cohort—this at a time when much of the developed world are dramatically increasing tertiary graduation rates.

With the lack of a national policy in the US to expand access aggressively to higher education in general, and not just to science and engineering fields, and the continued lack of general investment by states in their public higher education systems, one might imagine that HT-sector growth in the US has certain limits and, further, that under certain conditions, HT growth may exacerbate the division of rich and poor.
New and robust research centers in both developed and developing economies may eventually reduce the flow of talent into the US. A significant number might still come to the US for their university education, but leave for China, India, Australia, or the European Union to pursue employment.

Most states have assumed that a robust HT sector is key to the postmodern economy and that a competitive HT economy lifts all economics boats. But this last assumption is not necessarily correct.

There is currently a frenzy of new state-based initiatives, most of which promote collaborative university and industry research as decisive tools for economic competitiveness, focusing their investment on specific promising fields—like biotechnology, nanotechnology, communications and similar popular HT bets on the future. State governments have largely become the locus of new policy ideas, influenced by a sense of increased competition among states and other international economies for economic growth, and in part cajoled by the lack of leadership at the federal level.

The controversy over stem cells generated by neo-conservative advocates who dominate Washington, for example, is symbolic of a regressive federal political environment for bolstering science and innovation in the US that is, in turn, shaping new entrepreneurial R&D policies at the state level.

It's a simple observation, that high tech leading states are seemingly neglecting to broadly educate their own native populations, and one that further indicates why the US higher education lead in the world is waning. And this is not to imply that the US should not be importing talent or investing in promising technologies—both aggressively educating the domestic population and educating and attracting talent from throughout the world are not mutually exclusive goals. Indeed, doing both is the key to bolstering socio-economic mobility and building an economically competitive future.

Studies on the dynamics of innovation tend to show that the flow of labor (talent) in and out of universities and businesses is perhaps more important then directed investments in the “next big thing” – although that is not a bad idea unto itself and its cheaper.

Beyond the implications for socio-economic stratification, there is the question of the sustainability of this model. With globalization and the rise of competitors that are essentially ending the US’s science and high tech hegemony, the market for talent is beginning to diversify.

Will there be a surplus of science and high tech talent that will continue to feed America’s HT economy, as a few economists have speculated? Or over the next decade will they return or stay at home, or seek opportunity in other, non-US countries? It is an interesting and largely unconscious gamble.


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