
# The long game

## The next president must lay the foundation for a next-generation economy

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What can a president do to build a next-generation economy? How can economic growth widen opportunity for all Americans, not just a privileged few? Every modern American president has wrestled with some version of these two questions during his first year in office. America's next chief executive will do so as well. History provides powerful lessons and debunks popular myths of where innovation comes from.

The United States' extraordinary track record of invention and technical achievement—from the cotton gin to the transistor to the self-driving car—isn't just a story of ingenious entrepreneurs and free markets. It's a story of moral leadership from the White House, both in setting grand challenges and pushing for policies to make them a reality. These actions fall into three big categories, each with their own lessons for the next president.

**Investment**

Innovation and opportunity have bloomed when political leaders make foundational, long-range investments in people, ideas, and audacious technologies for which there isn't yet a market.

Consider President Dwight D. Eisenhower. The former military man came into office at a moment of high anxiety and geopolitical instability. "We live," said Eisenhower in a May 1953 radio address, "not in an instant of danger but in an age of danger." At the same time, the mounting costs of the conflict in Korea demonstrated how unsustainable it would be for the U.S. to engage in serial conflicts in every global hotspot. Instead, Eisenhower proposed a "New

Look" military that, among other things, used technological strength—in nuclear weapons, aerospace, and electronics—to deter potential conflict. One result was a massive mobilization of scientific people and institutions rather than a massive mobilization of soldiers.

In so doing, he set in motion an era of dazzlingly rapid American technological achievement. In the San Francisco Bay area, for example, large defense contracts became the bedrock for a small-electronics industry starting in the Eisenhower years. Defense contractor Lockheed was the largest employer in the region that later became known as Silicon Valley. Hewlett-Packard, a company that also counted the feds as a big customer, became the second largest. In the first years after its 1957 founding, Fairchild Semiconductor—the plucky venture-backed start-up that was the training ground for future leaders of so many iconic Valley companies—got 80 percent of its book of business from government contracts. And right at the heart of the region, federal money turned Stanford University into a research juggernaut and an astoundingly fertile intellectual hub for innovators in both high tech and biotech.

All this went into overdrive after another first-year president, John F. Kennedy, declared that America would reach the moon within the decade, creating a fresh harvest of federal contracting opportunities for companies making transistors, circuits, and high-tech components. Government investment gave entrepreneurs an incentive to develop and build blue-sky technologies and offered the security of doing business with a patient and deep-pocketed customer.

Are Eisenhower's military spending and Kennedy's moon shots good models for the current age of austerity, when there is considerable political pressure to cut public spending and lower tax burdens? Yes, they can be. These previous presidents faced similar pressure (including considerable opposition in Congress to some of their ideas), but they still made a case for bold action and sustained investment.

What's more, unlike his or her predecessors, the next president doesn't need to start from scratch. We still have the extraordinary research complex that the Cold War and space race built. However, it is in a fragile position, partly because too few recognize the foundational role that public policy continues to play in the high-tech economy.

To keep the pipeline flowing with new ideas, the next president needs to prioritize sustained, and increased, investment in the national research agencies. To ensure the U.S. has the world's most high-skilled, innovative workforce, he or she must lead a national reinvestment in higher education that sustains excellence in all disciplines while lowering college costs for students. The golden age of the U.S. high-tech industry didn't come from applying market models to research and education—it came from the willingness to make very long-term investments in blue-sky research and talented people.

**Internationalism**

It is no coincidence that the U.S. became the global command-and-control center of the high-tech industry at the same historical moment that the nation opened its borders to a broad

range of nationalities and ethnicities. It's a pattern seen throughout human history: innovation grows in places with open societies and open borders, where economic and educational opportunities draw in new migrants from across the globe.

During President Harry Truman's first year, as the U.S. emerged from the devastation of World War II and into the Cold War chill, Sen. William Fulbright (D., Ark.) led the charge to establish international educational exchange programs that brought thousands of foreign students and scholars to our shores. The expansion of the Fulbright and other programs over the years (by leaders of both parties) turned American colleges and universities into destinations for the world's best and brightest—and helped make the U.S. higher education system the strongest in the world.

At the same time, the Truman administration kept the nation's doors open to refugees from war-torn Europe, a humanitarian act that turned out to have huge economic returns. Those who came here included some of the world's leading scientists and thinkers, but they also included people whose potential wasn't clear at the time. One was Andy Grove, a penniless 19-year-old Hungarian who stepped off a boat in New York in 1946 and who went on to cofound the legendary microchip maker Intel two decades later.

Borders opened wider—and welcomed an even more diverse range of people—when President Lyndon Johnson signed the Hart-Cellar Immigration Act of 1965. LBJ acted in the name of civil rights, as the bill lifted racist quotas that had restricted immigration from most of the world (especially Asia and Latin America) for generations. At the time, he and the bill's supporters believed it was mostly a symbolic gesture rather than something that would radically alter immigration patterns. But Hart-Cellar didn't just alter them—it transformed them entirely, and the nation in the process.

The post-1965 immigrant wave transformed the economy as well, and there's no better place to see this than in Silicon Valley. Indian- and Chinese-born entrepreneurs were at the helm of 24 percent of the technology enterprises started between 1980 and 1998, a formative and hugely lucrative time for high tech . The economic upside of open doors has been clear to the most successful occupants of the Oval Office. "Our strength," declared Ronald Reagan during his first year, "comes from our own immigrant heritage and our capacity to welcome those from other lands."

The next president must remember that an innovative economy relies on open borders and a willingness to make bets on all sorts of newcomers, whether they have a PhD or less than a high school education. An increase in the number of available H1B visas for highly educated workers—something Silicon Valley tech companies strongly support—is a critical piece of an innovation-focused immigration policy. But so is keeping our doors open to political refugees and providing amnesty to the undocumented immigrants already here. It's not only the right thing to do; it makes economic sense. Immigrants are more likely than U.S.-born workers to become business owners, and immigrants' rate of business formation is more than twice that of

those born here. Bottom line: The next-generation economy doesn't just depend on the next great technology. It depends on finding and supporting the next Andy Grove.

**Income security**

Ideas and growth industries blossom when a society is stable and secure enough to become a place of hopeful possibility, imagination, and some willingness to take risks. In the U.S. case, the emergence of a world-dominant tech industry came out of a remarkable 25 years of rising incomes and education levels that happened after World War II. The expansion of economic security and opportunity that occurred during that period formed the bedrock for subsequent decades of technological breakthroughs and entrepreneurial success stories.

How did this happen? The conventional wisdom in much of the business community is that redistributive government programs are anathema to entrepreneurship and productivity. To grow a next-generation economy, the argument goes, we need supply-side measures like tax cuts and looser market regulation.

But if we take a longer view, we see how earlier presidential commitments to broad-based economic security—from Social Security to the GI Bill to Medicare and Medicaid—worked in tandem with the aforementioned public investments in R&D and infrastructure to raise incomes and expand educational and professional opportunities. This opened up the field of people who had the opportunity to apply their raw intelligence and entrepreneurial energy to create new companies, markets, and industries.

Most of the people who founded iconic tech companies weren't born rich. They were middle-class kids whose families rode that wave of postwar upward mobility. Steve Jobs's father was a machinist who didn't finish high school. Intel cofounder Robert Noyce was the son of a small-town Iowa clergyman. Another legendary microchip-industry CEO, Jerry Sanders, was a street-fighting kid raised by his grandparents on Chicago's South Side. Growing up during a moment of political commitment to expanded opportunity and prosperity, these men benefited from policies that widened opportunities for their college education, invested in science and math programs and built computer labs in schools, and broke down some old prejudices about religion, ethnicity, and pedigree.

There aren't as many of these kinds of stories today. Entry into the high-tech elite often comes through educated parents, good schooling, and an offer of admission from a prestigious university like Harvard or Stanford. The arena of tech opportunity still hasn't widened to include enough women, African Americans, and Hispanics, as still-dismal diversity statistics at major tech companies reflect. But overall income security, or lack of it, also plays a big role. In an era of economic precariousness for so many, it's hard for people without family and community resources to break into the start-up game.

The next president must resist the temptation to celebrate high-tech entrepreneurship without properly recognizing that only a few privileged people can afford to take those kinds of risks. The innovation economy isn't a meritocracy. First-generation immigrants sending money

to family back home can't afford to get paid a pittance in the feeble hope that their stock options will one day be worth something. Single parents can't be expected to juggle the punishing work hours of early-stage tech companies—or, for that matter, many tech companies. Start-up culture is the domain of young, childless people who have an economic safety net for when the venture stumbles or fails.

Policies that create that safety net, like publicly backed venture funds or targeted grants to underrepresented individuals, are one way to enlarge the pool of who gets to be a tech entrepreneur. But along with that, the next president can and should lead the way in broadening the definition of entrepreneurship itself—beyond tech, and toward all sorts of small businesses. And through both moral leadership and policy action, the next president can and must make the case to the American people that public investments to ensure overall prosperity—for the many, not just the few—are foundational to the next-generation economy.

In moving forward on an agenda for opportunity and mobility, the next president can learn from the prior occupants of the Oval Office—and from some basic historical truths about where innovation comes from, and how it grows.

**Make long-term investments with few strings attached**

Unlike other countries, American public sector spending on innovation is often indirect—flowing through contracts to private industry or universities, regulatory institutions, or the tax code. Where investments are more obvious, like in appropriations to the National Science Foundation or the National Institutes of Health, they are part of a long game. Research investments take a long time to pay off, and thus their returns are not immediately obvious to either political leaders or the public.

But the indirect, almost stealthy nature of spending has been absolutely critical to the ascendance of the American high-tech economy. The government invested, and then it got out of the way. The result was many centers of innovation across public, private, and nonprofit sectors. Size mattered, too. Sure, there were big federal research labs. But there also were plenty of contracts to small private companies that created an incentive to be entrepreneurial, to push technological boundaries, to innovate and grow. Contracts also have been a way for Washington to encourage the private sector to adopt certain behaviors, from moving away from areas deemed prime targets for nuclear bombs in the 1950s to encouraging firms to hire more women and minorities in the 1970s.

To keep the bedrock firm, the next president should not be afraid to push for long-term direct investments in research and education. And to keep this world-class entrepreneurial economy churning and enlarging its reach, he or she should deploy the contracting system to create private sector incentives to tackle particular social problems as well as to bring a more diverse workforce into tech.

**Don't fear unintended consequences**

The most powerful American "innovation policies" haven't been top-down, command-and-control initiatives to boost particular kinds of industry. In fact, their greatest impact often has come through the unanticipated consequences of policies designed with broader and different goals in mind.

Dwight Eisenhower never once declared that he would build a science city, tech park, or innovation district. In fact, the massive growth of government-sponsored science under his watch made him fearful about the future of American ingenuity. In the same farewell address of 1960 in which he gloomily assessed the reach of a new "military-industrial complex," the president lamented how the innovative landscape had changed. "The solitary inventor, tinkering in his shop, has been overshadowed by task forces of scientists in laboratories and testing fields," he declared. "A government contract becomes virtually a substitute for intellectual curiosity."

Ike was dead wrong. But he was right in setting bold priorities in his first year in office that turned the U.S. military into a more high-tech fighting force. The extraordinary outlay of federal spending on scientific R&D during his administration helped build the ultimate "science city," Silicon Valley. While regional economic development was not something he or other political leaders of that era had in mind as they authorized new defense and space programs, the extreme geographic concentration of these investments created dynamic regions that today are the undisputed global capitals of tech.

It's a helpful example for the next president. Policies that support great public education can have the unintended consequence of identifying and nurturing the next Steve Jobs. Policies to keep borders open and welcoming to immigrants and refugees can draw in the next generation of inventors and creators and company founders. Along the way, these presidential moves can rebuild the economic security that propelled the American innovation economy forward in the first place.

**The new economy rests on solid old economy foundations**

Today, the United States has a roaring high-tech economy but levels of economic inequality that are greater than at any time since the age of President William McKinley. This isn't sustainable. Broad-based economic security may not be required to grow a wave of next-generation companies, but it is essential to maintain innovation and economic dynamism over time. It also ensures that the benefits of economic growth flow to the many, not just the few.

As the dynamics of this year's election have made quite clear, the next occupant of the White House will have to address the great anxieties and anger so many Americans feel about an economy that is no longer providing the opportunity, mobility, and security that they and their families and communities need. One way to do so will be to no longer think of "economic policy" and "tech and innovation policy" as two separate streams, but as a whole that is greater than the sum of its parts.

The high-tech industry has been one of the extraordinary American success stories of the past four decades. The next president should look to that industry as a resource and prioritize public investment that sustains its growth, but not be afraid to challenge and disrupt it where necessary. The prescription is simple, but it demands political audacity and a willingness to play a very long game. Here is an opportunity for moral leadership as well as policy leadership, and a way for the next president to cement his or her legacy as a builder of the next-generation American economy.

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