THIRD WAY

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GOP Candidates: On the Road to Nowhere

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Americans view our country as a nation of innovators and innovation as the fuel that drives our economic growth. And indeed, the U.S. leads the world in the number of patents filed, [1] Fortune 500 companies founded, [2] and millionaires created. [3] But the myth of the lone inventor in his or her shed building the next big thing is too often just that: a myth. As far back as the 19th century, the lone inventor has often lacked the resources, capital, or know-how to solve great innovation challenges on their own; those who succeeded often did so with a big assist from the government.

From Abraham Lincoln to George H.W. Bush and beyond, the history of American innovation is actually that of the public sector working hand-in-hand with business to solve market failures, provide needed expertise, or raise the capital to bring a risky project to completion. U.S. Presidents—both Democratic and Republican—have fiercely championed government investment in innovation. Even President Reagan, the father of the modern conservative movement, recognized the public sector's important role in supporting private sector innovation. In 1983, he highlighting how the federal patent system" initiated the transformation of the United States from an importer of technology to a world leader in technological innovation." [4]

But the records of past GOP presidents, which helped drive the innovation that created American business triumphs in the railroad, aviation, Internet, and biotechnology sectors, stand in stark contrast to today's Republican presidential field. The 2012 candidates appear to be abandoning their party's tradition of public-private partnerships; instead of being celebrated, these successes are being derided as government meddling or wastes of money.

This is both short-sighted and ill-considered. There is little doubt that the clean energy sector will see some of the largest

gains in the global economy over the coming decades, creating an estimated $2.3 trillion in economic activity worldwide. Today's Republicans should heed their party's history of support for the partnerships that are critical to help the American private sector overcome capital, research, and market challenges and ensure that this country has a leading share of that market.

Republicans and Private Innovators: Partners in Growth

Time and again, America has faced major technological challenges that the private sector was not able to overcome on its own. In each case, American business leaders and policymakers recognized the benefits of innovating our way through the obstacles. In the last 150 years, these types of public-private partnerships gave birth to the transcontinental railroad, civil aeronautics industry, the Internet, and biotechnology, among many others.

Economists identify innovation as the foundation for the U.S. becoming the world's economic superpower in the 20th century and the key ingredient for sustaining that status in the 21st century. A groundbreaking study by Nobel Economist Robert Solow found that innovation was responsible for 87.5% of America's economic growth from 1909 to 1949, when the country went from relative backwater to a bustling economic super power. [5] Innovation created technologies that gave rise to new industries, improved worker efficiency, reduced manufacturing costs, reduced travel times, created new goods and services, and eliminated costly health threats. Noted economists Dale Jorgensen, Mun Ho, Jon Samuels, and Kevin Stiroh found that economic factors attributed to innovation—capital investment and increased efficiency—accounted for three-quarters of U.S. growth in the second half of the 20th century as well. [6]

The 2012 GOP Candidates' Records

The 2012 Republican Presidential candidates, including former Governors Mitt Romney and Tim Pawlenty and

Representatives Michele Bachman and Ron Paul, are abandoning public investment in innovation. They have supported the Republican budget proposal drafted by Rep. Paul Ryan (WI), or proposals that reduce investments even more steeply. They would take a chainsaw to government investment in R&D. As Rep. Ryan explained in a Wall Street Journal op-ed, he would roll back "expensive handouts for uncompetitive sources of energy, calling instead for a free and open marketplace for energy development, innovation and exploration." [7] This Republican ideology that opposes investments in innovation could make it difficult for any Republican president to carry on his or her party's tradition of supporting the R&D efforts that have kept America at the forefront of the global economy.

President Abraham Lincoln Invests in the Intercontinental Railroad

In the 1800's, the railroad emerged as a faster, more reliable, and more cost-efficient way to transport both people and goods. [8] However, rapid westward expansion outpaced railroad construction, and western products and commodities could not get to the eastern populace easily. Private investors were understandably wary of the extreme risks and huge engineering obstacles to laying rails across the Rocky Mountains. [9] In the midst of the Civil War, President Abraham Lincoln recognized the economic and military importance of linking the country in iron rail. He championed the Pacific Railway Act to provide capital and long-term financing. This enabled the Central Pacific and Union Pacific Railroads to build the tracks that linked the continent's eastern and western railroads. [10]

But that's not the whole story. Building railroads across the Rockies and desert was also one of the great technological challenges of the late 19th century. Most of the engineering work involved in the transcontinental railroad was the direct consequence of "strategically targeted polices to support engineering science from the beginning of the 19th century." [11] The striking of the golden spike helped spur

massive growth. American GDP jumped from $96 billion in 1869 to $152 billion in 1879 (in 2000 U.S. dollars). [12] Companies like Montgomery Ward and Sears Roebuck expanded, new industries and towns popped up near the rail lines, and Chicago—a small cow town at the center of cattle-grazing and railroad hubs—became the slaughterhouse capital of the world. [13]

President Calvin Coolidge Jump-Starts Commercial Aviation

In 1903, thanks to the experiments of the Wright brothers, the U.S. gave birth to powered flight. By 1913, however, the U.S. had fallen far behind other countries in the emerging field of aeronautics, ranking 14th in government investment. Foreign companies took the lead in airplane development. [14] In response, the federal government created the National Advisory Committee for Aeronautics (NACA) in 1925, to fund and coordinate industrial, academic, and federal R&D in flight. [15] Three years later, the investment was paying off. Research and testing at a NACA facility led Lockheed Aircraft to dramatically increase the maximum speed its airplanes could reach. "Record impossible without new cowling," Lockheed telegrammed to NACA, "All credit due NACA for painstaking and accurate research." This one breakthrough saved the airline industry $5 million at the time. [16]

New cowlings were the first in a long string of innovations in civil aviation, including metal construction, retractable landing gear, higher altitude flying, and greater airspeeds, most of which occurred in the teeth of the Great Depression. Companies simply could not have afforded this research on their own. [17] These innovations also led directly, in 1935, to the development of the Douglass Aircraft DC-3, the first plane that could compete with railroads for passenger travel. [18] Able to speedily fly large numbers of passengers in comfort, the DC-3 was quickly adopted by American, TWA, United, and Eastern Airlines, giving rise to the modern airline industry. [19]

President Dwight Eisenhower helps Spur the Computing Revolution

Another need arose in the late 1950's that the markets were not equipped to handle. With the Cold War heating up, the Defense Department decided it needed a way for its increasingly important computer systems to share information across the globe. It funded in-house and private sector researchers to develop new solutions to reach this goal. By 1962, the U.S. was investing more in computing than all other countries combined. [20] Seven years later, the first two computers were successfully connected, and by 1972, the Defense Department's early version of the Internet was showcased at an international conference, putting it on track for commercialization. [21] Ultimately, it was the government's $1 million investment that spawned the computer and information technology industries. [22] Today's tech giants, like Microsoft, Google, Apple, and Netflix, generate almost $1 trillion in revenues. [23] Those sectors would likely not exist, at least not in a form dominated by U.S. companies, without the Pentagon's investment. [24]

President Ronald Reagan Revolutionizes Military Technology and Manufacturing

Even as he worked passionately to reduce government spending, President Ronald Reagan saw tremendous value in supporting innovation—particularly when it came to boosting America's defense program. As the Cold War escalated, President Reagan made the modernization of America's fighting forces a top priority and turned to technology investment to get the job done. He drastically increased funding for DoD's Manufacturing Technology Program, designed to create and promote new technologies to enhance weapons systems and reduce production costs. [25] President Reagan's dogged leadership also ensured funding for the multi-billion dollar Strategic Defense Initiative (SDI), requesting $5.9 billion in funds in 1985 alone and a total of nearly $24 billion between 1985 and 1988. [26] While SDI did not produce the missile defense capabilities it was designed

to, it led to countless technology breakthroughs in medical research, cancer treatment, electronics, communications, and computing that American companies have used to create jobs, increase revenues, and innovate in competitive sectors. [27]

President George H.W. Bush and the Genome Project

In 1990, the U.S. began the Human Genome Project (HGP), a joint venture of Department of Energy and National Institutes of Health, to sequence human DNA and map the almost 25,000 human genes. [28] The goal was to gain a much greater understanding of human development and medicine, leading to the next generation of biomedicines. [29] Government funding and leadership was viewed as critical because of the costs involved in the project and the desire to ensure that any interested researcher could have access to discoveries from the HGP. Total funding for the project exceeded $2.7 billion. [30] The resulting discoveries—which were available for license to any private sector company—helped launch the multibillion-dollar biotechnology sector and, so far, have led to the creation of over 350 new biotech products. [31] During the lifetime of the HGP, from 1993 to 2001, when the rough draft of the genome was completed, the government-funded project and open licensing of the discoveries enabled the biotech industry revenues to triple from $8 billion to over $27 billion. [32] Since initial funding in 1988, the HGP and the related research and industry activity have produced $796 billion of economic output and over 310,000 jobs. [33]

Conclusion

Transcontinental rail service. Passenger air travel. Information technology. Biotechnology. These American successes might not have occurred, at least not in the U.S., without public-private partnerships. Democratic and Republican presidents have provided the capital, fostered the scientific and engineering know-how, created the initial market demand or funded the research. And American

businesses, workers, taxpayers, and shareholders are better off because of it. Today, clean energy requires the same investment. It also presents the same opportunity for economic growth. The question is: will our president, regardless of party, provide the federal partnership for the private sector that has benefited us so many times in our past? Or, if it is a Republican, will he or she turn their back on the party's long history of innovation? In his 2010 book, Mr. Romney lamented the decline of government investment in research, saying it "needs to grow instead, particularly in engineering and the physical sciences." [34] We can only hope that spirit, long held by Republican leaders, will imbue his campaign and those of his rivals.

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