Back to the *Future*

Getting Tennessee in the Game of Today's Innovation Economy

Beacon
CENTER OF TENNESSEE

Key *Takeaways*

- The companies that dominate the technology and innovation sector are increasingly concentrated in a few coastal cities.

- Even though Tennessee's technology sector has grown considerably in the last few years, particularly in the Nashville market, Tennessee is still far from a major player in the innovation economy.

- If Tennessee wishes to attract the type of companies and innovators that California and others have for years, Tennessee should embrace a culture of innovation without government intrusion.

- The first step to creating a culture centered around innovation is to adopt a broad regulatory sandbox, a program to assist innovative entrepreneurs and small business owners as they test, try, and launch new technologies and products. Sandboxes temporarily remove archaic regulations that have nothing to do with health and safety and make it difficult or impossible for those entrepreneurs to get their products off the ground.

Technological Change: *Ahead at Warp One, Mr. Sulu*

Harvard Business School professor Michael Porter called innovation "the central issue in economic prosperity," and it is hard to disagree with him. Since the proliferation of the internet in the 1990s, the American and global economies have become increasingly dominated by the technology industry and technological change. Devices and services like GPS, smartphones, personal computers, high-speed broadband, social media, streaming services, and others have transformed our daily lives and human interactions. And companies largely responsible for this change have been well rewarded. The "Big Five" tech companies of Amazon, Apple, Facebook, Alphabet (Google), and Microsoft litter the Fortune 50. Meanwhile, former "unicorn" technology startups like Uber, Airbnb, and DoorDash have created a whole new lexicon with the "gig economy," created more competitive marketplaces and even put legacy industries like taxi medallions at the brink of extinction.

To the average American, it may seem these changes and innovations in technology occur at an ever-increasing pace—and that's not far from the truth. In 1965, Fairchild Semiconductors and Intel cofounder Gordon Moore theorized that the number of components per integrated circuit would double every year for the next decade.[1] He later revised that doubling to every two years, a fact that has held ever since (now known as "Moore's Law"). The ever-increasing efficiency of technology is widely believed to have led to a surge in American workers' productivity in the late 1990s and early 2000s and made the innovations of the past quarter century possible.[2] This clear correlation between innovation and productivity has even led some to conclude that "productivity growth is the key economic indicator of innovation."[3] This growth and the influence of technology everywhere and in all sectors has led to the oft-quoted belief that "software is eating the world."[4]

Alderaan's Not Far Away: *It's Californication*

While most Americans have been able to take advantage of these new technologies and improvements to some degree, the economic growth associated with creating them has been extremely concentrated. Take Silicon Valley, for example—an area so intrinsically linked with technology that the place itself is synonymous with the tech industry, similar to that

1   Gordon Moore, "Cramming more components onto integrated circuits." *Electronics Magazine*, Vol. 38. No. 8. April 19, 1965. https://newsroom.intel.com/wp-content/uploads/sites/11/2018/05/moores-law-electronics.pdf.
2   Richard Anderson, "How Well Do Wages Follow Productivity Growth?" *Economic Synopses*. Federal Reserve Bank of St. Louis. 2007. https://files.stlouisfed.org/files/htdocs/publications/es/07/ES0707.pdf.
3   Dale Jorgenson, Mun Ho, and Jon Samuels, "Long-term Estimates of U.S. Productivity and Growth." Third World KLEMS Conference. May 12, 2014. http://www.worldklems.net/conferences/worldklems2014/worldklems2014_Ho.pdf.
4   Marc Andreesen, "Why Software is Eating the World." *Wall Street Journal*. August 20, 2011. https://www.wsj.com/articles/SB10001424053111903480904576512250915629460.

of Hollywood's link to the film industry. San Jose, the largest city in the Santa Clara/Silicon Valley region, has grown so much because of the cluster of technology companies there that a 2018 Brookings Institute Report found that it was the second strongest metro economy in the world, up 13 spots from 2000-2016. Meanwhile, San Francisco, just outside of the "traditional" Silicon Valley border, was fourth. While not as impressive, Nashville came in a respectable 41st, with Memphis at 188.[5]

The innovation economy has actually become even more concentrated in recent years, despite the strong economic growth in the Sunbelt and growth of telecommuting and working from home. From 2005 to 2017, more than 90 percent of America's innovation-sector growth was in five metro areas: San Jose, San Francisco, San Diego, Boston, and Seattle. One-third of all innovation-sector jobs were concentrated in a mere 16 counties.[6] This increasing concentration is likely the result of "agglomeration economies" in which initial successful firms creating a demand for highly skilled labor attracted top talent, thereby creating network and spillover effects. This eventually creates an industry "cluster" that serves almost like a black hole with a gravitational pull for new top talent and startups, creating a self-reinforcing cycle.[7]

More than the NASDAQ Ticker is Moving

However, as it has become clear that the technology sector will continue to drive the growth of the American economy, other states and metropolitan areas are growing increasingly unwilling to let California and a handful of cities permanently dominate this landscape. For a variety of reasons like lower cost of living, expansion to newer markets, or a better regulatory environment, technology companies and workers have been looking to move like never before, such as Amazon's HQ2, Elon Musk relocating Tesla's corporate offices to Texas, and tech workers looking to escape coastal cities during the pandemic.[8] In the case of Tesla, it also seems like California leaders were trying to push Tesla out. In response, some leaders, like Miami Mayor Francis Suarez, have sought to help with that move. Suarez has actively searched for ways to attract venture

capitalists, startups, and the bitcoin community, even using publicity stunts like using crypto "laser eyes" and setting up billboards to highlight Miami's openness to entrepreneurs and innovators.[9] Not to be outdone, last year the city of Savannah, Georgia, began offering $2,000 apiece to tech workers with at least three years of experience and the ability to work remotely to help them relocate there.[10] In perhaps the most successful effort, Wyoming began a series of reforms in 2017 to position the state as a regulatory haven for bitcoin and other blockchain-based projects.[11] One reform allowing for the creation of "crypto banks" (called Special Purpose Depository Institutions) is estimated to bring up to $20 billion in investment to the state.[12]

5   Max Bouchet, Sifan Liu, Joseph Parilla, and Nader Kabbani, "Global Metro Monitor 2018." Brookings Institution. June 2018. https://www.brookings.edu/wp-content/uploads/2018/06/Brookings-Metro_Global-Metro-Monitor-2018.pdf.
6   Robert Atkinson, Mark Muro, and Jacob Whiton, "The Case for Growth Centers: How to spread tech innovation across America." Brookings Institution. December 2019. https://www.brookings.edu/wp-content/uploads/2019/12/Full-Report-Growth-Centers_PDF_BrookingsMetro-BassCenter-ITIF.pdf.
7   Ryan Donahue, Joseph Parilla, and Brad McDearman, "Rethinking Cluster Initiatives." Brookings Institution. July 2018. https://www.brookings.edu/wp-content/uploads/2018/07/201807_Brookings-Metro_Rethinking-Clusters-Initiatives_Full-report-final.pdf.
8   "Coronavirus: Elon Musk vows to move Tesla factory in lockdown row." BBC.com. May 10, 2020. https://www.bbc.com/news/world-us-canada-52601750; Erica Pandey, "Tech workers are moving—but the Bay Area and New York are still on top." Yahoo! News. July 13, 2021. https://news.yahoo.com/tech-workers-moving-bay-area-102029684.html.
9   Daniel Raisbeck, "Mayor Francis Suarez Wants to Turn Miami Into an Un-woke, Pro-Bitcoin, Tech Billionaire's Paradise." Reason. May 20, 2021. https://reason.com/video/2021/05/20/mayor-francis-suarez-wants-to-turn-miami-into-an-un-woke-pro-bitcoin-tech-billionaires-paradise/.
10   Jeanette Settembre, "Post-coronavirus, Georgia city paying tech workers to move there." Fox Business. June 10, 2020. https://www.foxbusiness.com/lifestyle/savannah-fund-paying-tech-workers-to-move-there.
11   Gregory Barber, "The Newest Haven for Cryptocurrency Companies? Wyoming." Wired. June 13, 2019. https://www.wired.com/story/newest-haven-cryptocurrency-companies-wyoming/.
12   Mark Wilcox, "Five 'blockchain banks' may open in Wyoming." Gillette News Record. September 17, 2019. https://www.gillettenewsrecord.com/news/wyoming/article_c4100610-f661-54a7-9557-94370bacf6ce.html.

Leveling Up Tennessee's *Innovation Economy*

While Tennessee is known for its music and hospitality industries, it has raised its tech profile recently, especially in the Nashville area. Over the past several decades, Nashville has sought to lure several large technology companies, often on the backs of taxpayers, starting with Dell several decades ago.[13] Most recently, Oracle announced that it would be creating 8,500 jobs with a new regional hub in Nashville due to its "nearby colleges and universities, a 'vibrant culture' and high quality of life."[14] A recent joint report by Middle Tennessee State University and the Greater Nashville Technology Council (GNTC) found that the number of tech jobs in Middle Tennessee jumped 36 percent from 2014 to 2019, far greater than the national average.[15] Real estate company CBRE found a similar result, revealing Nashville has had the fastest-growing tech workforce in the country since 2015.[16]

Knoxville and Chattanooga have also garnered attention for their growing entrepreneurial and innovative ecosystems. Knoxville has been recognized as a potential innovation growth center due to its relatively high university STEM research and development per capita and high number of residents with STEM doctoral degrees.[17] Meanwhile, Chattanooga's strong foundation support and public officials' emphasis on fostering an environment of innovation and growth has been praised as a model.[18] The Tennessee General Assembly has also implemented several pro-innovation laws in recent years. In 2015, the legislature passed a law that allows the testing of autonomous vehicles statewide as long as the testing complies with all other rules of the road.[19] In 2020, the General Assembly passed a law allowing delivery robots to use sidewalks.[20] As a result of the change, Amazon selected Franklin, Tennessee, as one of two cities in the South to test its Amazon Scout delivery robots.[21] Finally, earlier this year, the General Assembly passed the first law in the nation prohibiting local governments from regulating the operation of online marketplaces like Etsy, Turo, or Airbnb.[22] Now, no Tennessee city or county can create a patchwork of onerous regulations that would inhibit these platforms.[23]

However, there are challenges to this growth of Tennessee's tech presence. Some are concerned that Tennessee does not

13   Sandy Mazza, "From Dell to Oracle: How Nashville became a tech hub." *The Tennessean*. April 14, 2021. https://www.tennessean.com/story/money/2021/04/15/dell-oracle-nashville-how-city-became-hub-tech-industry/7225124002/.
14   Ibid.
15   "Report: Tech job growth in Middle Tennessee far outpacing the nation." *MTSU News*. December 22, 2020. https://mtsunews.com/state-of-middle-tennessee-tech-report-2020/.
16   Adam Sichko, "Nashville's five-year tech job growth is biggest in the nation, CBRE analysis finds." *Nashville Business Journal*. July 13, 2021. https://www.bizjournals.com/nashville/news/2021/07/13/cbre-tech-talent-report-2021.html.
17   Robert Atkinson, Mark Muro, and Jacob Whiton, "The Case for Growth Centers: How to spread tech innovation across America." Brookings Institution. December 2019. https://www.brookings.edu/wp-content/uploads/2019/12/Full-Report-Growth-Centers_PDF_BrookingsMetro-BassCenter-ITIF.pdf.
18   Yasuyuki Motoyama, Emily Fetsch, Chris Jackson, and Jason Wiens, "Little Town, Layered Ecosystem: A Case Study of Chattanooga." Kauffman Foundation. February 2016. https://www.kauffman.org/wp-content/uploads/2019/12/chattanooga_entrepreneurship_ecosystem_study.pdf.
19   Tenn. Code Ann. § 55-8-202(a).
20   Public Chapter No. 685. 111th General Assembly. https://publications.tnsosfiles.com/acts/111/pub/pc0685.pdf.
21   Emily West, "Franklin is one of two locations in the South to test the delivery robot Amazon Scout." *The Tennessean*. July 21, 2021. https://www.tennessean.com/story/news/amazon/2020/07/21/amazon-scout-franklin-robot-package-delivery/5476702002/.
22   Public Chapter No. 339. 112th General Assembly. https://publications.tnsosfiles.com/acts/112/pub/pc0339.pdf.
23   Justin Owen, "Tennessee takes huge step in slashing red tape that strangles innovation." Beacon Center of Tennessee. April 20, 2021. https://www.beacontn.org/tennessee-takes-huge-step-in-slashing-red-tape-that-strangles-innovation/.

have the trained labor force to meet this growing demand for skilled labor. GNTC President Brian Moyer recently admitted that Nashville does not have the necessary talent pool to fill this rapid expansion of tech jobs.[24] Tennessee startups and entrepreneurs also face difficulties obtaining funding, with 75 percent of all venture capital going to startups in California, New York, and Massachusetts.[25] Additionally, universities often play an integral role in research and development that spins off into startup ventures. In a 2017 report, the Milken Institute found that Tennessee universities are not the strongest economic drivers in this space, with Vanderbilt ranking 42nd in the nation, UT-Knoxville 85th, and Memphis 167th.[26] Tennessee has also traditionally lagged behind the nation in overall economic dynamism with a smaller rate of business churn, labor turnover, and fewer new jobs per new company.[27] Lower levels of dynamism tend to lead to stagnation and reduce the opportunities for innovators to bring forth new ideas and find the best workers.[28]

Permissionless Innovation: *This Is the Way*

It is clear that if Tennessee's economy is going to thrive in the economy of the future, it must become a leader in innovation today. However, as the Jedi master Qui Gon Jinn observed, "Your focus determines your reality." If Tennessee is to become the national leader in innovation, its policymakers must be willing to pursue bold reforms that attract entrepreneurs and innovators seeking to be the next Elon Musk or Steve Jobs. How can Tennessee leaders create such an environment? By fostering the strongest climate of innovation without government intrusion in the country.

Technologist Adam Thierer boils the concept of permissionless innovation—that climate of innovation without government intrusion—down to a simple question: "Must the creators of new technologies seek the blessing of public officials before they develop and deploy their innovations?"[29] Or put another way, does the entrepreneur have the right to innovate? On one hand, regulators and lawmakers can embrace what is known as the "precautionary principle"—the belief that new ideas or technologies could pose a danger or risk until the innovator can *prove* the innovation is safe and the regulators have created a way for them to operate. Essentially, the innovation is presumed guilty until proven innocent. Nashville's debacle with electric scooters in 2018 perfectly illustrates this mindset: city leaders argued that Bird could not operate "until a regulatory scheme [was] adopted by ordinance regarding the permitting and operation of such scooters."[30] Ultimately, Metro Nashville government would seize more than 400 scooters without a court order before Bird agreed to suspend operations until a licensing scheme could be created.[31]

On the other hand, lawmakers can facilitate that climate of innovation without government intrusion by giving entrepreneurs the right to innovate, whereby new technologies are presumed to be free of onerous regulations. Under this approach, the burden is on regulators to show the risks to health and safety to the public; if they cannot, the innovation can proceed with minimal interference. This approach allows for the greatest experimentation and freedom, often with extraordinary results. For example, when the Clinton administration released its "Framework for Global Electronic Commerce" regarding internet regulation in 1997, it essentially created a right to innovate framework through the following five principles:

1. **The private sector should lead;**
2. **Governments should avoid undue restrictions on electronic commerce;**
3. **Where governmental involvement is needed, its aim should be to support and enforce a predictable, minimalist, consistent and simple legal environment for commerce;**
4. **Governments should recognize the unique qualities of the internet; and**
5. **Electronic commerce over the internet should be facilitated on a global basis.[32]**

24   Cassandre Stephenson, "Tech jobs are pouring into Nashville. How many will go to local workers?" *The Tennessean*. May 9, 2021. https://www.tennessean.com/story/money/2021/05/10/nashville-tech-jobs-oracle-nashville-software-school/7400540002/.
25   Clara Henderickson, Mark Muro, and William Galston, "Countering the geography of discontent: Strategies for Left-Behind Places." Brookings Institution. November 2018. https://www.brookings.edu/wp-content/uploads/2018/11/2018.11_Report_Countering-geography-of-discontent_Hendrickson-Muro-Galston.pdf.
26   Ross DeVol, Joe Lee, and Minoli Ratnatunga, "Concept to Commercialization: The Best Universities for Technology Transfer." Milken Institute. April 2017. https://milkeninstitute.org/sites/default/files/reports-pdf/Concept2Commercialization-MR19-WEB.pdf.
27   "Index of State Dynamism: Tennessee." Economic Innovation Group. May 2017. https://eig.org/index-state-dynamism/tennessee.
28   "Dynamism in Retreat: Consequences for Regions, Markets, and Workers." Economic Innovation Group. February 2017. https://eig.org/wp-content/uploads/2017/07/Dynamism-in-Retreat-A.pdf.
29   Adam Theirer, "Permissionless Innovation: The Continuing Case for Comprehensive Technological Freedom." Mercatus Center. 2014.
30   Joey Garrison, "Nashville to Bird: Remove all scooters from city rights-of-way by end of Wednesday or face impounding." *The Tennessean*. June 6, 2018. https://www.tennessean.com/story/news/2018/06/06/nashville-bird-remove-all-scooters-city-rights-way-end-wednesday-face-impounding/679141002/.
31   Joey Garrison, "Bird agrees to suspend operations in Nashville, wait for scooter regulations." *The Tennessean*. June 6, 2018. https://www.tennessean.com/story/news/2018/06/07/bird-scooters-impounded-nashville-thursday/681281002/.
32   President William J. Clinton and Vice President Albert Gore, Jr., "A Framework for Global Electronic Commerce," July 1, 1997, https://clintonwhitehouse4.archives.gov/WH/New/Commerce/read.html.

It should be noted that these principles show that the administration, while lax on specific regulations, was in fact forward-thinking in terms of fostering an environment and understanding the uniqueness of this new technology. This means that creating an environment of permissionless innovation requires a more proactive role than a reactive one.[33] Had the government taken a different approach, it is difficult to imagine we would be enjoying the conveniences, capabilities, and benefits of the digital world we have today.

With the digital revolution and modern technology economy deeply ingrained in our daily lives, it may seem like nothing as revolutionary as the internet could be at stake if we were to completely embrace the precautionary principle. However, we can have no idea what revolution the next innovator will create; as former Patent Office Commissioner Charles Duell is widely quoted as remarking in 1889, "Everything that can be invented has been invented." In fact, creating a permissionless innovation framework will continue to become even more important as technology continues to change at an exponential rate while government agencies evolve at a slower rate—a concept known as Martec's Law.[34] This means as new technologies and innovations are created, they will continue to run into questions and issues with regulators and policymakers as policy continues to struggle to keep up with technology.
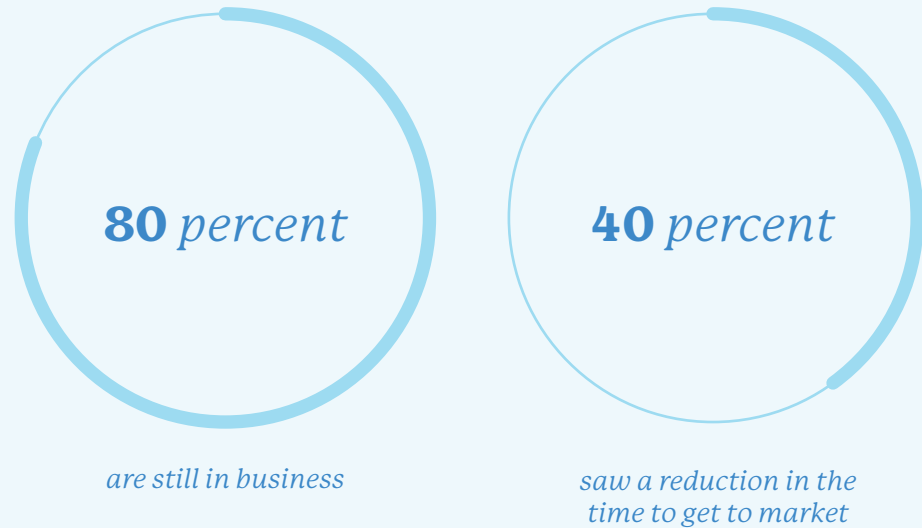
33   Andrea O'Sullivan, "Permissionless Innovation: A Pro-Growth Policy Vision and Plan for Florida." The James Madison Institute. July 7, 2021. https://www.jamesmadison.org/wp-content/uploads/2021/07/Backgrounder_Innovation_7.7.21_v02.pdf.
34   James Czerniawski, "Utah Innovates: Regulatory Frameworks for the Future." Libertas Institute. December 30, 2019. https://libertas.org/policy-papers/regulatory_sandbox.pdf.

Armand Lauzon's *Story*

Armand Lauzon was inspired to create his business when he observed how difficult it was for his cousin, a manicurist, to maintain her job after having a baby. Armand launched an app called Project Belle, allowing his cousin and others like her to be entrepreneurs, set their own hours and rates, and take control of their careers. Project Belle quickly found success in Nashville, with numerous cosmetologists and other beauty-industry professionals, massage therapists, personal trainers, and nutrition coaches gravitating towards the model and offering their services on the app. Unfortunately, the state cosmetology board has issued a multitude of rules and regulations to prevent competition in the state. One of those regulations stated that it was illegal to practice cosmetology outside of a brick-and-mortar salon unless it was for a photoshoot or an invalid—an obviously arbitrary regulation. The board took action, issuing Armand a $500 penalty and a cease-and-desist notice. Armand decided not to back down. He took on the board, arguing that Project Belle was merely connecting buyers and sellers and not personally providing services. The counteraction was successful and the board backed down, allowing Project Belle to operate in peace. Had Armand been able to simply participate in a regulatory sandbox, he could have saved untold dollars and hours trying to launch his business.

Of participants in the FCA regulatory sandbox:

80 *percent*

are still in business

40 *percent*

saw a reduction in the time to get to market

Regulatory Sandboxes in 2021: *A Regulatory Reform Space Odyssey*

While there is no one silver-bullet policy to create that climate of innovation, the strongest first step Tennessee lawmakers could take would be to create a regulatory sandbox. A regulatory sandbox is a program set up to assist innovative entrepreneurs and small business owners as they test, try, and launch new technologies and products by temporarily removing archaic regulations that have nothing to do with health and safety and that make it difficult or impossible for those entrepreneurs to get their products off the ground.

By fast-tracking new businesses through bureaucratic red tape and giving them regulatory clarity, lawmakers can make it easier for these entrepreneurs to start and grow their companies and create jobs in our state. In fact, according to the National Small Business Association, the average cost of regulations for a business in its first year is more than $83,000.[35]

The first regulatory sandbox in the world was launched in 2016 by the United Kingdom's Financial Conduct Authority (FCA), focusing on financial technology products ("fintech"). Since then, the program has admitted nearly 700 companies into the program with promising results.[36] Additionally, a different study found that participants in the

35   "2017 NSBA Small Business Regulations Survey." National Small Business Association. January 17, 2017. https://www.nsba.biz/wp-content/uploads/2017/01/Regulatory-Survey-2017.pdf.
36   "The Impact and Effectiveness of Innovate." Financial Conduct Authority. April 2019. https://www.fca.org.uk/publication/research/the-impact-and-effectiveness-of-innovate.pdf.

States with sandboxes
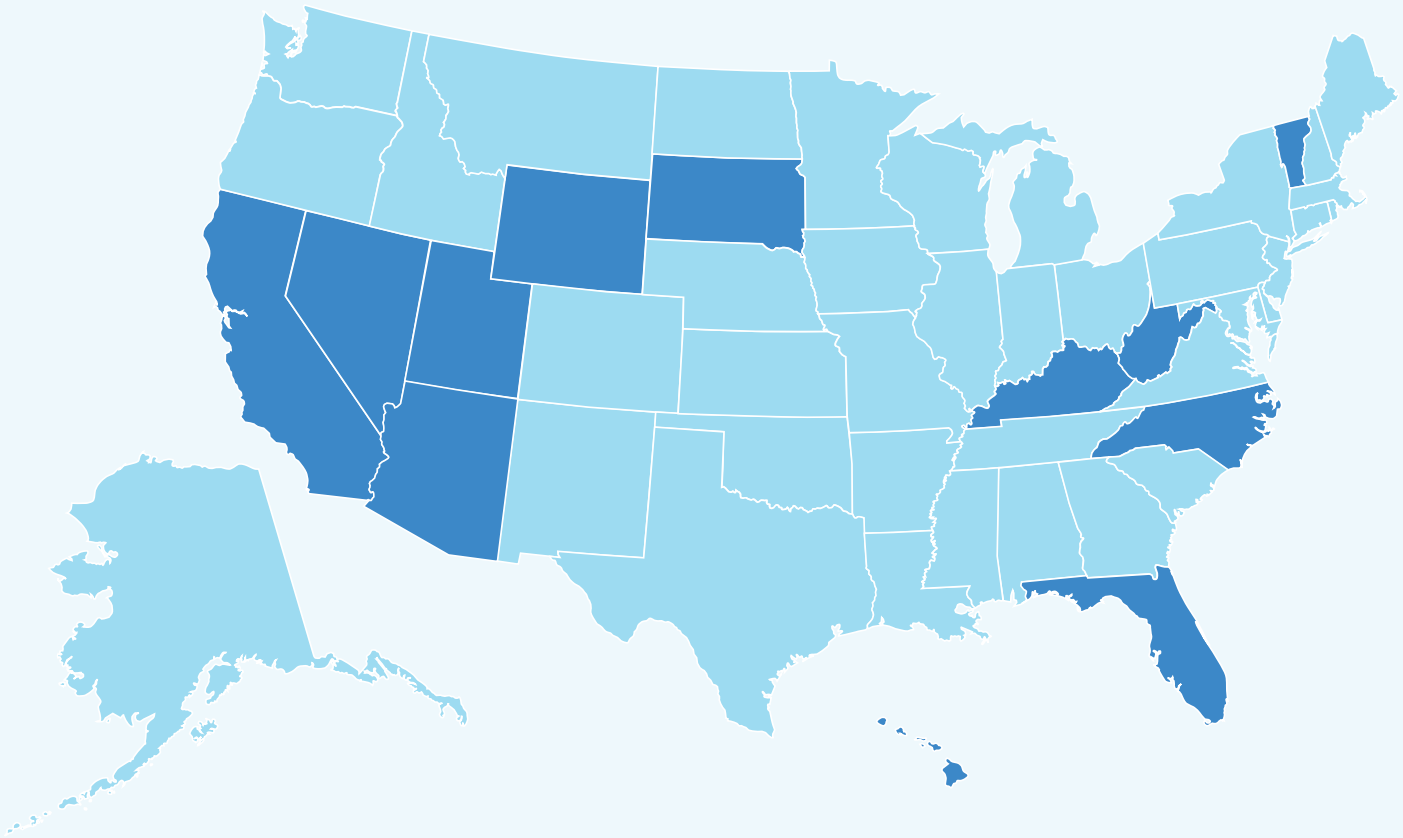
FCA's sandbox were 50 percent more likely to obtain funding and would receive 15 percent more funding than nonparticipants.[37]

Since then, 57 countries have implemented regulatory sandboxes, with Arizona becoming the first state to do so by creating a fintech sandbox in 2018.[38] In all, 20 different sandbox programs have been created across 12 states in the fields of fintech, blockchain, insurance, legal services, digital medical technologies, and property technology. Earlier this year, Utah passed the first industry-agnostic sandbox, allowing innovators and entrepreneurs to seek regulatory relief in any industry.[39]

While a regulatory sandbox does create a mechanism to help entrepreneurs bring new ideas to market, it can also prevent regulators from living out the precautionary principle through regulatory creep. Sadly, as new innovations enter the marketplace, regulators—whether they are boards or agencies—often try to expand their regulatory scope without express statutory authority

to do so. By creating Tennessee's own industry-agnostic sandbox, lawmakers could create an avenue to ensure no executive agency expands beyond the power vested in it by the legislature.

A regulatory sandbox not only offers regulatory relief, flexibility, and clarity to an innovative company, but it can also protect them from getting caught in bureaucratic delay. Regulatory sandboxes help innovative new firms fast-track their products and services to market by working in conjunction with specialized and dedicated regulators; they usually go through a separate application process. Finally, one way to improve upon the typical sandbox model would be to add a permanent "no-action" component in which the regulators in charge of the sandbox must use strict scrutiny to determine whether the applicant's technology is even contemplated by existing statutes and thus fails to fall under the purview of any existing regulations.

However, as with most policies, there are risks. In designing and

37   Giulio Cornelli, Sebastian Doerr, Leonardo Gambacorta, and Ouarda Merrouche, "Digging for Gold: How regulatory sandboxes help fintechs raise funding." Centre for Economic Policy Research. February 2, 2021. https://voxeu.org/article/how-regulatory-sandboxes-help-fintechs-raise-funding.
38   "Key Data from Regulatory Sandboxes across the Globe." The World Bank. November 1, 2020. https://www.worldbank.org/en/topic/fintech/brief/key-data-from-regulatory-sandboxes-across-the-globe.
39   Matthew Nicaud, "Regulatory 'Sandbox' Reforms Advance Across the Nation." Mississippi Center for Public Policy. June 23, 2021. https://mspolicy.org/regulatory-sandbox-reforms-advance-across-the-nation/.

Adam Jackson's *Story*

Adam Jackson is a highly trained former soldier who helped provide electronic security for a U.S. embassy and installed systems on overseas military bases. After retiring from the military, Adam and his partners developed groundbreaking facial-recognition software that can instantly scan the face of someone appearing on security cameras and search for matches in databases of known offenders to strengthen the defenses of the most vulnerable locations, such schools or shelters for abused women or victims of child sex crimes.

Standing in Jackson's way was Tennessee's Alarm Systems Contractors Board. The alarm board told him he could not distribute his product until he obtained a license to install alarm systems, even though his product is nothing like an alarm. What Jackson has made is simply software that enhances the capability of existing systems.

After learning of Tennessee's restrictions on alarm companies, Jackson appeared before the alarm board to explain how his system worked even though he does not install alarms. To his surprise, the board told him he was in a "grey area" and ought to get a license. That ruling essentially shut Jackson down because at the time, the statute required an alarm company to have a board-approved manager with a bachelor's degree in an engineering field and two years of experience in the alarm industry, or to have a manager with five years of experience in the alarm industry. While Jackson would ultimately prevail over the board's ruling, in the interim his seed funding dried up and he was unable to launch his business. The worst part of this story is that regulators often act out the precautionary principle in the belief they are protecting consumers. But in this case, regulators made potentially millions of people less safe by preventing this innovation from coming to market. This should serve as a warning to all regulators.

implementing sandboxes, Tennessee lawmakers and regulators should seek to implement some best practices. In order to prevent any unintended consequences, lawmakers should keep in mind the following principles:

1. **Consumer protection is critical;**
2. **The ultimate beneficiaries of a regulatory sandbox should be consumers, not just participating companies;**
3. **Sandboxes should be as accessible as possible, and applications from similar firms should be approved in order to prevent a government-granted advantage to one business over a competitor;**
4. **Sandboxes should remain voluntary, and companies should not be punished for choosing not to participate; and**
5. **The application process should be as simple as possible. If the process is nearly as difficult as the regulatory burdens the sandbox is designed to avoid, companies may decide the program is not worth it.[40]**

Yet, as we have seen in the United Kingdom, if Tennessee lawmakers follow these best practices and create the state's first regulatory sandbox program—one that is ideally industry-agnostic, like Utah's—they can create a dynamic ecosystem that fosters new innovative startups and companies. Regulatory sandboxes are one of the most surefire ways for lawmakers to create a culture of innovation without government intrusion in Tennessee because they allow disruptive new companies to test, try, and market new innovative products, services, and technologies with minimal regulatory interferences narrowly tailored to protect public health and safety.

40   Brian Knight, "How to Build a Good Regulatory Sandbox." The Bridge. April 17, 2019. https://www.mercatus.org/bridge/commentary/how-build-good-regulatory-sandbox; Andrea O'Sullivan, "Expanding Regulatory Sandboxes to Fast-Track Innovation." The James Madison Institute. January 28, 2021. https://www.jamesmadison.org/expanding-regulatory-sandboxes-to-fast-track-innovation/.

Conclusion: *The Blue Pill or the Red Pill*

In recent decades, the most transformative sector of the American economy and our lives has been technology. The proliferation of the internet at ever-faster speeds, inventions like the smartphone and personal computers, and new business models like the sharing economy have transformed our everyday lives and led to historic growth in productivity. However, while all American consumers have benefited from *using* these technologies, the benefits from *creating* them are becoming ever more concentrated. Despite the recent growth of its tech and innovation economy, Nashville still isn't a national driver in technology innovation—and concerns remain over whether the Middle Tennessee labor market can meet those growing demands. Additionally, the rest of the state has not experienced anywhere near the same level of growth.

If Tennessee wishes to have a thriving economy in the future, it must become a tech and innovation leader today. To do so,

Tennessee needs a more dynamic economy in which new technology startups are created, thrive, sometimes fail, and realign. Tennessee lawmakers can accomplish this by creating the strongest culture of "permissionless innovation" in the country—a culture of innovation without government intrusion, where the next Elon Musk has the right to innovate and will be welcomed and supported and live without fear of arcane, archaic, or onerous regulations getting in the way. The first step in creating this culture should be to follow Utah's example and create an industry-agnostic regulatory sandbox in which all entrepreneurs and companies can obtain regulatory relief and clarity to fast-track their businesses and innovative ideas. If not, little can be done to truly challenge the hegemony of coastal cities in the innovation economy. But if Tennessee lawmakers do commit and embark on creating the most free and innovative economy the nation has ever seen, who knows? Someday soon the Tennessee Valley will be the new Silicon Valley.

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