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State Entrepreneurial Ecosystems: How Public Policy Can Drive Economic Innovation

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In a Nutshell

- Economists agree that economic innovation is critical to achieving long-run economic growth and rising living standards and research shows public policy interventions can help foster more of it.
- An analysis of budget and financial data shows Michigan invests less than its neighbors in I&E programs that aim to improve the state's entrepreneurial ecosystem.
- The report identifies revenue options to increase both one-time and ongoing support for I&E programs in Michigan. The pending creation of a new Michigan Innovation Fund should help provide a funding boost in the coming years.

Summary

Economic innovation is a critical factor in long-run economic growth. The development of new innovative products and processes makes workers more productive. This, in turn, boosts incomes and living standards. Recognizing its importance, both the federal government and states administer programs designed to foster greater innovation. A new Citizens Research Council of Michigan report examines existing research on the efficacy of these programs. It then evaluates Michigan's state funding for innovation and entrepreneurship (I&E) programs relative to five neighboring states. The study finds that Michigan spends less relative to the size of its economy than four of the five comparison states. Here are four key takeaways from the research:

Economic innovation drives growth and living standards.

There is a strong consensus among economists that economic innovation achieved through new knowledge and technological progress is critical to the long-run growth of the economy. Without such progress, theories of economic growth suggest per capita income and living standards stagnate over time.

However, economic literature also suggests market barriers can cause private markets to underinvest in innovation-inducing research and development (R&D). First, an inventive firm developing new technology for the marketplace may find its eventual profits constrained if competitors are able to learn from, adapt, or even copy the firm's innovation. This can deter the firm from taking on necessary R&D costs even when the broader societal benefits of the innovation (think, for example, how smartphones have changed the way we live and work) are very large. Economic research suggests that $1 in R&D investment generates at least $5 in social benefits – greatly exceeding the private gain to inventors.

Second, research suggests small firms and startup firms in R&D-reliant sectors face higher capital costs than do their larger counterparts and firms in other sectors because of challenges related to information sharing. While founders of these young companies will have a strong understanding of the viability of their innovations, external lenders will have much less information on which to base their evaluation of this market potential. Further, these founders may not be able to fully disclose information regarding their innovative products or technologies because

doing so could reveal details to potential competitors. While the development of the venture capital industry has helped, this financing gap remains for young and small startups.

Public policy can help generate more innovation.

The existence of these market challenges alone, however, does not necessarily imply that public policy can effectively address their potential negative effects. Crucially, empirical evidence shows public policy interventions have had a positive impact on R&D and technological innovation. Highlights from the report show:

- Historical spikes in federal R&D appropriations resulted in long term productivity gains, growth in the flow of patents, and growth in the science and engineering workforce.
- Businesses that received moderate support from publicly-funded venture capital sources achieved better outcomes in terms of total venture capital financing and in terms of a successful "exit" (e.g., achieving an initial public offering or being acquired by a third party) than businesses that relied solely on private venture investments.
- Federal Small Business Innovation Research (SBIR) program grant awards had large, positive impacts on eventual patenting, future revenue, and the probability that the recipient business would receive subsequent venture capital support.
- A 10 percent drop in the tax price of R&D attributable to an R&D tax credit results in a long-run increase of 10 percent or more in actual R&D activities.

In short, the research points to several different policy interventions that have yielded positive outcomes in terms of encouraging innovation-inducing R&D, improving the prospects of young innovative firms, and achieving long-run impacts on productivity and patenting.

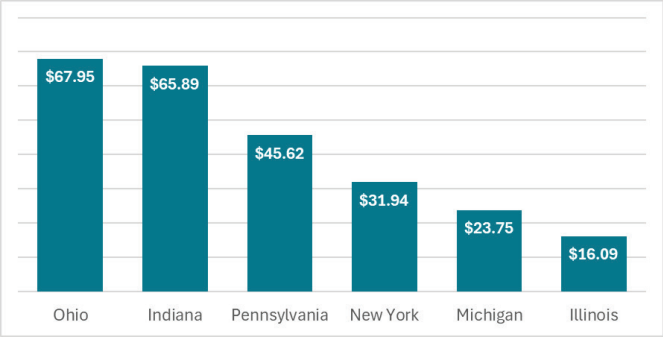
Michigan invests less than its neighbors in I&E programs.

Recognizing the importance of innovation to economic growth, state governments commonly administer innovation and entrepreneurship (I&E) programs aimed at fostering an entrepreneurial "ecosystem". State programs provide early-stage financing as well as technical assistance and other business support for new high-tech, early-stage business startups. They also provide support to encourage the commercialization of new products and technologies arising from research and development, often with an emphasis on research generated by colleges and universities within the state.

However, Michigan's state-funded support for these programs (measured relative to the size of the state economy) trails four neighboring states (Ohio, Indiana, Pennsylvania, New York), exceeding only Illinois in state spending. **Chart A** displays total state funding per $1 million in state gross domestic product for these states.

An important driver of these differences is spending on business support programming. Ohio, Indiana, and Pennsylvania all have systems that lean heavily on coordination from long serving and well-funded entrepreneurial service providers. Average annual

Chart A
State Spending Effort for I&E Programs
(State spending per $1 million in state GDP)



funding to Ohio's five regional Entrepreneurial Service Providers is $32.9 million. Pennsylvania's Ben Franklin Technology Partners (BFTPs) had annual revenue of around $32 million when counting reinvested earnings from prior rounds of state funding. In Indiana, Elevate Ventures receives $6.5 million annually for its direct business support services but also committed $21 million through its early-stage capital programs.

In Michigan, the Small Business Development Center network plays the primary role in providing these business supports. Adding the annual value of their Tech Team and Business Accelerator Fund contracts with the annual direct funding that the Michigan Economic Development Corporation provides to Michigan incubators shows Michigan allocates roughly $4.7 million each year for this category of services – below these comparison states, particularly when spending is compared relative to the size of each state's economy.

It is important to note that these business support partners also play a key role in connecting state colleges and universities, potential investors, and entrepreneurs in efforts to commercialize research generated by these institutions of higher education. While Michigan operates an assortment of programs aimed at encouraging this commercialization, the evidence reviewed suggests the state receives too little benefit for the very significant academic R&D spending occurring here. Michigan's lack of long-term strategic partnerships with entities like Pennsylvania's BFTPs, Elevate Ventures in Indiana, and Ohio's regional Entrepreneurial Service Providers may contribute to the state's below-average metrics in this area.

Michigan has options to increase I&E support.

Michigan policymakers have a menu of funding options that they could tap to increase I&E program spending effort to levels closer to these states.

Ohio, with voter approval, utilized two rounds of general obligation bonding in 2005 and 2010 to raise $1.2 billion launch its Third Frontier initiative. Michigan has used similar general obligation and revenue bonding in the past to initiate its Clean Michigan Initiative and to capitalize the 21st Century Jobs Fund.

Beyond borrowing, Michigan has revenue already dedicated to economic development that could be directed to I&E programs. Michigan's 21st Century Jobs Fund could be a source of significant one-time revenue; the fund has maintained a balance of between $250 million and $300 million for the last 10 years. The recent approval of online gaming and sports betting has also resulted in annual increases of $17 to $18 million to the Michigan Strategic Fund (MSF) as state law allocates 10 percent of related tax revenue from Michigan's tribal casinos to the MSF.

In 2014, Michigan lawmakers approved a $195 million contribution from Michigan's Budget Stabilization Fund (BSF) – the state's "rainy day fund", which protects the state from revenue declines during periods of economic recession – as part of the "Grand Bargain" agreement to help the City of Detroit emerge from its recent bankruptcy. State law requires an annual deposit of $17.5 million from Michigan's tobacco settlement proceeds through Fiscal Year (FY)2035 to replenish the BSF, but separate budget actions are expected to add more than $1.7 billion to the fund by the end of FY2025 – more than four times the pledged repayment amount. Redirecting this annual allocation to I&E programs would more than double Michigan's current appropriation.

Other states have employed unique funding models to support I&E programs that Michigan could adopt. Colorado has utilized a form of tax increment financing to capture the growth of recent income tax withholding attributable to statutorily defined advanced industry sectors to support its Advanced Industries Accelerator Programs. The program provides grant funding to support early-stage financing and encourage public-private partnerships to promote commercialization of new technologies in these sectors. Further, Illinois lawmakers approved the use of up to five percent of the state's cash investment portfolio for investments in Illinois-based venture funds through the Illinois Growth and Innovation Fund.

Finally, two packages of legislation are currently pending before the Michigan Legislature that could have profound impacts on I&E program funding. A new $60 million appropriation in the FY2025 bud-

get to support a new Michigan Innovation Fund will help provide limited-term support; legislation that sets parameters on how that funding is spent is still the subject of deliberations. In addition, legislation pending before the Michigan House would extend the temporary redirection of $550 million in corporate income tax revenue currently allocated for business attraction, housing, and community placemaking initiatives. To the extent that the redirection is extended, using some of the revenue as a source of ongoing support for I&E programs could significantly increase funding.

To be clear, there are many important areas of public policy where state funding might be gainfully utilized to improve the lives of Michigan residents. But within economic development programming, economic research suggests that I&E programs have a unique link to innovation-induced economic growth that policymakers should consider as decisions are made on future budget allocations.

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State Entrepreneurial Ecosystems: How Public Policy Can Drive Economic Innovation

Economic innovation is a critical factor in long-run economic growth. The development of new innovative products and processes makes workers more productive. This, in turn, boosts incomes and living standards. Recognizing its importance, both the federal government and states administer programs designed to foster greater innovation. A new Citizens Research Council of Michigan report examines existing research on the efficacy of these programs. It then evaluates Michigan's state funding for innovation and entrepreneurship (I&E) programs relative to five neighboring states. The study finds that Michigan spends less relative to the size of its economy than four of the five comparison states.

Economic Innovation and State Public Policy

Economists generally agree that economic innovation is a critical factor in long-run economic growth. The development of new products and processes makes workers more productive, which in turn helps push up their wages, incomes, and standards of living. Major inventions such as the printing press, the steam engine, electric light, and the personal computer transformed how people live and work and contributed to huge gains over time in productivity that helped provide economic prosperity to middle-class workers. In today's digital economy, the development of the smartphone, 3D printing, advanced robotics, and cloud computing continue to transform the workplace.

All of these innovations resulted from taking new ideas and inventions and turning them into new products and processes sold or used in the marketplace. Today, many of these new technologies and inventions arise from research conducted at universities and research institutions. Technology transfer – the process by which new inventions and technologies from those entities are commercialized into an innovation-inducing product – relies heavily on early-stage businesses run by entrepreneurs involved in the research that created the innovation.

The path to success for these early-stage businesses, however, is a challenging one. In terms of financing, early-stage firms bring the promise of high rewards to potential investors but also very high levels of risk – which often preclude the involvement of traditional business lenders. Further, while having played an extensive role in developing their new products or technologies, some early-stage entrepreneurs have not acquired experience and knowledge in starting and operating a business, with the myriad of financial, legal, and management issues that come with it.

The importance of economic innovation raises an obvious question: what things can be done to maximize it? In the private sector, a venture capital industry has developed over many decades to help meet some of the challenges with access to capital for these high-risk/high-reward early-stage businesses, supplementing financial assistance with technical assistance and expertise.

The question for governments is whether public policy can help generate more economic innovation. In the United States, the federal government plays a major role in financing research and development (R&D), with federal obligations in Fiscal Year (FY)2022 exceeding $190 billion.[1] The federal government's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs also provide special federal research grant support to promote innovation within early-stage start-up firms and small businesses. The STTR program specifically focuses on encouraging the commercialization of new technologies through partnerships between small businesses and the universities and research institutions that are driving new innovation. In FY2022, awards under both programs exceeded $4.3 billion.[2]

States also sponsor programs and initiatives aimed at creating "ecosystems" conducive to the high-tech entrepreneurism critical to increased innovation. State programs provide direct funding to expand the availability of capital to early-stage firms (while optimally leveraging additional private funding); provide technical assistance and support to early-stage businesses through an assortment of different partnerships with public and private entities; and sponsor programs to encourage technology transfer, often in collaboration with the state's research universities.

This report summarizes economic literature documenting the importance of economic innovation and what economic research says about the efficacy of using public policy to help promote innovation. It then evaluates where Michigan stands in terms of public investments in innovation and entrepreneurship programming relative to selected neighboring states.

The goal of the research is to better inform both policymakers and the public on the importance of innovation to the state, national, and even world economies and to highlight the role public policy can play in fostering this innovation. It is divided into three parts.

The first section answers the most fundamental question: why should the public care about innovation? It reviews widely-accepted economic theory on the key role of innovation in fueling economic growth and documents empirical research that demonstrates how public policy can help encourage the R&D that helps fuel it.

The second section looks at state-level programs aimed at encouraging innovation and entrepreneurship. The report provides an overview of Michigan's current state programs as well as case studies on programming in five neighboring states. It then measures the relative public investment effort in these states by examining state funding levels relative to the size of each state's economy.

Finally, the report provides a "fiscal roadmap" that explores budget and revenue options to raise both one-time and ongoing funding to support an expansion in the scope of innovation and entrepreneurship programs offered in Michigan.

The Economics of Innovation

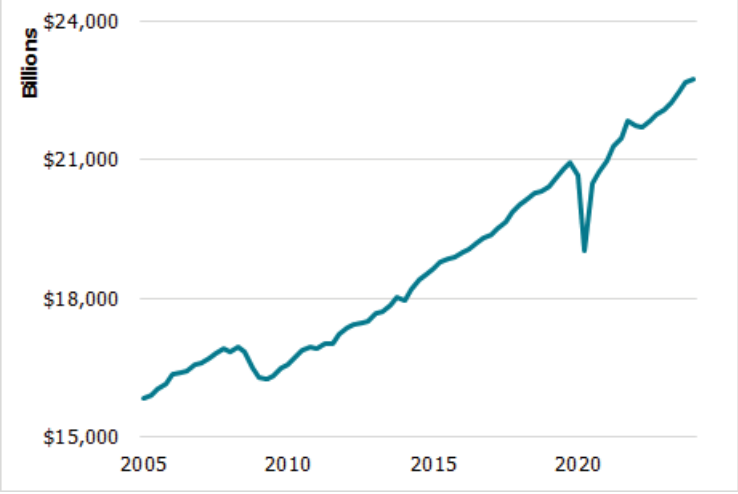
Economists have significant disagreements on many economic matters. Within macroeconomics, this includes theories of the business cycle which attempt to explain the cyclical expansions and contractions of the economy. **Chart 1** displays fluctuations of U.S real Gross Domestic Product (GDP) since 2005; the Great Recession in 2008 and the sharp contraction tied to the onset of COVID-19 are clearly visible. There is still significant debate among economists as to the underlying causes of these kinds of cyclical fluctuations as well as to the efficacy of using fiscal and monetary policy tools to help mitigate economic downturns and slow inflation during periods of expansion.

However, there is a strong consensus among economists on one important issue: what drives long-term economic growth in the economy – in other words, what factors affect the long-term upward trajectory of real GDP shown in **Chart 1**. Nobel Prize-winning economist Robert Solow authored his seminal research on long-term growth in 1956.[3] One of the key implications of his growth model is that growth in per capita income is entirely linked to technological progress. Without this progress, population, output, and income growth rates tend to converge over time. The implication of the theory, since population and income grow at the same rate, is that living standards (as measured by per capita income) become flat over time in the absence of new knowledge and technological progress.

Solow's model has since been extended to incorporate human capital – the skills and knowledge of the economy's workforce that contribute to the workforce's productivity.[4] The general consensus remains that increases in worker productivity result from economic innovation and worker skills that drive living standards and economic prosperity.

Empirical research has largely supported this conclusion that productivity and innovation are the key drivers of long-run economic growth. One recent study applied a unique methodology to measure this impact. Researchers compiled and examined a large database of U.S. patents going back to as early as 1840 and developed a method to measure the "quality" of each patent by examining how similar the text was to patents that had preceded it. This allowed them to identify patents with unique "breakthrough innovation" that were unlike anything introduced by existing patents.[5] The research found that changes in the number of breakthrough innovations correlated strongly with changes in productivity levels over time and were also predictive of major inventions and individual firm profits. The study helps confirm the critical importance of innovations to productivity and economic growth.

Chart 1
U.S. Real Gross Domestic Product
(in 2017 Chained Dollars)



Source: U.S. Bureau of Economic Analysis

Chart 2 demonstrates this correlation at a simpler level by measuring the correlation between the issuance of patents and real personal income per capita by state. The chart is a scatterplot; each state's observation reflects the number of utility patents[a] – those protecting the functionality of inventions related to new products, processes, machines, or software – issued per 100,000 population on the x-axis and real personal income per capita on the y-axis.

Chart 2
Utility Patents and Real Personal Income Per Capita by State, 2020

Source: U.S. Patent and Trademark Office and U.S. Bureau of Economic Analysis

While lacking the unique identification of breakthrough innovations shown in the research, it still shows the positive correlation between state-level innovation created by new inventions and the average living standards of state residents as reflecting in the personal income measure.

In short, both economic theory and empirical studies make clear the importance of productivity-enhancing innovation on long-run economic growth. Improving the living standards of society is dependent on the continued development of new technologies, new innovative processes, and new business models that enhance worker productivity and wages.

Market Failures and the Role of Public Policy in Driving Innovation

While both economic theory and empirical studies point to the importance of innovation as the driver of long-run growth and living standards, the critical question for policymakers is whether government policy can and should effectively help spur that innovation. Economic theory suggests that in the absence of some form of market failure, the best course of action for policymakers would be to allow private firms to make investment decisions on the commercialization potential of new technologies, products, and processes that have the potential to drive innovation. Is there a role for public policy to make things better? Economic theory suggests that there is.

First, academic literature suggests that private markets will tend to underinvest in innovation-inducing R&D due to the existence of "knowledge spillovers".[6] For example, consider a private firm that invests both time and significant financial resources into R&D that allows a new technology to improve its production process. That firm will gain a competitive advantage from reducing its production costs, which

a Utility patents represent roughly 90 percent of patents issued each year and reflect traditional "inventions". Other types of patents include design patents (protecting the ornamental design of manufactured products) and plant patents (protecting the discovery or invention of a new type of biological plant). See U.S. Patent and Trademark Office background at https://www.uspto.gov/web/offices/ac/ido/oeip/taf/data/patdesc.htm.

should then result in a monetary gain from a boost in profits. Knowledge spillovers, however, suggest that competitor firms will learn from, adopt, or even copy that process innovation over time. While laws that grant patents and protect intellectual property rights can assist the innovative firm, in the long run, other firms will gain from the innovation without having to bear the costs of developing it. Further, as knowledge spills over to other firms, the monetary gain to the innovative firm will be diminished.

In calculating the value of the necessary R&D to develop a new innovation, some firms may conclude that their more limited private gain falls below their private R&D costs; those firms would then decide to not undertake the R&D investment. That said, the social gain from that innovation – the benefit to consumers and producers across the entire economy from the cost-saving technology – could be enormous and far greater than the R&D costs.

It should be noted, however, that the social gains from R&D do not always exceed the related R&D costs. One relevant example is when pharmaceutical manufacturers engage in costly R&D to marginally improve the outcomes of a competitor's existing drug. Theoretically in this case, the manufacturer that engaged in the R&D may accrue large private gains from shifting usage to their new drug – making the R&D a profitable investment. At the same time, the social gains may be rather small to consumers.

Overall, however, the economic literature concludes that social returns from innovation arising from R&D are large and greatly exceed the private returns to innovative firms. A recent survey of research in this area concludes that every one dollar in R&D investment generally provides at least five dollars in social benefits.[7]

These findings support the conclusion that knowledge spillovers may constrain private R&D spending. Importantly, they also suggest that public policies aimed at encouraging and incentivizing R&D and the resulting innovations that derive from R&D can play a role in offsetting the impact of knowledge spillovers.

Even in the absence of knowledge spillovers, however, economic theory suggests another rationale for public policy intervention. Firms bringing new innovations to market will face an information challenge if they need to generate capital from external sources. Simply put, while founders of these companies will have a strong understanding of the viability of their innovations, external lenders will have much less information on which to base their evaluation of this market potential. Further, founders of the early-stage firm may not be able to fully disclose information regarding their innovative products or technologies because doing so could reveal details to potential competitors. Economists refer to this market challenge as "asymmetric information". The result is that the cost of capital to these firms will be higher than for established firms less reliant on R&D and innovation. In the end, asymmetric information can mean less innovation occurs in the economy as high capital costs prevent certain early-stage businesses from obtaining needed capital at a cost that allows them to move forward with their business ventures.[8]

The development of the venture capital industry is essentially the private sector's response to this potential market failure. However, empirical research suggests that, even with a robust venture capital industry in the United States, small and startup firms in R&D-reliant industries face higher capital costs than do their larger counterparts and firms in other industries.[9]

Empirical Evidence on the Impact of Public Policy

Economic theory suggests that both knowledge spillovers and asymmetric information challenges will tend to hinder economic innovation. The existence of knowledge spillovers reduces the private sector return on investment in R&D despite strong social gains from the resulting innovations; and the lack of full information for potential investors and lenders about new innovative products and technologies pushes up capital costs in a way that may threaten the viability of new business ventures with high innovation potential. Both of these factors suggest a potential role for public policy to mitigate these market failures and better enhance the realization of the new economic innovations within the marketplace.

The existence of market failures alone does not necessarily imply that public policy can effectively

address their deleterious effects. Crucially, empirical evidence also shows public policy interventions have had a positive impact on R&D and technological innovation.[10] Research results reveal the following:

- R&D tax credits: a survey of recent empirical research concludes that a 10 percent drop in the tax prices of R&D results in a long-run increase of 10 percent or more in actual R&D activities.[11]
- Federal direct R&D grants: research from the Federal Reserve Bank of Dallas finds that large historical increases in federal government non-defense R&D appropriations resulted in increases in productivity, a boost in the flow of innovative patents, and growth in the number of highly-skilled science and engineering workers in the economy. Growth lagged the initial appropriations increase in R&D by about eight years and then remained persistently elevated for at least another 15 years.[12]
- SBIR program: research examines data on ranked applicants for SBIR grants to the U.S. Department of Energy and compares outcomes for marginal winners and marginal losers under the program. Receiving a Phase I award has large, positive impacts on both patenting and revenue and roughly doubles the probability that a firm receives subsequent venture capital; and those effects are strongest for small, young firms that might otherwise experience financial constraints.[13]
- Accelerators and incubators: a recent meta-analysis of 14 different studies analyzing business accelerators, incubators, or both found that they have positive impacts on employment and that accelerators have positive impacts on access to capital for participating firms.[14]
- Public venture capital programs: using data from 20,446 business enterprises in 25 countries receiving venture capital between 2000 and 2008, researchers found that enterprises that received financing from private venture capital with a moderate fraction from public venture capital sources received more overall venture capital funding and had a greater likelihood of a successful "exit" (e.g., achieving an initial public offering (IPO) or being acquired by a third party) than enterprises relying solely on private venture capital. Notably, however, the impact of government-funded venture capital turns negative once the public share of financing is large.[15]

In summary, economic theory is clear that economic innovation achieved through technological progress is critical to increasing worker productivity in the economy, and it is this productivity that helps drive worker wages and thus living standards. Further, economists recognize market failures related to knowledge spillovers and imperfect information for investors that can reduce the level of research and development and available capital that is needed to bring new innovative products to market. Fortunately, there is substantial empirical evidence that public policy can help mitigate those challenges and help to enhance the level of economic innovation that is realized in an economy.

The next section examines the degree to which Michigan and other states are utilizing public policy to try to catalyze additional innovation in their state economies.

Innovation and Entrepreneurship Programs at the State Level

Recognizing the importance of innovation to economic growth, state governments commonly administer programs aimed at encouraging new high-tech early-stage business startups and the commercialization of new products and technologies arising from research and development, often with an emphasis on research generated by universities within a state.

This section provides a summary of Michigan's current innovation and entrepreneurship (I&E) programming and then examines available data to gauge Michigan's success relative to other states in generating innovation within its economy.

Before examining individual state programs, it is helpful to understand the types of I&E programs frequently administered at the state level. While specific programs may cover more than one of these bases, this report organizes these programs into three broad support categories.

Access to Capital Support

Access to capital programs provide early-stage financing to start-up and nascent companies in the process of bringing innovative new products and services to market. While there is much fluidity in these definitions, funding is often defined in stages:

- Pre-Seed funding: financing to companies working in the earliest stages on a concept or idea. Funding at this stage often starts with personal savings, family and friends, and occasionally angel investors. Public pre-seed programs add further support for companies that show high potential.
- Seed funding: supports start-up companies that have moved to having a defined product or prototype that is marketable with perhaps a small group of employees. Angel investors and private venture funds and other private investors are options for companies at this stage. State programs can help to provide direct capital and draw in additional private investment.
- Growth-Stage funding: capital support to young companies at the end of the start-up stage and in need of additional capital to grow the company, add employees, and refine its business model to eventually achieve profitability. Venture capital funds are likely a key source of financing at this stage, but public programs can provide additional support and attract other private capital.

Business Support Programs

Business support programs provide a range of assistance to early-stage companies including technical support (e.g. legal and management consultations), networking and mentorship opportunities, product evaluation and validation, and other supports. State-supported incubators and accelerators to help guide these early-stage firms are often a component of this support. Many states also administer programs that provide matching funds for federal SBIR/STTR grants:

- Accelerators provide intensive short-term support (commonly between three to six months although this varies across programs) to a cohort of new start-up companies, including educational and technical assistance and capital support often in coordination with other investors and experienced entrepreneurs. Services and financing are provided in return for a stake in the early-stage business.
- Incubators provide longer-term support to start-up firms who are often still refining their product idea. Support can continue for multiple years and often includes shared physical space with other entrepreneurs, technical guidance and research validating a product idea, and networking and mentorship opportunities. Financing support may or may not be available through an incubator.
- Federal SBIR/STTR grants are provided in two stages.[16] Phase I awards cover activities in the early concept stage that help to validate the feasibility of an idea; Phase I awards typically cover a period of a year or less and can fund

up to $175,000. Phase I recipients can then apply for a Phase II awards to cover continued R&D costs related to developing a prototype; Phase II awards can last up to two years and provide up to $1.5 million. State matching programs typically provide matching grants for Phase I, and sometimes for Phase II, federal grant awards to supplement the federal funding.

University Research Commercialization

University-based research is a key driver of new economic innovation. New ideas, knowledge and technologies developed through this research bring opportunities to commercialize new innovations and products to the marketplace. Recognizing its importance, states often administer programs that aim to maximize university research commercialization. At the state level, grant programs provide funding to help potential start-up companies validate the market potential of new product ideas arising from university research. Programs also facilitate entrepreneurial hubs within the university system and provide special expertise and talent to facilitate the commercialization of university research.

Michigan's Innovation and Entrepreneurship Programs

Michigan's FY2024 state budget appropriates $15.7 million from the state's 21st Century Jobs Fund[b] to support programs designed to enhance the state's entrepreneurship eco-system. This appropriation has remained flat since FY2021 and was somewhat higher ($16.4 million) in FY2020 before funding was cut as part of broader budget reductions implemented as the state grappled with an expected revenue shortfall during the early stages of the COVID-19 pandemic. Further, the appropriation has dropped significantly over the last decade from a high of $28.5 million in FY2014.[17] The programs reviewed in this section are all administered by the Michigan Economic Development Corporation (MEDC).

As background, the 21st Century Jobs Fund receives an annual allocation of $75 million from Michigan's tobacco settlement proceeds under current state law. This allocation supports not only the innovation and entrepreneurship programs discussed below but also the majority of the state's business attraction and community revitalization programs administered by the MEDC. Notably, that allocation is set to expire after FY2026. However, three previously scheduled sunsets of this allocation in Fiscal Years 2015, 2019, and 2023 were eventually extended through new legislation, so it's quite possible the sunset could be extended once again. Without such an extension, these programs would depend on new General Fund appropriations to replace this earmarked revenue; this could jeopardize ongoing funding levels for the programs.

Access to Capital Support

The MEDC's Early Stage Funding programs provide funding to non-profit organizations that in turn capitalize funds that aim to invest in early-stage companies seeking to transition from research to commercialization of new technologies and products. This access to capital is often critical to early-stage companies as a bridge to other forms of capital from venture capital funds or other private investors. Successful exits from early-stage, pre-seed funding as companies attract new investments can provide returns to the early-stage funding program to help generate additional investments in new early-stage companies.

The Michigan State University Foundation, which administers the state's Pre-Seed Fund III[18], is currently the largest program grant recipient from the MEDC. The fund invests in Michigan technology startups with the goal of advancing the commercialization of innovative research and technologies. Michigan Rise, a fully-owned subsidiary of the foundation, manages the program that provides funding awards of between $100,000 and $250,000 as well as other technical assistance and support to emerging entrepreneurs and technology start-ups.

Since FY2020, Michigan Rise has invested $20.7 million with 95 active companies. The program's investments have leveraged an additional $614.9 million from other sources, and two companies have successfully exited the program.[19]

The MEDC also contracts with the Centrepolis Accelerator at Lawrence Technology University to operate the Design for Michigan Manufacturing program. The three-year, $1.5 million grant award supports this incubator program that serves companies involved in the development of "hardware" technologies (e.g. manufactured products, advanced materials, manufacturing technologies). Grant funding is allocated to provide financing of up to $50,000 to participating companies to assist in getting new products to market. Companies repay the investment within two years along with an additional fee tied to realized future gross revenue. To date, the program has resulted in four new startup companies; 65 new patents, copyrights or trademarks; and 171 new commercialized products.[20]

In 2023, the state announced the creation of a new Michigan Innovate Capital Fund Program[21] to further expand the availability of capital for Michigan-based early-stage technology companies. Four new grant awards totaling $18 million were established with

b For additional details on the history and use of the 21st Century Jobs Fund, see the discussion beginning on page 29 of this report.

non-profit partners across the state in late 2023 and early 2024. Initial grants cover five years with the option to extend that term for an additional five years with the approval of the Michigan Strategic Fund. Award recipients were: Ann Arbor SPARK ($5 million), Invest Detroit Foundation ($5 million), the Western Michigan University Biosciences Research and Commercialization Center ($5 million), and InvestUP ($3 million).

Business Support Programs

The state contracts with Michigan's network of Small Business Development Centers (SBDCs) to assist both new startups and existing small businesses as well as advanced technology companies. A $7.4 million grant from the MEDC spanning eight years from 2019 to 2027 supports the SBDC's Tech Team which provides specialized support to high-tech startups seeking to commercialize new products and ideas.

In addition to the Tech Team supports, the SBDCs administer Michigan's SBIR/STTR matching grant program. Their Emerging Technologies Fund provides matching funds of $25,000 for Phase I grants and, contingent on third-party match, another $125,000 for Phase II awards. Matching funds are available to Michigan companies submitting SBIR/STTR proposals in at least one of the following sectors: life sciences; homeland security/defense; advanced automotive, manufacturing, and materials; or alternative energy. The program was supported by a four-year grant from the MEDC of $6.6 million which ran from 2020 through 2023. MEDC data show that, as of the end of FY2023, the matching grants helped launch six new startup companies and created 449 new jobs in Michigan. The program also supported the issuance of 101 new patents, copyrights, or trademarks, and 48 new commercialized products.

Training, outreach, and proposal development support for SBIR/STTR applicants in Michigan is provided through a separate four-year, $2.0 million MEDC contract with BBC Entrepreneurial Training and Consulting, a Michigan-based consulting firm specializing in SBIR/STTR assistance.

The MEDC also awards grant funding to a network of incubators and accelerators around the state. As of the close of FY2023, it had active grant agreements with 22 different organizations committing a total of $7.4 million across the five-year period starting in FY2019. Agreements were effective through March 2024 and yielded average annual support to each organization of roughly $100,000.

The SBDC's Business Accelerator Fund[22] supplements this grant funding to many of the state's accelerator programs by providing small grants (typically between $7,000 to $15,000) to business accelerators operating in one of Michigan's 20 SmartZones[23], which are geographic hubs of technology-based companies, entrepreneurs and researchers. The fund is supported by a $6.5 million grant from the MEDC covering the six-year period from 2020 to 2025 and provides specialized services that are not otherwise available from the accelerator.

University Research Commercialization

Michigan administers three programs designed to encourage greater technology transfer from Michigan institutions of higher education to the private sector.

The largest is the Michigan Translational Research and Commercialization (MTRAC)[24] program. First initiated in 2013, MEDC had active grant agreements in place with four Michigan public universities to support innovation hubs as of the close of FY2023. Each hub is designed to promote spinoff companies from university research in a specific focus area. Active grant awards[c] include:

- University of Michigan – Life Science Innovation Hub ($2.6 million)
- University of Michigan – Advanced Transportation Innovation Hub ($2.2 million)
- Michigan State University – Ag Bio Innovation Hub ($1.6 million)
- Michigan Tech University – Advanced Material Innovation Hub ($1.3 million)
- Wayne State University – Advanced Computing Innovation Hub ($875,000)

[c] Amounts include the sum of any active grant awards. All awards were originated between FY2019 and FY2023.

Since the advent of the program, $23.9 million in state awards have leveraged $535.8 million in additional funding, resulting in 122 new startup companies, 492 new jobs, 127 issued patents, copyrights, or trademarks, and 49 license agreements with Michigan-based companies.[25]

The MEDC also provides grant funding to the Michigan State University Innovation Center for its University Early-Stage Proof of Concept Fund, which offers support to all public universities in the state. The current five-year contract started in 2021 and provides $850,000 in support to the program; that followed a $1.7 million grant agreement that started in 2016 and ended in 2021. Typically working with university technology transfer offices, project funding of up to $20,000 – which would be matched dollar-for-dollar by the participating university – is used to identify actionable market applications coming out of university research through proof-of-concept evaluation or the validation of a project's business model or potential market. The goal of the grants is to maximize the potential for commercialization success and the eventual attraction of additional capital to viable projects.

Under the new contract, the program has provided $418,800 in grant support (and leveraged equivalent university matching funds) to 22 different university researchers from five different Michigan public universities between April 1, 2021, and February 9, 2023.[26] To date, the program has brought in additional outside funding of $7.9 million from the federal SBIR/STTR program and private investors.[27]

Finally, the state's Technology Transfer Talent Network (T3N) supports the commercialization of university innovations by funding four distinct talent programs that help bring unique experience and expertise to the process. Those programs include:

- Mentors-in-Residence: experienced entrepreneurs that help provide expertise to projects with high start-up potential drawing on their business experience and connections to investors and local talent. The program generally maintains a network of 19-20 mentors.
- Postdoctoral Commercialization Fellowships: these researchers receive salary support and mentorship opportunities that assist the further development and potential commercialization of their university technologies.
- Technology Assessment Fellows Program: Fellows are graduate students who work alongside technology transfer professionals to increase their knowledge of the technology assessment process.
- Technology Transfer Shared Services Program: the program provides support to universities with limited in-house technology transfer support by sharing access to a participating university's matching funds and talent networks.

Assessing Michigan as an Innovation State

Have these state programs successfully positioned Michigan as innovation leader among other states in the country? To examine this question, the report begins by examining Michigan's ranking within two well-established state innovation indexes designed to gauge each state's relative status when it comes to economic innovation.

Milken Institute's State Technology and Science Index

The Milken Institute's State Technology and Science Index (STSI)[28] ranks individual states in five composite subindexes that gauge each state's relative strength in key factors that influence innovative capacity. The five subindexes in 2022 index are:

- Research and Development Inputs: the state's capacity to attract funding and create innovative technologies that can be commercialized; the index tracks data on university, industry, and federal R&D funding and support
- Risk Capital and Entrepreneurial Infrastructure: draws on indicators including venture capital, patents, business formation, and initial public offerings that are key parts of the technology commercialization pipeline
- Human Capital Investment: evaluates the skill/talent level of a state's workforce using metrics including the numbers of degrees in STEM field; high school test scores; and computer and broadband access
- Technology and Science Workforce: evaluates the state's technology and science workforce by examining the proportion of a state's workforce in key fields like computer and information services, engineering, and the sciences
- Technology Concentration and Dynamism: evaluates high-tech industry growth in the state using metrics that include the concentration of a state's establishments and employment in high-tech industries and concentration of certain high-sectors in the state relative to the rest of the country.

State New Economy Index

The State New Economy index[29] another noted index developed by the Information Technology and Innovation Foundation. The index draws on 25 indicators divided into five categories to evaluate how closely a state's economic structure resembles the ideal structure for an innovation-driven economy. The index has been compiled nine times between 1999 and 2020. The index's five categories are:

- Knowledge Jobs: drawing on indicators such as educational attainment within the state's workforce; immigration and net migration of foreign and domestic knowledge workers; worker productivity in the manufacturing sector; and employment of IT professionals outside the IT industry
- Globalization: indicators include foreign direct investment within the state; manufacturing exports; and the share of state output that goes to the export of high-tech goods and services
- Economic Dynamism: examines the state's business churn (startups and failures); the prevalence of high-growth firms in the state ("Inc 5000" companies); the number and value of initial public offerings in the state; and individual inventor patents
- Digital Economy: indicators include state government and health care industry use of IT-delivered services; broadband speed and use in the state; and Internet and computer use by farmers in the state
- Innovation Capacity: draws on indicators for jobs in high-tech industries; scientists and engineers in the workforce; measures of industry and academic research and development; and venture capital investment.

Michigan's Rankings

In both indexes, Michigan ranked 17th among the 50 U.S. states. At first blush, that appears to be a healthy ranking, and one that would suggest that Michigan is, at a minimum, above average in terms of fostering an innovative economy. However, examining its individual ranks within specific sub-indexes helps to reveal an important relative weakness of the state. **Chart 3** displays those sub-index rankings from both surveys. Green-shaded categories indicate areas where the state ranked in the top-third of all states; yellow-shaded categories display where Michigan ranked in the middle-third; and red-shaded categories are those where Michigan ranked in the lowest-third of states.

Michigan ranks highest in sub-indexes with indicators that focus on its strong spending levels for research and development (R&D Inputs and Innovation Capacity); its STEM-heavy workforce (Tech/Science Workforce and Innovation Capacity); and its globalized economy with heavy manufacturing exports and foreign investment (Globalization). Most of these categories reflect Michigan's automotive manufacturing legacy. A recent Citizens Research Council report on Michigan's workforce and economy showed that Michigan maintains one of the nation's highest concentration of engineers in the state's workforce given its automotive history.[30] That legacy also promotes high levels of both R&D spending and manufacturing exports.

Michigan's R&D spending levels are also high due to the existence of its strong university system, with three major public research universities. **Chart 4** shows that Michigan (shown in orange) ranked 12th nationally in academic research and development per $1,000 in state GDP in 2021, making it 2nd to only Pennsylvania among Midwest competitor states (shown in red).

On the other side, Michigan's relative weaknesses relate to below-average prevalence of business churn, high-growth companies, new initial public offerings (IPOs), and patenting within the state (Economic Dynamism and Risk Capital/Entrepreneurial Infrastructure). In short, while Michigan has significant capacity to innovate, it is not achieving significant "bang for the buck" in terms of converting that capacity into new high-tech companies and product innovations (see **Chart 5**).

Chart 5 illustrates this challenge by measuring the value of venture capital deals per $1,000 in state GDP in each state. On this metric, Michigan ranks 34th among all states and below six of its nine Midwest competitor states highlighted in red within the chart.

Chart 3

Michigan's Rankings in Individual Innovation Sub-Indexes

2022 Milken Institute	
#17	
10	R&D Inputs
13	Tech/Science Workforce
19	Human Capital Investment
26	Tech Concentration & Dynamism
36	Risk Capital/Entrepreurial Infrastr

2020 State New Economy	
#17	
5	Innovation Capacity
17	Globalization
21	Digital Economy
25	Knowledge Jobs
38	Economic Dynamism

Source: 2022 Milken Institute State and Technology Science Index and 2020 Information Technology and Innovation Foundation State New Economy Index.

Chart 4
Academic Research and Development per $1,000 in State GDP, 2021

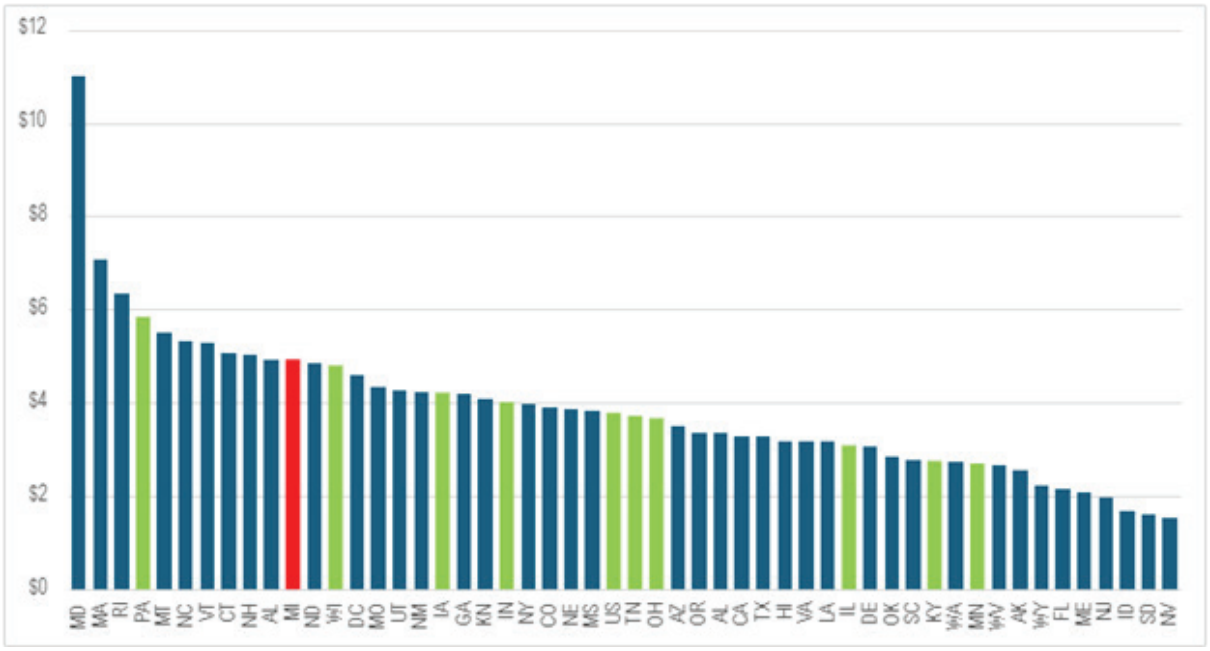
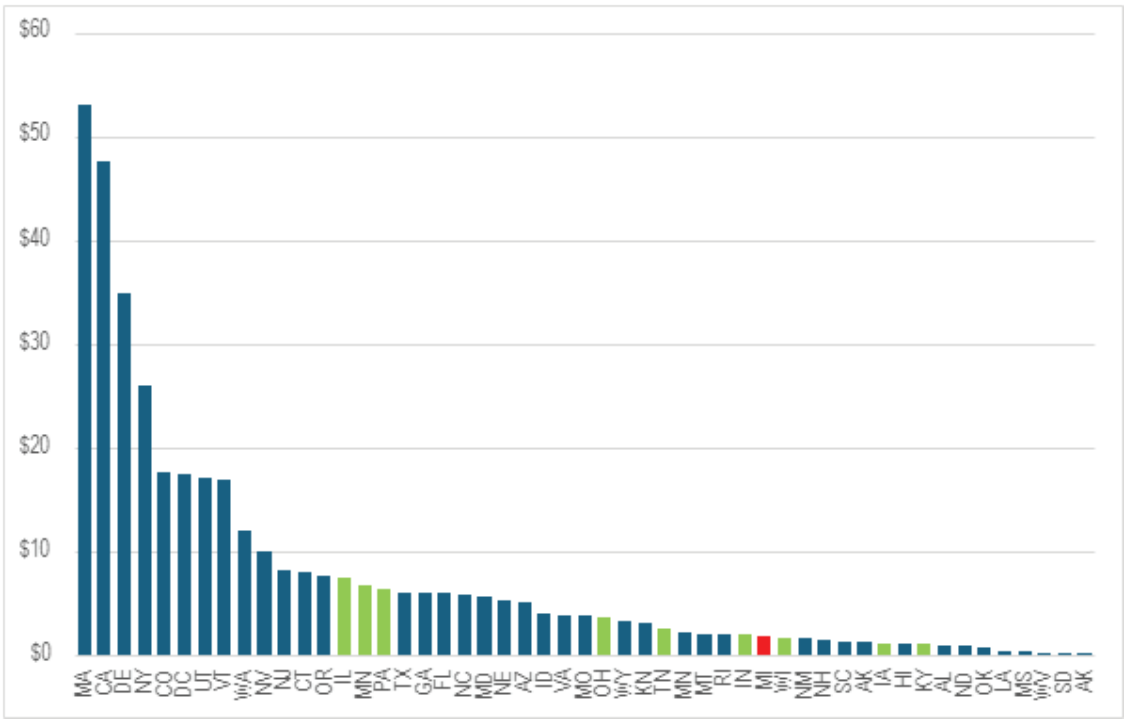


Chart 5
Venture Capital Deal Value per $1,000 in State GDP, 2021



These findings are consistent with the findings of an internal evaluation of MEDC's innovation and entrepreneurship programs conducted by Guidehouse, Inc. on behalf of the Michigan Department of Technology Management and Budget. As part of a quantitative analysis of Michigan's programs relative to six selected comparison states, the evaluation noted that Michigan was in the top quartile among all states related to various measures of university R&D, but conversely was in the lowest quartile when evaluating the dollar value of research expenditures per university invention disclosure for each state's largest research university (University of Michigan – Ann Arbor). Similarly, Michigan was in the second lowest quartile for research expenditures per business start-up formation (see **Chart 6**).

The number of venture capital investors headquartered in Michigan and the number of active investors with an early-stage focus also fell into the second lowest quartile.

In summary, Michigan would appear to have a very strong capacity to generate economic innovation. Its automotive heritage has allowed the state to retain a high concentration of scientific and technology workers, particularly in the engineering fields. Michigan's strong R&D spending effort in both the private and academic sectors have kept Michigan in the top 10 of all states in terms of R&D investments as a percentage of state GDP.[31]

However, data also suggest that Michigan's capacity to innovate is not being fully utilized for the commercialization of new technologies and products that actually generate the increased innovation and productivity that help drive economic growth and growth in living standards.

The next section of the report reviews the scope of I&E programs in five selected states to gauge how Michigan's state spending effort compares to those states.

Chart 6

University-Based Innovation and Early Company Formation

	Michigan	Indiana	Virginia	Illinois	Minnesota	Ohio	Wisconsin
University-based Innovation							
Higher Ed R&D Expenditures	$13.6B	$7.7B	$8.4B	$12.9B	$5.0B	$11.8B	$7.9B
Higher Ed R&D Expenditures (Public Institutions)	$13.3B	$6.6B	$8.3B	$5.7B	$5.0B	$9.0B	$6.5B
Higher Ed R&D Expenditures (Science & Engineering	$12.8B	$6.9B	$7.7B	$12.2B	$4.8B	$11.2B	$7.3B
Research Expenditures per University Invention Disclosure	$3.2M UM-Ann Arbor	$1.8M Purdue	$2.4M Virginia	$2.7M Illinois	$2.5M Minnesota	$2.3M Ohio State	$3.2M Wisconsin
Research Expenditures per Start-Up Formation	$78.9M UM-Ann Arbor	$29.4M Purdue	$89.6M Virginia	$101.5M Illinois	$57.9M Minnesota	$72.4M Ohio State	$131.4M Wisconsin
Early Company Formation							
Venture capital investors with HQ in state	90	54	117	289	78	108	56
Active investors with early-stage focus	78	29	99	207	53	78	51

KEY: 25% Quartile | 50% Quartile | 75% Quartile | 100% Quartile

Source: adapted from Department of Technology, Management and Budget and Guidehouse Inc., "Michigan Strategic Fund Entrepreneurship & Innovation Program Evaluation," July 13, 2023. R&D data from National Center for Science and Engineering Statistics, Higher Education R&D Survey; FY2016-2020. Data on invention disclosures and start-up formation from AUTM Licensing Activity Survey and Statistics Access for Tech Transfer (STATT); early company formation data from Crunchbase as of November 2022.

Innovation and Entrepreneurship Programs in Other States

In order to gauge the scope of Michigan's I&E programming against what is provided in other states, case studies are provided of five neighboring competitor states – Ohio, Indiana, Illinois, New York, and Pennsylvania. These states were selected because they resemble Michigan in terms of the structure of their economies, they are geographic neighbors, and each has had long-standing programs with some level of I&E focus.

A key objective of this report is to determine how Michigan's public spending effort on innovation and entrepreneurship programs compares to these states. Clearly, looking only at absolute funding allocations would not be sufficient since the relative impact of a given dollar commitment to these programs would vary depending on the overall size of a state's economy. For instance, Indiana's Gross Domestic Product (GDP) in 2023 was $497 billion, less than half of the GDP for Illinois, which was just below $1.1 trillion. So, a $30 million public investment in Indiana could have a greater relative impact on the Indiana economy compared to the same investment in Illinois.

To control for the size of the individual state economies, the report calculates annual public support per $1 million in state GDP. The starting point in the calculation of annual public support is the current appropriation for innovation and entrepreneurship programming as outlined in each case study. However, several states have relevant spending commitments that come from non-appropriated sources such as bond funding. Where relevant, the base appropriation is then supplemented by the amount of recent annual expenditures for programs funded outside of the state appropriation.

For Michigan, the $15.7 million appropriation for I&E programs forms the basis for this calculation. Michigan's state GDP in 2023 was $659 billion, so Michigan's state spending effort equates to $23.75 per $1.0 million of state GDP. This section concludes with a comparison of calculated spending effort across all six states.

Ohio – Ohio Third Frontier

In November 2005, Ohio voters approved an amendment to the state's constitution authorizing the issuance of $500 million in general obligation bonds to support the Ohio Third Frontier initiative, with a focus on providing support and early-stage financing to young technology firms and startups. Five years later, voters approved a second round of bonding for $700 million, creating a $1.2 billion fund to finance current and future I&E programming. Since that time, the upfront revenue generated by these Third Frontier Research and Development Bonds has been the sole source of public support in Ohio for I&E programs.

Third Frontier funds are administered by the 11-member Ohio Third Frontier Commission comprised of the Director of Ohio's Department of Development, the chancellor of the Ohio Department of Higher Education, the governor's science and technology advisor, the chief investment officer of JobsOhio (a private nonprofit economic development agency), and six regional business or research representatives as well as one public-at-large representative appointed by the governor.

Earnings and returns on programs over time are maintained within the fund and have allowed the state to reinvest additional dollars in I&E programming above the level of the original bond funding. As of the close of FY2023, $229 million of the $1.2 billion in bonding authority remains unissued, leaving room for more bond issues in the future. Using these bond revenues, Ohio has maintained consistent funding for I&E programs anchored on a network of non-profit entrepreneurial services providers that help provide technical assistance and services coordination across the state.

Access to Capital Support

Ohio's primary program for early-stage financing is its Pre-Seed/Seed Plus Fund Capitalization Program, which seeks to increase early-stage capital invested in Ohio for young tech-based companies to help accelerate the growth of those companies and

the high-wage employment that accompanies that growth. The program has two funding components, although applicants can apply for "combined" funding across the two components:

- *Pre-Seed funding*: state funding can range from $1 million to $5 million and comes with a required 1:1 cost share from recipients so that total investable fund size will range from $2 million to $10 million. Pre-seed funds must be invested within three years of the state award.
- *Seed Plus funding*: the state funding range increases to $2.5 million to $5 million, but cost share requirement also grows to $3 for every $1 from Ohio Third Frontier so that total investable funds grow to between $10 million and $20 million. Seed Plus funds must be invested within five years of the award.

In March 2021, Ohio awarded $70.5 million in Third Frontier funding to 11 pre-seed funds and three combined pre-seed/seed plus funds with a total state commitment of $70.5 million. Funds committed $95.5 million in cost share to generate total investable funds of $166.0 million.[32]

As of October 2022, four rounds of program funding between 2013 and 2021 had generated $250 million in early-stage investments ($105 million from Ohio Third Frontier and $145 million in cost share funding) to 656 early-stage companies with 33 companies to date successfully exiting the program generating $37.7 million in returns repaid to Third Frontier.[33]

Business Support Programs

Ohio's Entrepreneurial Services Provider Program (ESP) is a key component of Ohio's I&E programming. The program aims to fill gaps in the entrepreneurial eco-system for high-potential pre-seed, seed, and early-stage technology companies to enhance their ability achieve significant long-term growth. The Ohio Department of Development contracts with five non-profit venture development organizations that serve as the lead provider in six distinct regions of the state. Each ESP partner develops a strategy, in collaboration with other regional organizations, to address current gaps facing early-stage companies. ESP partners help coordinate a network of regional assistance providers and connect early-stage businesses to funding opportunities.

In July 2022, the Ohio Third Frontier Commission approved new 2.5-year contracts with their five non-profit partners worth $82.3 million.[34] These contracts run from January 1, 2023, through June 30, 2025. Contracts require one-to-one cost sharing from program providers, with 75 percent in the form of cash match. Up to 25 percent of the cost share can come from donated services from third-party professional firms (e.g., legal, tax, marketing). The contracts provide average annual state funding of $32.9 million for the program as a whole.

Metrics covering the last two completed ESP grant periods covering the years 2017 through 2021 show that ESP providers served an average of 960 active business clients each year. Those early-stage businesses created 6,053 jobs across that five-year period and generated $4.2 billion in third-party investments.

University Research Commercialization

Ohio's Technology Validation and Start-Up Fund (TVSF) is designed to help promote technology transfer from Ohio universities and nonprofit research institutions that can demonstrate a history of technology commercialization into the marketplace by facilitating new Ohio startup companies. The program awards grants in two phases:

- Phase 1 validation projects help recipients evaluate new technologies with commercialization potential. Awards are generally between $200,000 and $500,000 and must be matched 1:1 with institutional cost share matching funds.
- Phase 2 start-up funds are awarded to Ohio startup companies and other young companies in the process of commercializing technologies developed by Ohio universities and other research institutions. Awards can be up to $200,000. Cost sharing is not required for Phase 2 awards.

Since the advent of the program in 2012 through 2023, $48.1 million in TVSF funding has been awarded under the program, with $10.2 million in awards in 2022 and 2023.

State Spending Effort

Since all of Ohio's public funding for innovation and entrepreneurship programs comes from Third Frontier bond revenue, recent annual expenditures by major program tied to the bond revenue are used to calculate Ohio's annual spending for the comparison. Ohio's annual public spending is estimated at $59.3 million based on the following analysis of recent funding commitments:

- $32.9 million for the Entrepreneurial Services Provider program, which represents the average annual value under the 2.5-year contracts totaling $82.3 million approved for the six ESP regions for the period between January 1, 2023, and June 30, 2025.
- $21.3 million for the Pre-Seed/Seed-Plus, which is the average annual value of the three-year commitment of $46.0 million commitment to 11 pre-seed funds and one-quarter of the $24.5 million commitment made to three combined pre-seed/seed-plus funds during the last round of awards in 2021.
- $5.1 million for the Technology Validation and Start-Up Fund grants, which is the average annual award amount from the program across 2022 and 2023.

Ohio's state GDP in 2023 was $873 billion. With $59.3 million in annual state support for I&E programs, Ohio's state spending effort equates to $67.95 per $1 million in state GDP.

Federal Funding: ARPA's State Small Business Credit Initiative

This report focuses on state funding of programs designed to encourage the formation of business start-ups that bring new innovative products and processes to market. However, it's important to note that the federal government has recently provided a large infusion of new funding to states that can also be used for this purpose.

Most notably, the American Rescue Plan Act of 2021 reauthorized the federal State Small Business Credit Initiative (SSBCI) and allocated $10 billion to the program to assist small businesses across the country in their recoveries from the economic impacts of the COVID-19 pandemic.[69] The program will provide a huge injection of funding to states, the District of Columbia, U.S. territories and Tribal governments to induce greater private capital to small businesses, with special allocations specifically for businesses in historically underserved communities or owned by entrepreneurs the are part of underrepresented groups based on factors such race, gender, ethnicity, or residence.[70]

SSBCI funding is intended to support programs that either provide capital to small businesses or provide technical assistance such as legal, accounting, or financial advisory services to those businesses. Capital programs include equity and venture capital programs targeting underserved startups and investors. Many states are using SSBCI funding in this capacity to greatly expand the availability of early-stage financing. Below is an outline of how Michigan and this report's five case study states are employing these dollars to encourage innovation-inducing startups.

Michigan ($236 million total award): The Michigan Small Business Venture Capital Program (SBVCP) will provide up to $75 million to increase capital access to Michigan technology-based early-stage companies through investments as a limited partner in venture capital funds operating in the state. Venture firms must demonstrate a 1:1 match of private funding for each SSBCI dollar and special consideration will be given to funds that invest in very small businesses and those owned by socially and economically disadvantaged individuals consistent with U.S. Treasury guidelines.[71]

continued on p. 27

continued from p. 26

New York ($505 million total award): New York has allocated SSBCI funds to four different venture capital initiatives administered by New York Ventures.[72] The Emerging and Regional Partner Fund will invest $102 million in diverse and emerging venture funds that specifically target investments to undercapitalized regions of the state. Another $52 million will be used for a Community and Regional Partner Fund that will invest in venture funds that operate with regional accelerators or other mentor-based programs. $30 million in SSBCI funding will support a Pre-Seed and Seed Matching Program that offers equity investments in early-stage New York companies who demonstrate a dollar-for-dollar match from private investors. Finally, $35 million will supplement New York's state-funded Innovation Venture Capital Fund.

Pennsylvania ($268 million total award): $125 million will be committed to an Equity Capital Program that will provide seed- and growth-stage capital investments through the state's regional Ben Franklin Technology Partners and its three regional Life Sciences Greenhouses. An additional $17 million allocation will support a Diverse Leaders Venture Program specifically targeting underserved startup founders.[73]

Illinois ($355 million total award): Illinois Innovation Venture Fund (INVENT)[74] taps $114 million in SSBCI funding to provide equity investments in very small businesses with fewer than 10 employees; businesses owned and controlled by historically disadvantaged individuals[75]; and businesses operating in seven key economic sectors[76] defined as part of the state's economic development plan.

Ohio ($182 million total award): $75 million will support the Ohio Venture Fund which will make between seven and 15 awards to professional investment funds for investments in growth-stage Ohio technology companies. SSBCI funds will require a 1:1 cost share, and the program has target of 40 percent of funding going to woman- or minority-led investment funds. Another $36.7 million will support an Early Stage Focus Fund specifically targeting early-stage Ohio companies in underserved communities or led by underserved populations.[77]

Indiana ($99 million total award): $70 million of Indiana's SSBCI funding will be used for venture capital investments in seed-stage companies through the state's Indiana Angel Network Fund with a portion of the funding dedicated to venture capital partners with a demonstrated focus on reaching underrepresented startup founders. Investments may be up to $1 million per company and require a minimum 1:1 co-investment.[78]

Pennsylvania – Ben Franklin Technology Development Authority

The Ben Franklin Technology Development Authority (BFTDA) was established in 1983 to help promote greater innovation and entrepreneurship within the Pennsylvania economy. The authority's 21-member board consists of elected officials as well as persons with expertise and background in finance, economic development, and higher education. The authority partners with the Pennsylvania Department of Community and Economic Development and four regional Ben Franklin Technology Partners to provide access to capital and technical expertise and support to early-stage companies in Pennsylvania. BFTDA programs also promote collaborations between Pennsylvania's colleges and universities, businesses, and private investors to encourage the startups of technology-based businesses.

To help provide one-time funding for BFTDA programming, Pennsylvania sold $100 million in deferred insurance premium tax credits to 29 insurance companies in July 2015. The sale generated $85.4 million to support BFTDA programming, including the state's Venture Investment Program. The original funding has now been expended, but returns in the Venture Investment Program that were derived from the original funding continue to support new funding commitments.

Access to Capital Support

Pennsylvania's Venture Investment Program (VIP) helps to promote access to capital to early-stage businesses by providing funding to venture capital funds that are primarily located in Pennsylvania and that target their investments on startup businesses in high-growth, technology sectors that are in the seed stage and early-stage of development.[35] VIP program support is limited to 20 percent of the overall capital commitment to any individual venture fund, and eligible funds must demonstrate that they will generate at least $10 million in aggregate commitments across the VIP program and other private sources.

Support to venture funds is provided in the form of loans with a repayment based on investment returns and available cash flow over what is typically a 10-year term. In 2022 and 2023, the BFTDA board approved $11.5 million in new commitments to seven Pennsylvania venture capital funds.

The Department of Community and Economic Development also administers the Life Sciences Biotechnology Greenhouse Program.[36] Initially launched in 2001 with a $100 million investment from the state's tobacco settlement proceeds, the program supports three regional "greenhouses" that combine early-stage financing and R&D support with specialized technical and business expertise for businesses in the life sciences sector. The greenhouses share $3 million in state appropriations for the program.

Business Support Programs

The state's business support programs are administered by four regional Ben Franklin Technology Partners (BFTP). It should be noted that services from the regional partners cross over all three categories of I&E programs. Based on regional needs, BFTPs provide supports that include access to capital programs, access to business and technical expertise and subject matter experts, mentorship and networking opportunities, and collaborations with universities/colleges, industry, and investors to encourage greater technology commercialization.

Core annual funding to the regional partners is provided through Challenge Grants from the state's Department of Community and Economic Development. For FY2024, the four BFTPs each received grant support of $4.1 million from a combined state allocation of $16.4 million for the program. That represents an increase over the $14.0 million annual allocation that was in place in FY2022. Many of the BFTPs are able to supplement this annual allocation with additional revenue generated from investment and program returns from previous rounds of Challenge Grant awards. BFTDA annual reports show this additional revenue has ranged from $14-17 million in recent years, with the revenue being substantial for BFTPs serving more highly-populated regions of the state containing its major cities.[37]

In 2023, the four BFTPs assisted 1,827 Pennsylvania companies and contributed to 119 new startup formations. These companies created 2,493 new jobs in the state; commercialized 257 new products and were awarded 189 new patents and software copyrights.[38]

University Research Commercialization

Much of the work on university commercialization is handled within the BFTP contracts discussed above, but the Pennsylvania Department of Community and Economic Development does sponsor one program tied to the state's largest public research university. The Invent Penn State program[39] supports entrepreneurship-focused academic programs with business incubation and funding support for commercialization. The program is supported by a $2.4 million line-item appropriation in the state budget.

State Spending Effort

State appropriations of $22.4 million provide core funding for the BFTPs as well as the Biotechnology Greenhouse Program and Invent Penn State. To those appropriations, the report adds:

- $5.8 million to reflect the average funding commitments within the Venture Investment Program over 2022 and 2023
- $15.9 million to capture average BFTP spending from investment and program returns tied to previous rounds of grant funding

With those adjustments, total Pennsylvania I&E spending is calculated at $44.0 million. Pennsylvania state GDP in 2023 was $965 million, bringing state spending effort to $45.62 per $1 billion in state GDP.

Indiana – 21st Century Research and Technology Fund

Since 2011, Indiana's I&E programs are coordinated by Elevate Ventures, a private venture development organization that was formed as a public-private partnership with the Indiana Economic Development Corporation (IEDC), the state's primary economic development agency. Since its inception, program data suggest the organization's efforts has committed over $171 million in early stage funding across the state and contributed to the creation of 8,355 new direct jobs in Indiana.

Access to Capital Support

In partnership with the IEDC, Elevate Ventures operates a number of early-stage financing programs covering startup companies at various stages of growth[40]:

- *Pre-Seed Stage*: A newly-launched pre-seed fund will provide financing to very young start-up ventures that remain in the ideation phase of developing a viable product. The fund provides small investments typically ranging from $20,000 and $100,000. Nine commitments totaling $480,000 were made in late 2023.
- *Early-Stage*: The Indiana Angel Network Fund provides co-investments alongside qualified angel investors to seed- and early-stage companies. Elevate Ventures committed $22.8 million in 72 program transactions during 2022 and 2023.
- *Growth Stage*: Mature companies that have a market size of over $1 billion can access the "21 Fund"; during 2022 and 2023, the fund supported 21 commitments totaling $12.5 million.

Business Support Programs / University Research Commercialization

Indiana's Elevate Ventures operates under a three-year contract with the IEDC that pays the organization $19.6 million. The organization will receive $6.5 million in annual payments for their business support programs in Fiscal Years 2024, 2025, and 2026. As part of their activities, they have established three regional partnerships with organizations that provide services to startup entrepreneurs through experienced "entrepreneurs-in-residence". Elevate Ventures has also developed an Elevate Origins training program designed for first-time entrepreneurs.

Indiana also operates an SBIR/STTR matching program providing up to $1 in match for every $2 in Phase I federal award received by companies headquartered in Indiana. The state match is capped at $50,000. The program was recently expanded to include matching for federal Phase II awards, again on $1 match per $2 in federal award basis. Phase II state matching funds are capped at $75,000 per award. In 2023, the program awarded $917,000 in matching grants to 16 organizations.[41]

As part of its contract, Elevate Ventures, along with its regional partners, also play a role in working with Indiana colleges and universities on research commercialization. Between 2020 and 2023, a key vehicle in this engagement was their Elevate Nexus pitch competitions across the state organized in partnerships with state higher education institutions. Across 2022 and 2023, the program's competitions resulted in 41 investments totaling $2.0 million to startups in their earliest stages.[42] In 2024, the Nexus program will be replaced by the new pre-seed fund which will target the same cohort of early-stage startups.

State Spending Effort

Indiana's I&E programs are supported by an annual state appropriation of $32.8 million. In 2023, Indiana's state GDP was $497 billion, making the state's spending effort on I&E programs equal to $65.89 per $1 million in state GDP.

New York – Empire State Development / NYSTAR

I&E programs in New York State are housed within Empire State Development (ESD), the state's lead economic development agency. Within ESD, the Division of Science, Technology & Innovation (NYSTAR) is responsible for administering most programs.

Access to Capital Support

The primary source of state funding for early-stage financing is New York's Innovation Venture Capital Fund, administered by New York Ventures, a venture capital fund within Empire State Development that was established in 2016 with $100 million in state support. The fund makes co-investments alongside other venture funds or institutional investors to support seed and early-stage investments in companies in the climate technology, health tech and life sciences, ag-tech systems, advanced manufacturing, social impact software, and data/artificial intelligence. In 2022 and 2023, the Empire State Development board approved new commitments of $31.8 million from the fund.

Business Support Programs

NYSTAR operates three programs designed to support early-stage companies throughout the state.

First, NYSTAR provides funding to 10 designated Innovation Hot Spots, one for each of the state's economic development regions. Hot Spots receive annual funding of $250,000 over their five-year terms and are responsible for coordinating services to regional entrepreneurial ecosystems. Services vary by region but often include the provision of shared space or administrative staff, access to capital support, prototype development, coaching/mentoring programs, and other technical support. Twenty certified business incubators receive $100,000 in annual state support and assist with service and program delivery across the state. There are currently 20 certified incubators serving under the program. During the 2021-2022 contract period, the program helped participating early-stage businesses to create 1,028 new jobs.[43]

NYSTAR's Innovation Matching Grants Program[44] provides matching funds for federal SBIR/STTR grants to new small businesses actively in the process of applying for either a Phase I or Phase II SBIR/STTR grant. The program provides a state matching grant equal to 50 percent of the federal award, with the total matching grant capped at $100,000 for Phase I grant recipients and $200,000 for Phase II grant recipients. Matching grant funds are to be used to expedite commercialization and generally cover expenses not allowed for SBIR/STTR funds, such as commercialization, patenting, and marketing studies.

Beyond the traditional SBIR/STTR matching program, NYSTAR also administers a Matching Grants Leverage Program[45] to assist New York institutions of higher education and nonprofit research institutions in leveraging new federal and private foundation funding to support applied research, technology development, and commercialization efforts. The program provides total matching grant funds of up to $1,000,000. Grant recipients must show a minimum of $2 in federal, foundation, or other private sources coming into New York for every $1 in state match. Matching funds can be provided for a term of up to five years. During the FY2023 award period, NYSTAR awarded $5.9 million in matching funds which helped to leverage $56.9 million in federal and private funding.[46]

University Research Commercialization

Created in 1983, the Centers for Advanced Technology (CAT) program supports applied R&D and technology transfer through competitive grant support to New York universities and affiliated research institutes. The state awards 10-year CAT designations in technology fields of strategic importance to the New York economy. The program currently provides $15 million in combined grant support to 15 CATs at 13 different institutions of higher education. The goal of the program is to help leverage other federal and private funds to promote the commercialization of applied R&D and formation of start-up companies to enhance economic development in the state. During academic years 2021 and 2022, program activities with existing and start-up businesses resulted in the creation of 604 new jobs across the state.[47]

NYSTAR also administers a Centers for Excellence program that provides support to 13 designated Centers of Excellence[48] at nine New York universities.

Like the CAT program, the Centers for Excellence program aims to connect academic researchers to the business sector, promote joint university-industry R&D and encourage the commercialization of new products and technologies. State funding for the program was increased from $14.0 million in FY2024 to $14.5 million in the FY2025 budget.

State Spending Effort

An annual state appropriation of $52.8 million[49] supports the NYSTAR I&E initiatives, including all the business support and university research commercialization programs reviewed in this section. In calculating state spending effort, $15.9 million is added to reflect the average state-funded commitment in 2022 and 2023 from the New York Innovation Venture Capital Fund. New York's state GDP in 2023 was $2.15 trillion, more than double any of the other case study states. New York's state spending effort on I&E programs was $31.94 per $1 million in state GDP.

Illinois – Department of Commerce and Economic Opportunity

The State of Illinois administers a number of different programs to encourage R&D and early-stage business formation. Most are administered by the Department of Commerce and Economic Opportunity (DCEO), but the Illinois Science and Technology Coalition also plays a lead role. Further, the state's university system partners within the Illinois Innovation Network to promote the commercialization of university research. State lawmakers have also enacted legislation allowing the state treasurer to tap a portion of the state's cash investment portfolio to support early-stage financing.

Access to Capital Support

The Illinois Growth and Innovation Fund (IGIF) is the primary source of state-funded early-stage financing in Illinois. The fund derives from 2002 legislation[50] that allowed the state treasurer to invest up to one percent of the state's investment portfolio in Illinois venture capital firms with the goal of growing "technology-enabled" businesses within the state. In 2018, that legislation was amended to allow five percent of the investment portfolio to be used for venture investments. The result was the creation of the IGIF as a $1 billion evergreen fund authorizing targeted investments in venture capital and other funds with nexus to Illinois over the following 10 years. Beginning in 2016 and continuing through late 2023, the fund had committed $647 million to Illinois venture capital firms. The fund had helped support 585 Illinois-based companies by the end of 2022.[51]

In 2011, state lawmakers also approved an Angel Investment Tax Credit[52], which provides a tax credit equivalent to 25 percent of direct investments in a certified technology-focused Illinois business, with a cap of $2 million on the total credit. The credit can grow to 35 percent for investments in qualified business ventures owned by women, minorities, disabled persons, or operating in a qualified rural area. Total credits statewide cannot exceed $10 million. Total credits of $9.7 million were claimed by eligible investors across 2022 and 2023.

The Sustaining Illinois Seed Fund[53] administered by the Illinois Innovation Network is another early-stage financing program. The program was initiated in 2020 with resources provided by the University of Illinois System and Northern Illinois University. Since its inception, the program has provided $1.2 million in seed funding to 40 concept-stage ventures.

Business Support Programs

The OCED's Office of Entrepreneurship, Innovation and Technology administers the state's SBIR/STTR matching program.[54] Illinois provides a state matching grant of up to $50,000 to for-profit Illinois businesses that have received a Phase I federal award. Illinois does not provide matching grants for Phase II awards. Businesses are limited to one award per fiscal year and five awards over the lifetime of the business. In 2023 and through June 2024, the program had awarded 56 matching grants totaling $2.8 million.

University Research Commercialization

The Illinois Science and Technology Coalition, a non-profit organization that is designated as the state's technology advisor under Illinois law, partners with the DCEO to administer a new Illinois Innovation Voucher (IIV)[55] program. The program's goal is to encourage collaboration between Illinois colleges and universities and small- and medium-sized businesses to increase economic innovation and the creation of new products and services. Eligible businesses must either have their principal place of business in the state or must employ at least 100 full-time employees in the state. Higher education partners must be non-profit postsecondary institutions.

The program awards successful business applicants with an innovation voucher which covers up to 75 percent of eligible costs of the collaborative research engagement, including items such as shared technologies/facilities/equipment; commercialization efforts; prototyping and other product validation; and salaries for research and scientific expertise. Vouchers are capped at $75,000 of eligible costs.

State Spending Effort

State appropriations of $11.3 million support the OECD's Office of Entrepreneurship, Innovation and Technology (OEIT); the SBIR/STTR matching program administered by the OEIT; and the Innovation Voucher program. To this amount, the report adds:

- $5.9 million to reflect the average investment tax credits issued in 2022 and 2023 which are considered tax expenditures that generate early-stage investments
- $240,000 to reflect the average Sustaining Illinois seed funding committed in 2022 and 2023

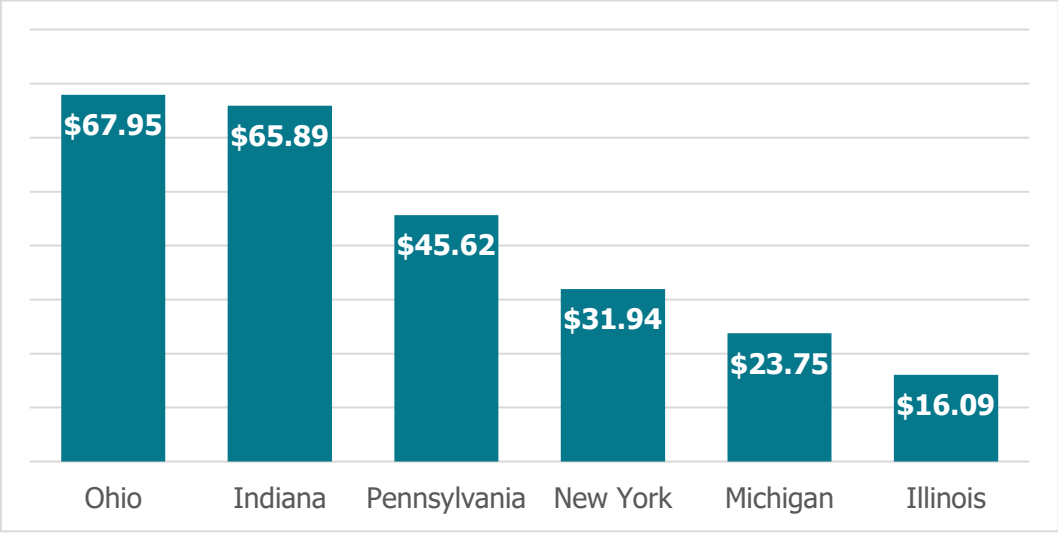
Given that records show no further funding commitments in the first three quarters of 2023 from the IGIF, the report makes no adjustment for the program. In 2023, Illinois state GDP was $1.08 trillion. State spending effort for I&E programs equates to $16.09 per $1 million in GDP.

Spending Effort Across States

Chart 7 compares Michigan's spending effort for I&E programs to those of the five case study states. Michigan's ongoing state support for these programs ranks fifth, ahead of only Illinois. Michigan's spending effort is just over one-third of the spending per $1 million in state GDP provided by the top two states – Ohio and Indiana.

An important driver of these differences is spending on business support programming. Ohio, Indiana, and Pennsylvania all have systems that lean heavily on coordination from long-serving and well-funded entrepreneurial service providers. Average annual funding to Ohio's five regional Entrepreneurial Service Providers is $32.9 million. Pennsylvania's Ben Franklin Technology Partners had annual revenue of around $32 million when counting reinvested earnings from prior rounds of state funding. In Indiana, Elevate Ventures receives $6.5 million annually for its direct business support services but also committed $21 million through its early-stage capital programs.

Chart 7
State Spending Effort for I&E Programs
(State spending per $1 million in state GDP)



In Michigan, the Small Business Development Center network plays the primary role in providing these business supports. Adding the annual value of their Tech Team and Business Accelerator Fund contracts with the annual direct funding that the MEDC provides to Michigan incubators shows Michigan allocates roughly $4.7 million each year for this category of services – below all of three of these states, particularly when spending is compared relative to the size of each state's economy.

It is important to note that these business support partners also play a key role in connecting state college and universities, potential investors, and entrepreneurs in efforts to commercialize research generated by these institutions of higher education. While Michigan operates an assortment of programs aimed at encouraging this commercialization, the evidence reviewed in this report suggests the state receives too little benefit for the very significant academic R&D spending occurring here. Michigan's lack of long-term strategic partnerships with entities like Pennsylvania's BFTPs, Elevate Ventures in Indiana, and Ohio's regional entrepreneurial service providers may contribute to the state's below-average metrics in this area.

Finally, the analysis suggests Michigan also remains behind most of the case study states in terms of access to capital support programs. While the creation of the Michigan Innovate Capital Fund program last year will expand public support for early stage financing, Michigan's recent funding levels still fall below state support in all five of the competitor states examined in the report.

Michigan falls below many of its neighbors in spending effort on I&E programs. Michigan would need

Fiscal Roadmap: Revenue Options for Michigan I&E Programs

to increase its current $15.7 million annual I&E appropriation by more than $25 million to boost its spending to the same levels as case study states like Ohio and Indiana. If Michigan wants to be serious about fostering an ecosystem that supports innovative early-state businesses, state policymakers should note this gap and consider boosting public investment in these programs that can play an important role at the state-level of inducing greater economic innovation and growth.

The good news is that there are revenue options available to accomplish this task. This final section of the report lays out a fiscal roadmap for policymakers outlining options to tap new revenue or redirect existing revenue to support public investments in Michigan. These options would all apply to raising revenue for I&E programs, but in most cases, they also represent options to garner new revenue for any public purpose. The roadmap outlines two categories of revenue options.

First, modelling the approach used in several of the state case studies, this report examines paths to generating significant one-time dollars to jumpstart I&E programming. States have used large one-time allocations to capitalize new venture and early-stage capital funds. Ohio, in particular, has tapped large one-time bonding allocations to provide a stream of stable financial resources to support all of its I&E programs for almost two decades.

Second, the report looks at options to generate an increase in ongoing annual support for these programs

Innovation and the Opioid Crisis

The opioid crisis has had a devastating effect in both Michigan and the United States as a whole. Since 1999, the incidence of drug overdose deaths in Michigan grew by 550 percent rose from 4.6 per 100,000 residents in 1999 to 29.9 per 100,000 residents in 2022.[79] This increase was fueled by growth in both prescribed and illicit use of opioid drugs, including the illicit use of drugs such as heroin and fentanyl.

Beginning in 2021 and continuing into 2024, nationwide settlements[80] have been reached related to litigation brought by state and local governments against large manufacturers, pharmacy chains and distributors of pharmaceutical opioids. The settlements provide funding to these governments to help address harm to the public that arose from the manufacturing, marketing, and distribution of those drugs.

The State of Michigan and local governments are expected to receive $1.6 billion between 2022 and 2040 under the existing settlements[81]. Funding will be split equally between the state and local governments. Appropriately, an emphasis has been placed on ensuring settlement funds are used to address the current crisis. The initial settlements in 2021 – which account for more than half of total settlement funding – require that at least 85 percent of settlement proceeds by used for opioid remediation.

In 2022, Michigan lawmakers enacted legislation[82] establishment a framework for the use of settlement funds provided to the state. The legislation creates an Opioid Advisory Commission[83] with the state's Legislative Council to review existing public initiatives related to education, prevention, treatment and services for persons affected by substance use disorders and to recommend funding initiatives to the legislature. The commission consists of 14 members: 12 voting members appointed by legislative leadership from both political parties along with the Legislative Council administrator and director of the Michigan Department of Human Services, who serve as non-voting, ex officio members. The commission is tasked with producing an annual report containing a needs assessment for relevant programming; funding recommendations and performance metrics to measure progress; and an assessment of the effectiveness of prior spending of settlement dollars in abating the opioid crisis in Michigan.[84]

continued on p. 19

continued from p. 18

As these settlement funds are allocated, a unique Ohio initiative shows how funding for economic innovation can play a role in combatting the opioid crisis. In 2017, the Ohio Opioid Technology Challenge tapped $8 million in Ohio Third Frontier funding to encourage the commercialization of new technologies to help address the problem.[85] Twelve finalists in the competition were provided $200,000 grants to help further validate their new technologies and analyze their potential for commercialization. From the finalists, four winners were chosen and provided $1,000,000 grant awards to help support the commercialization of their innovative technologies. The challenge resulted in both the commercialization of new technology-driven products and their eventual use within the Ohio health care system to better support Ohioans struggling with opioid addiction.

The four winning companies brought the following new technologies to market:

- A quarter-sized button device installed in the hoe of someone struggling with addiction that allows the person to call for supervision or support in the case of a potential overdose or other emergency. The winning company worked with two Ohio counties to install the device for at-risk persons in supportive housing programs and those leaving incarceration.
- A small mattress that generates random vibrations to mitigate rapid breathing and irregular heartbeats in infants exposed to drugs in the womb. The winning firm has deployed its technology in partnership with Ohio hospitals and other organizations that support opioid-exposed newborns.
- A mobile app that facilitates testing and medical supports and scheduling, including the submission of self-administered breath or saliva tests through the app using video verification. The winning company subsequently worked to launch the app within Ohio's largest addiction treatment system.
- An app developed by an Ohio hospital system designed to prevent abuse and addiction by ensuring timely, appropriate care is provided as patients transition from hospital care back into their communities. A new start-up company is working to commercialize the app for broader use.

by both tapping into existing revenue streams and by generating new revenue through tax policy changes.

In terms of funding strategies, perhaps the most important factor is that the state identifies a source of stable long-run funding to support I&E programs. This is especially important for access to capital programs that seek to leverage new and sustained private investment from venture funds and other private investors into the state. One-time surges of limited-term funding are less likely to draw in that financial support and are more likely to see any new private funding exit the state once the limited-term support is fully utilized.

In that sense, both one-time and ongoing revenue strategies can have positive impacts. Large one-time investments which generate sufficient upfront revenue can be used to maintain steady annual funding for I&E programs over time. Similarly, the dedication of new permanent revenue to I&E programs accomplishes the same increase in a more direct way.

One-Time Revenue Options

The Michigan Constitution and state laws allow several different paths to provide significant one-time funding for specific public policy initiatives. Generally, those options involve either borrowing through bond issues or tapping into existing fund balances. Each of these options would require the approval of the Michigan legislature, either through the enactment of new legislation or the approval of the financing changes through the appropriations process. One option would also require the approval of Michigan voters.

General Obligation Bonds

The Michigan Constitution authorizes the state leg-

islature to approve long-term borrowing for specific public purposes.[d] However, it also sets out special conditions for approving such borrowing. Legislation authorizing the borrowing must be approved by two-thirds of the members of each legislative chamber. In addition, following the enactment of this legislation, the issue must then be put to a vote of the people at a general election. The ballot question must contain details on the amount to be borrowed, the specific purpose for which funds will be used, and the method of repayment.

Long-term borrowing of this nature is typically facilitated through the issuance of general obligation bonds, which are backed by the full faith and credit of the state. As noted in the previous section, Ohio used a similar $1.2 billion bond issuance to support its Third Frontier initiative.

Michigan has used general obligation bonds to finance special public policy initiatives in the past. Perhaps the most prominent was the state's Clean Michigan Initiative. In July 1998, state lawmakers enacted Public Act 284 authorizing the issuance of $675 million in general obligation bonds to support environmental and outdoor recreation initiatives. As required by the Constitution, the question was placed on the general election ballot and was approved by voters in November of that year. Of the total borrowing, $575 million was earmarked for environmental protection and clean-up programs. The remaining $100 million was allocated to state park infrastructure improvements and local recreation projects.[56]

Similar to the Ohio Third Frontier model, general obligation bonds could be issued to support one-time funding for I&E programs with sufficient support from the legislature and Michigan voters.[e] A sufficiently large bond issue could support the additional $25 million in annual I&E funding needed to boost Michigan's spending effort to the levels in place in Ohio and Indiana – the two case study states with the largest spending efforts. Further, the dedicated long-run revenue stream would allow time for program earnings to be realized and eventually reinvested to support long-run programming.

Revenue Bonds

The issuance of revenue bonds is another option to generate one-time funding for I&E programming. Unlike general obligation bonds that pledge the full faith and credit of the state for repayment, revenue bonds are backed by the specific revenue stream pledged as the source of repayment. As such, the supermajority votes in the legislature and the approval of the bond issue by the public is not required.

As with general obligation bonds, Michigan has made use of revenue bonds in the past. Most notably, the 21st Century Jobs Fund – which is now the primary source of revenue for I&E programming – was initially capitalized using proceeds generated by the issuance of revenue bonds tied to Michigan's tobacco settlement proceeds.

In 1998, 52 states and U.S. territories signed a Master Settlement Agreement (MSA) with the country's four largest tobacco companies to settle claims brought to recover health care-related costs incurred by these governments to treat smoking-related illnesses. Eventually, more than 50 tobacco companies joined the MSA with these settling states and territories. Michigan is among the settling states participating in the agreement. As of April 2024, Michigan had received just under $7.2 billion since the inception of settlement payments in 1999.[57]

In 2005, Public Act 226 authorized the sale of a portion of the state's tobacco settlement revenue proceeds to a new entity – the Michigan Tobacco Settlement Finance Authority (MTSFA).[f] The MTSFA issued $400 million in revenue bonds as payment to the state for this purchase, and the state pledged 13.3 percent of its annual share of tobacco settlement

d Article IX, Section 15 of the 1963 Michigan Constitution.

e Note that the question would need to be put before voters at a general election, and Michigan's next general election will not occur until 2026.

f Executive Order 2010-2, effective May 30, 2010, consolidated the powers and duties of the Michigan Tobacco Settlement Finance Authority with those of nine other public authorities into a single entity – the Michigan Finance Authority (MFA). The MFA is governed by a seven-member board including the State Treasurer and six gubernatorial appointees.

proceeds to the MTSFA beginning April 1, 2008.[g] In FY2023, Michigan's annual settlement payment was $292.3 million, of which roughly $38.9 million was diverted to the MTSFA to fulfill this pledge.

The $400 million the state received from the revenue bond issue was used to capitalize Michigan's 21st Century Jobs Fund, which was created in 2005 to support a broad array of state economic development initiatives, including I&E programs. Beginning in FY2008, state law has supplemented this startup funding from the revenue bonds with an additional $75 million in annual appropriations of tobacco settlement proceeds. The 11-member Michigan Strategic Fund board is given authority to allocate proceeds from the 21st Century Jobs Fund.

With appropriate statutory changes, Michigan could conceivably use a permanent revenue stream to securitize one-time revenue bonding to support I&E programs. Two revenue streams that are particularly relevant given the flexibility on how they can be used are:

- Tobacco settlement proceeds: While most of Michigan's anticipated $282 million in tobacco settlement proceeds are earmarked in state law, the FY2024 enacted budget contains $63.2 million in discretionary appropriations from the Merit Award Trust Fund[58] – which is the state fund that collects Michigan's tobacco settlement dollars. Most of these discretionary appropriations are used to replace General Fund appropriations within the Medicaid program.
- Liquor system profits: Under Michigan law, the state controls the wholesale distribution of liquor through a privately-operated distribution system. Liquor is sold to retailers at a price markup above the cost incurred in purchasing liquor from individual manufacturers. This revenue is then used to meet costs incurred by both the private distributors and administrative costs incurred by the Liquor Control Commission. Net income earned from the markup exceeding these costs is deposited annually in the state's General Fund. For FY2023, net income from liquor distribution equaled $309.2 million.[59]

It is important to note, however, that since these revenues currently flow to the state's General Fund, any diversion of these revenue sources would have budget implications since General Fund revenue available for other purposes would fall, necessitating other budget reductions or replacement revenue from other sources.

21st Century Jobs Fund

As noted above, the 21st Century Jobs Fund was originally financed with a one-time deposit of $400 million that came from the state's securitization of a portion of its tobacco settlement proceeds. Since FY2008, state law also provides that the fund receives an annual deposit from Michigan's tobacco settlement payment; in most years, that deposit equaled $75 million. Under state budget provisions, it also receives a transfer of any General Fund appropriations supporting the MEDC's business attraction and community revitalization program (which amounts to $40.6 million in the current FY2024 budget). As noted, the fund is vital to Michigan's I&E programs as it is currently their sole source of appropriations in the state budget.

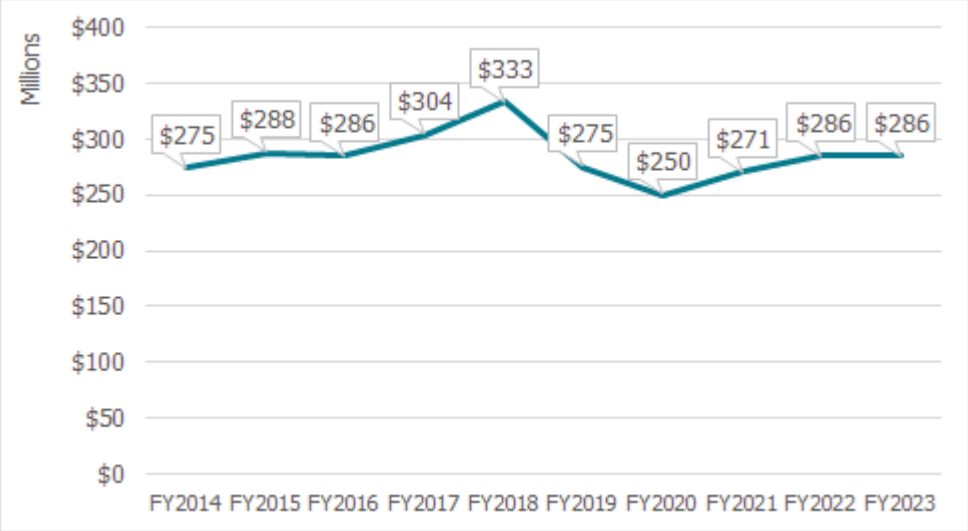
g Another 10.8 percent of the state's annual proceeds were pledged to the MTSFA beginning April 1, 2010 as part of a separate securitization of tobacco settlement proceeds to support a state budget shortfall, bringing the total pledge to 24.11 percent.

Chart 8 shows that, for the last decade, the fund has maintained a sizable year-end balance. Between Fiscal Years 2014 and 2023, the fund's balance stayed within a range of $250 million to $333 million. The fund's balance at the close of FY2023 was $286 million.

Since I&E programs already fall within statutory guidelines for spending 21st Century Jobs Fund revenue, policymakers could tap some portion of the fund's balance to supplement existing I&E programming on a one-time basis.

Chart 8

21st Century Jobs Fund – Year-End Balance History



Source: Michigan Strategic Fund annual financial reports.

Venture Michigan Fund and the Creation of the New Michigan Innovation Fund

The Venture Michigan Fund (VMF) was established through legislation enacted in 2003[86] and as a new nonprofit early-stage venture corporation that would invest in private venture capital funds operating in Michigan with goal of attracting into the state more private capital for early-stage businesses, thereby encouraging greater in-state formation of new high-tech companies and the high-wage employment that they often bring. However, the creation of the new initiative occurred at a time when the state was facing severe budget constraints, making it difficult to allocate the large sum of one-time state funding needed to start up the program.

To avoid the need for a large appropriation, the state turned to an alternative strategy. In 2005, state lawmakers approved the issuance of $450 million in tax vouchers which could be used by a taxpayer holding a voucher as payment towards tax withholding under Michigan's personal income tax or what was then the Michigan Business Tax. The vouchers were then used as collateral to allow the state to attract funding from lenders into the Venture Michigan Fund. To the extent that early venture fund investment returns were insufficient to meet debt repayments, lenders could sell the tax vouchers to make up for the shortfall. In 2006, the first funding commitments were made to Michigan venture funds drawing on these borrowed dollars. Since 2006, MEDC reports show $109 million in funding commitments were made to 13 venture funds as well as one direct investment.[87]

Beginning in 2015, a first series of tax voucher sales were scheduled in order to ensure full repayments under the loan agreements that capitalized the Venture Michigan Fund. However, instead of moving ahead with voucher sales, the State of Michigan utilized $171.7 million in General Fund revenue to directly buy back vouchers in two rounds during 2015 and 2017. These budget commitments also caused many Michigan lawmakers to question the efficacy of the Venture Michigan program, and legislation enacted in 2015 prohibited any further funding commitments or tax voucher issues under the program.[88]

However, existing commitments remained active and strong investment earnings in 2021 and 2022 allowed for remaining loan repayments to be made without further reliance on tax vouchers. Further, as of the close of FY2023, those investment gains have generated a cash balance of $100.2 million with another $240.2 million in active investment assets against only $11.4 million in total liabilities. Under current state law, the Venture Michigan Fund expires at the beginning of 2030 with the first $140 million of any net assets being deposited to the state General Fund and the remainder to the 21st Century Jobs Fund.

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However, Michigan policymakers have noted the cash balance in the VMF, and in June, $60 million was appropriated from the fund to support a new Michigan Innovation Fund. The new initiative is still dependent on the enactment of new legislation authorizing the early transfer of VMF dollars and outlining the parameters of the Michigan Innovation Fund program. Pending legislation before the Michigan House of Representatives would require the transfer of $105 million from the VMF to the 21st Century Jobs Fund as of June 30, 2024, if realized investment returns in at least one investment fund exceeded $105 million (a fiscal analysis of the legislation confirms that roughly $125 million in realized earnings now exist, so this provision likely will be met).[89] The bills also require that if the VMF has one or more funds with annual returns that exceed $10 million, that 75 percent of those returns would also be transferred to the 21st Century Jobs Fund. All of these transfers would be earmarked to support Michigan Innovation Fund programs.

The package of bills also set out guidelines for the use of revenue in the Michigan Innovation Fund. While these bills still need to be approved by the Michigan House and have yet to be considered by the Michigan Senate, the current House bills would allocate Michigan Innovation Fund proceeds to:

- Nonprofit or university-based evergreen venture funds for investments in early-stage Michigan startup companies engaged in competitive edge technologies[a] and other assistance related to the investment (88 percent of funding in FY2025; 60 percent in future years)
- Nonprofit agencies for start-up services that support the creation and growth of Michigan startup companies and their founders or that support the growth of the state's venture capital talent pool and future leadership (seven percent of funding in FY2025; 20 percent in future years)
- The Jobs for Michigan Investment Fund – a permanent fund that supports an array of MEDC programming – to support activities related to job creation/retention, encouraging the development and commercialization of competitive edge technologies, and community revitalization efforts (five percent in FY2025)
- The Jobs for Michigan Investment Fund to support investments in or alongside private venture capital funds (20 percent in future years beyond FY2025)

Final guidelines will not be set until either these bills or some alternative legislation is enacted, but given the financial status of the VMF, at least $105 million should be available to support the enacted $60 million Michigan Innovation Fund appropriation for FY2025 plus an additional $45 million in future fiscal years. It is also conceivable that continued VMF returns could generate an additional – although likely smaller - flow of revenue for several additional years.

a Current version of legislation defines these as life sciences technology; advanced automotive, manufacturing, materials, information, and agricultural processing technology; homeland security and defense technology; alternative energy technology; or other innovative technology as defined by the Michigan Strategic Fund board.

State Common Cash Pool

The Illinois Growth and Innovation Fund (IGIF) noted in the case studies is a unique model for generating state financing for venture capital investments. State lawmakers have authorized up to five percent of the state's cash investment portfolio to be tapped for investments in Illinois-based venture funds. As a result, Illinois can deploy roughly $1 billion through the IGIF for these investments and has committed $647 million to venture capital firms through late 2023.

Like all states, Michigan has a common cash pool which consists of the uncommitted liquid reserves of most state funds. Since funding is not immediately needed to meet obligations, the State Treasurer invests these funds to generate interest earnings on this available cash. State law guides the investment of these funds[60] and generally requires funds to be placed in low-risk investments such as short-term commercial paper and U.S. government securities. However, state law also allows funds to be used as part of specially-authorized loan programs, most notably the state's Emergency Financial Assistance Loan Program that provides emergency loans to local governments facing financial stress.

At the close of FY2023, Michigan's common cash pool had total assets of almost $30.0 billion. However, that balance has increased dramatically over the past several years. This is mostly the result of the

surprising growth in state revenues following the onset of the COVID-19 pandemic that generated very high state fund balances. Higher interest rates also generated above-average investment earnings. For perspective, assets in the common cash pool were $6.6 billion at the close of FY2019.[61]

Michigan lawmakers could opt to follow the Illinois model and amend state law to allow a small portion of the state's common cash pool to be invested in venture investments and other early-stage financing.

Ongoing Revenue

Michigan trails the five case study states in terms of ongoing state support for I&E programs. To close this gap permanently, Michigan will need to increase annual appropriations for these programs. This subsection looks at options to find new permanent revenue for I&E programs.

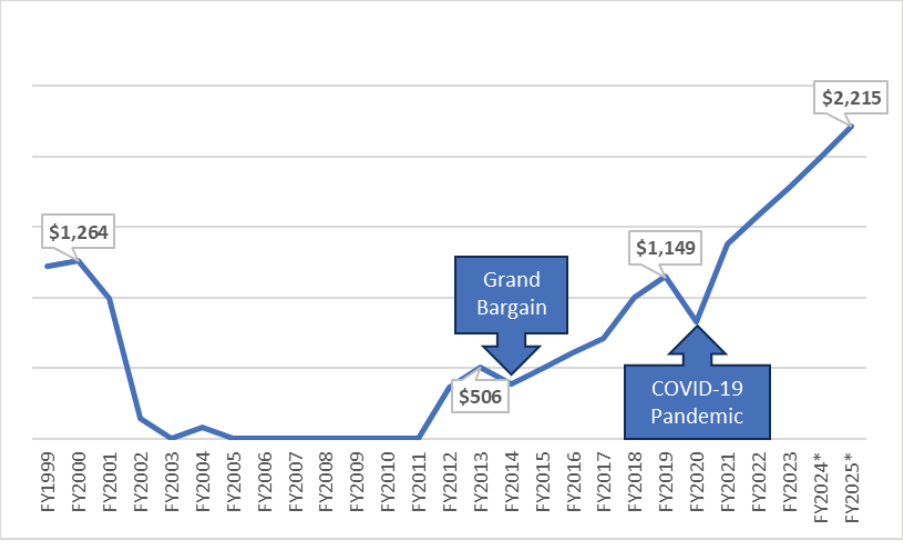
Redirection of "Grand Bargain" Repayment to Budget Stabilization Fund

In December 2014, the City of Detroit emerged from the nation's largest-ever municipal bankruptcy. A key factor in its exit was a $816 billion contribution from multiple philanthropic foundations, the State of Michigan, and several major donors to the Detroit Institute of Arts. The arrangement – now commonly known as the "Grand Bargain" – allowed the contribution to be allocated over 20 years to the city's two major retirement systems covering police and fire public safety employees and general employees. This helped to greatly mitigate the size of Detroit employee pension cuts that would have otherwise been necessary to address roughly $7.4 billion in unfunded pension and retiree health care obligations.[62] It also helped the Detroit Institute of Arts to move from city ownership to becoming an independent organization and preserving the museum's artwork from being exposed to a bankruptcy sale.

Part of the State of Michigan's Grand Bargain contribution came from an appropriation of $195 million from the state's Counter-Cyclical Budget and Economic Stabilization Fund – commonly known as the Budget Stabilization Fund (BSF). The BSF was created in 1977 as a buffer to protect the state against revenue declines experienced during periods of economic recession. At the time of the Grand Bargain deal, it had a balance of $506 million; by the end of FY2014, the balance was reduced to $386 million. Legislation enacted to approve the $195 million BSF withdrawal[63] required it to be paid back by requiring the deposit of $17.5 million of Michigan's tobacco settlement proceeds to be deposited into the BSF for a 21-year period scheduled to end in FY2035. The series of scheduled repayments total $368 million which reflects the $195 million withdrawal amount plus estimated interest. In effect, the state chose to borrow from itself using BSF revenue rather than engaging in traditional bonding or other borrowing to meet this commitment.

However, since the Grand Bargain, state revenue growth has allowed for substantial new deposits to the BSF well beyond the planned repayments under the Grand Bargain legislation. **Chart 9** tracks the

Chart 9
Budget Stabilization Fund Balance History, FY1999 to FY2025
(in millions)



* = estimated. Source: Research Council analysis using Michigan House Fiscal Agency data.

year-end balance of the BSF over the last 25 years. Just two years after the Grand Bargain withdrawal, the BSF already exceeded its pre-Grand Bargain level due to discretionary deposits approved by state policymakers beyond the Grand Bargain repayments. And despite a second withdrawal from the fund to help offset an expected sharp decline in state revenue during the early months of the COVID-19 pandemic[64], by the close of FY2023, additional discretionary deposits allowed the BSF to accrue a balance of $1.8 billion. Adding estimated interest earnings and another $150 million from two new deposits included in the approved FY2024 and FY025 state budgets, the BSF balance is expected to exceed $2.2 billion by the end of FY2025.

In short, current projections suggest the BSF balance will have grown by over $1.7 billion above its pre-Grand Bargain level of $506 million when financial books are closed on the state's 2025 fiscal year. That's more than 4.5-times greater than the payback pledged in the Grand Bargain legislation.

The implication is that $17.5 million annual repayment from tobacco settlement proceeds to the BSF prescribed in state statute has become largely symbolic. The reality is that the state has already paid itself back more than four times over.

Redirecting the $17.5 million in tobacco settlement revenue to the 21st Century Jobs Fund to support I&E programs would more than double Michigan's current funding commitments in this area.

Tax Increment Financing Mechanisms

Tax increment financing (TIF) is a common financing tool for economic development efforts whereby incremental tax revenue growth attributable to a defined set of taxpayers is set aside for a specific public policy purpose. For instance, Michigan law allows downtown development authorities to establish special downtown districts and to collect the incremental growth in property tax revenues generated from properties within those districts to help finance the revitalization of abandoned properties or other public improvement to help enhance economic growth in the district. TIF financing is also used by local Brownfield Development Authorities to capture property tax revenue to help encourage the cleanup and redevelopment of contaminated brownfield sites.

The State of Colorado has employed a unique form of TIF to support its Advanced Industries Accelerator Programs, which aims to promote growth and innovation in seven advanced industry sectors: advanced manufacturing, aerospace, bioscience, electronic, energy and natural resources, infrastructure engineering, and technology and information.[65] The programs offer grant funding and investment tax credits to support early-stage financing, encourage public-private partnerships within these sectors, and accelerate commercialization of new technologies.

To finance these programs, Colorado law utilizes a TIF structure to tap into income tax withholding growth in these advanced industry sectors. Enacted in 2013, the Colorado Bioscience and Clean Technology Innovation Reinvestment Act authorizes the deposit of one-half of the growth of income tax withholding attributable to wages paid by employers in 51 specific North American Industry Classification System (NAICS) codes tied to these seven advanced industry sectors into an Advanced Industries Acceleration Cash Fund (AIACF). Withholding growth is defined as total withholding within those sectors in the prior tax year minus the average annual withholding within those sectors in the preceding three years. So, for instance, the 2023 deposit would be one-half of the difference between 2022 withholding within these NAICS code sectors and average withholding across tax years 2021, 2020, and 2019.

The AIACF is then used to support the grant programs under this initiative. The deposit of one-half of this withholding growth equated to $17.6 million in FY2023. Both the grant program and the redirection of withholding under the TIF mechanism were authorized for ten years and were set to expire on July 1, 2024. However, legislation enacted in 2023 extended the grant programs for 10 more years and the withholding transfer for two additional years.[66]

Michigan could employ a similar strategy to capture income tax withholding growth within selected advanced industry sectors and earmark that funding toward expanded I&E programming.

Corporate Income Tax Redirection

In March 2023, state lawmakers enacted major tax reforms that reinstated more favorable income tax treatment of certain retirement income and expanded the state's Earned Income Tax Credit for low-income working households. Another important provision in that same legislation was the temporary redirection of state Corporate Income Tax (CIT) revenue. CIT revenue is typically deposited in the state's General Fund, but the legislation diverts $600 million of CIT revenue to three special revenue funds:

- $500 million annually to the Strategic Outreach and Attraction Reserve (SOAR) Fund to provide business incentive to attract new businesses and site selection to Michigan;
- $50 million to the Revitalization and Placemaking Fund to support community revitalization efforts to enhance quality of life in Michigan communities;
- $50 million to the Michigan Housing and Community Development Fund to address housing-related needs.

While the $50 million redirection to the housing fund is permanent, the $550 million shifted to the SOAR and placemaking funds is scheduled to expire under current law in FY2025, meaning that that CIT revenue would return to the discretionary General Fund in subsequent fiscal years.

However, pending legislation is both re-examining the policy priorities to be addressed with this revenue and contemplating an extension of these redirections. A bill package that was approved by the Senate in March 2024 would shift 50 percent of the annual CIT revenue allocated to the SOAR fund to be spent instead on a new "360 Program" that would provide funding to local governments, educational institutions, nonprofits, and other local economic development entities for an array of local public improvements including things like regional transit, affordable housing, neighborhood stabilization, business assistance, and public services such as child care, job training and recreation programs.[67]

Bills still pending in the Michigan House both redefine eligible spending and extend the $550 million redirection of Corporate Income Tax revenue for ten years through FY2035. A key component of the House legislation is the creation of a Michigan Mobility Trust Fund which would take $200 million of the annual SOAR Fund allocation under current law and shift it to finance transformational public transit projects around the state.[68]

Whether or not the expiring revenue redirections are extended as proposed in the House legislation, there is an opportunity to expand ongoing funding for I&E programs either by including them as a priority within the extended earmarks or by tapping into the increased General Fund that will become available during deliberations on the FY2026 budget next year if the earmarks expire.

Tribal Internet Gaming Revenue

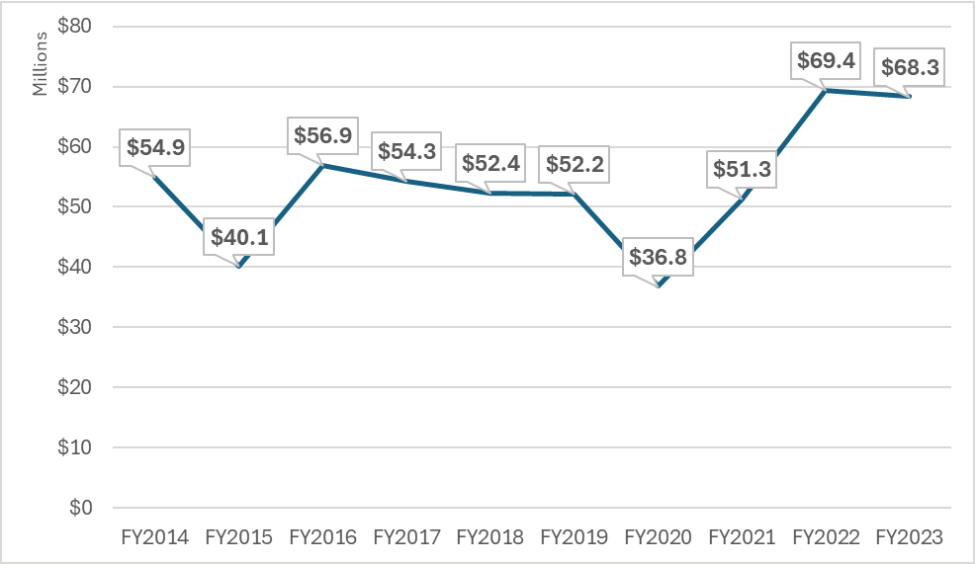
Changes to state law in 2019 authorized new forms of internet gaming and online sports betting in Michigan through both state-licensed casinos and tribal casinos in Michigan.[h] As was the case in 1996 with the approval of on-site casino gaming, these newly legalized forms of gambling come with new taxes on this activity. Michigan licensed casinos and tribal casinos that offer an online gaming option are subject to a marginal tax rate of between 20 and 28 percent of their adjusted gross gaming receipts; those same casinos are taxed 8.4 percent of their adjusted gross receipts from internet sports betting.

For tribal casinos (but not the licensed Detroit casinos), state law provides that 10 percent of their tax collections from both forms of new legal gambling are distributed to the Michigan Strategic Fund, and that distribution has given the MSF a significant bump in tribal gaming revenues since 2021. **Chart 10** displays total tribal gaming revenue received from all sources to the MSF since FY2014. The chart shows revenue on a steady but slightly downward trend from FY2016 to FY2019 before a significant decline due to the COVID-19 pandemic in FY2020. However, revenues jumped by around $17 to $18 million starting in FY2022, and that increase is largely due to the new allocations tied to online gaming and sports betting administered through tribal casinos.

The Michigan Strategic Fund board determines how the MSF's corporate revenues from tribal gaming and other sources are allocated. This recent increase in gaming-related revenue to the MSF provides an opportunity to boost support to I&E programs.

h Public Act 149 of 2019 authorized internet sports betting, while Public Act 152 of 2019 authorized online casino-type gaming.

Chart 10
Michigan Strategic Fund – Tribal Gaming Revenue, FY2014 to FY2023



Source: Michigan Strategic Fund annual financial reports

General Tax Increases

Finally, policymakers always have the option of adding new revenue through tax policy changes to help support public policy needs. **Table 1** provides an overview of Michigan's major taxes that support a portion of the state's discretionary General Fund. For each tax, the current rate is listed along with the estimated impact of specific incremental changes to its rate. Since the revenue from most of these major taxes is distributed across one or more different special revenue funds, the table displays both the total revenue increase associated with these incremental rate changes along with the specific impact on the state's discretionary General Fund. Policymakers would have discretion to allocate increases in General Fund revenue to any public policy purpose.

Tax increases bring obvious political challenges, but state lawmakers can also use tax policy to generate new revenue to support I&E programs and other key policy priorities. For example, modest changes to the state's tobacco and/or liquor excise taxes could generate the additional $25 million in annual revenue needed to move Michigan closer to the spending effort currently in place in Ohio and Indiana.

Table 1
Estimated Revenue Impact of Changes to Major Michigan Tax Rates

		Estimated Revenue Increase		
	Current Rate	Rate Change	Total	General Fund
Individual Income Tax	4.25%	0.1%	$228.6	$146.3
Sales Tax	6%	0.1%	$359.7	$56.5
Use Tax	6%	0.1%	$42.7	$28.4
Corporate Income Tax	6%	0.1%	$35.0	$35.0
Tobacco Tax				
Cigarettes	$2.00/pack	$0.10/pack	$30.9	$5.9
Other Products	32% (wholesale price)	2%	$6.7	$1.7
Liquor Excise Tax	4%	1%	$20.1	$20.1

Source: Michigan State Fiscal Agency. Research Council calculations on General Fund impact are based on analysis of Michigan House Fiscal Agency reports.

Conclusions and Policy Implications

Michigan lags behind several of its neighboring states in its focus on innovation and entrepreneurship programs. Many of the competitor states examined spend between two- to three-times more than Michigan in this policy area and have well-established relationships with public and private partners to guide public investments in these programs.

While Michigan benefits from world-class research and development anchored by its major public research universities, data suggest the state is failing to receive the economic "bang for the buck" that other states have achieved through the commercialization of this research into new business start-ups that tap into the new technologies and knowledge created by the research. A boost in funding and focus on innovation and entrepreneurship programs could help improve this dynamic.

The analysis of state spending effort illustrates the large differences in state funding between Michigan and the competitor states examined as part of the case studies. In particular, several states have established well-funded, long-standing networks of service providers that are charged with supporting all three segments of I&E programs: establishing early-stage funding programs in coordination with private funders; providing support and building networks to enhance the state's eco-system of entrepreneurs and funders; and working to connect the state's universities with resources to promote the commercialization of new products and technologies that derive from university research.

While programs currently exist in all of these areas in Michigan, the analysis shows that (1) they are generally funded at a lower level; and (2) they lack a statewide entity – or network of entities – to help coordinate across these programs.

The inclusion of $60 million in funding reinvested from the Venture Michigan Fund into a new Michigan Innovation Fund represents a good start to this process. It represents the first significant state-funded increase largely targeted to I&E programs in more than a decade and could conceivably provide a new stream of support for I&E programs for several years if existing VMF investments continue to realize earnings. Yet even with this new significant but limited-term investment, Michigan will remain behind these states in ongoing permanent public support for I&E programs that can foster an innovative entrepreneurial ecosystem to help drive greater economic innovation in the state.

The report outlines a menu of options that Michigan policymakers could tap to increase I&E program funding to levels closer to the state investments made in many of the states highlighted in the report's case studies. Options include tapping into sizable balances already earmarked for economic development programs; but they identify other strategies as well. For instance, redirecting the now largely-symbolic tobacco settlement allocation to the Budget Stabilization Fund tied to the Grand Bargain agreement would by itself double the size of the state's regular investments in I&E programs. Policymakers could also consider a shift in existing MEDC appropriations toward I&E programs.

To be clear, there are many important areas of public policy where state funding might be gainfully utilized to improve the lives of Michigan residents. But within economic development programming, economic research suggests that I&E programs have a unique link to innovation-induced economic growth that policymakers should consider as decisions are made on future budget allocations.

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73 For more information, see https://dced.pa.gov/programs-funding/federal-funding-opportunities/pennsylvania-state-small-business-credit-initiative-pa-ssbci/. Specific guidelines for the Diverse Leaders Venture Program are available at https://dced.pa.gov/download/diverse-leaders-venture-program-guidelines/?wpdmdl=115526.
74 For more information, see https://dceo.illinois.gov/illinoisinvent.html.
75 https://dceo.illinois.gov/illinoisinvent/sedi-and-cdb.html
76 https://dceo.illinois.gov/illinoisinvent/key-sectors.html
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78 FAQ on Indiana SSBCI programs is available at https://iedc.in.gov/program/state-small-business-credit-initiative-(ssbci)/faq.
79 Michigan Overdose Data to Action Dashboard, https://www.michigan.gov/opioids/category-data.
80 https://nationalopioidsettlement.com/
81 The Michigan Department of Attorney General's Opioid Settlement website provides details on the various settlements at https://www.michigan.gov/ag/initiatives/opioids.
82 https://www.legislature.mi.gov/documents/2021-2022/billanalysis/House/pdf/2021-HLA-0993-CD7AF455.pdf
83 https://council.legislature.mi.gov/Council/OAC
84 The commission's 2023 and 2024 annual reports are available on the commission's website at https://council.legislature.mi.gov/Council/OAC.
85 Ohio Third Frontier, "Ohio Announces $1 Million Prize Recipients of the Ohio Opioid Technology Challenge," press release, August 27, 2019.
86 Public Act 296 of 2003, Michigan Early Stage Venture Investment Act of 2003 accessible at https://www.legislature.mi.gov/Home/Document?objectName=mcl-Act-296-of-2003.
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88 For more information, see Senate Fiscal Agency analysis available at https://www.legislature.mi.gov/documents/2015-2016/billanalysis/Senate/pdf/2015-SFA-4195-A.pdf.
89 Michigan House Fiscal Agency analysis, Michigan Innovation Fund - House Bills 5651, 5652, and 5653, June 26, 2024, https://www.legislature.mi.gov/documents/2023-2024/billanalysis/House/pdf/2023-HLA-5651-53257FB7.pdf.