

Michael D. LaFaive, Srikant Devaraj, Ph.D. & Michael Hicks, Ph.D.

ECONOMIC DEVELOPMENT?

**State Handouts and Jobs:
A New Look at the Evidence
in Michigan**



The Mackinac Center for Public Policy is a nonpartisan research and educational institute dedicated to improving the quality of life for all Michigan residents by promoting sound solutions to state and local policy questions. The Mackinac Center assists policymakers, scholars, businesspeople, the media and the public by providing objective analysis of Michigan issues. The goal of all Center reports, commentaries and educational programs is to equip Michigan residents and other decision makers to better evaluate policy options. The Mackinac Center for Public Policy is broadening the debate on issues that have for many years been dominated by the belief that government intervention should be the standard solution. Center publications and programs, in contrast, offer an integrated and comprehensive approach that considers:

All Institutions. The Center examines the important role of voluntary associations, communities, businesses and families, as well as government.

All People. Mackinac Center research recognizes the diversity of Michigan residents and treats them as individuals with unique backgrounds, circumstances and goals.

All Disciplines. Center research incorporates the best understanding of economics, science, law, psychology, history and morality, moving beyond mechanical cost-benefit analysis.

All Times. Center research evaluates long-term consequences, not simply short-term impact.

Committed to its independence, the Mackinac Center for Public Policy neither seeks nor accepts any government funding. The Center enjoys the support of foundations, individuals and businesses that share a concern for Michigan's future and recognize the important role of sound ideas. The Center is a nonprofit, tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code. For more information on programs and publications of the Mackinac Center for Public Policy, please contact:

Mackinac Center for Public Policy 140 West Main Street P.O. Box 568 Midland, Michigan 48640
989-631-0900 Fax: 989-631-0964 Mackinac.org mcpp@mackinac.org

The Mackinac Center for Public Policy

Economic Development? State Handouts and Jobs: A New Look at the Evidence in Michigan

By Michael D. LaFaive,
Srikant Devaraj, Ph.D., and Michael Hicks, Ph.D.

©2020 by the Mackinac Center for Public Policy
Midland, Michigan



Guarantee of Quality Scholarship

The Mackinac Center for Public Policy is committed to delivering the highest quality and most reliable research on Michigan issues. The Center guarantees that all original factual data are true and correct and that information attributed to other sources is accurately represented.

The Center encourages rigorous critique of its research. If the accuracy of any material fact or reference to an independent source is questioned and brought to the Center's attention with supporting evidence, the Center will respond in writing. If an error exists, it will be noted in a correction that will accompany all subsequent distribution of the publication. This constitutes the complete and final remedy under this guarantee.

Contents

Introduction.....	1
Research Question	1
Literature Review.....	2
A National Assessment	2
An Iowa Tax Credit Program	3
The Kansas PEAK Program.....	3
The Shell Game Study.....	4
Pioneer Institute Research	4
Two Themes in the Research Literature	5
Data Sources and Programs	7
Analysis and Findings of Michigan Economic Development Programs	10
Results	11
Program-specific results.....	13
The 21st Century Jobs Fund: \$274,800-\$330,600 annual cost per job created.....	13
The Michigan Economic Growth Authority: \$125,000 annual cost per job created	14
The Michigan Business Development Program: \$29,400 annual cost per job created.....	15
Conclusion	17
Appendix: Data and Methodology.....	19
Results.....	20
Alternate specifications.....	21
Analysis by type of incentive.....	23
Analysis of post-recession sample.....	24
Analysis including establishments that received multiple awards over time	25
Quasi-experimental analysis using MBDP award data	26
Acknowledgements	28
Endnotes	29

Introduction

State and local governments have been in the business of trying to lure companies from other states to relocate within their borders for decades. They've also tried their hand at assisting the development of new businesses and growing existing ones. The state of Michigan has not sat idly. Indeed, every governor back to Kim Sigler in the 1940s tried to put their own "economic development" stamp on the Great Lake State.

Michigan politicians have tried to advance state economic growth here mainly by providing certain businesses and industries with tangible incentives to relocate, expand or start up. The initiatives may come in the form of tax credits (refundable or otherwise), direct subsidies, tax abatements, free or discounted land, inexpensive loans, publicly funded infrastructure and other fiscal favors. The newest of these programs, MI-Thrive and (the now shuttered) Good Jobs for Michigan, involve other types of fiscal favors.

Indeed, the Good Jobs for Michigan program was adopted in 2017, in part, to lure the multinational conglomerates Amazon and Foxconn Technology Group, the latter famous for manufacturing the iPhone.* The state offered up billions worth of incentives across several programs if the firms would establish a presence in Michigan. Neither firm took the bait.

The Mackinac Center for Public Policy has written extensively about Michigan-specific economic development programs. Indeed, this is our fifth major study that measures the impact of incentive programs run by state government. The first two studies examined the now shuttered Michigan Economic Growth Authority, the third addressed the state's Pure Michigan tourism subsidies and the other looked at the impact of Gov. Rick Snyder's Michigan Business Development Program.¹ The MBDP is a grant and loan program that replaced MEGA.

Research Question

This research is based on a database described as "as close to an annual census of American business as exists," enabling researchers "to focus on the components of growth."² It is known as the National Establishment Time Series database, and it includes employment and sales data for individual companies.[†]

The NETS database tracks establishments across the U.S. over time, each with their own unique identifier. Scholars can follow firms over the years, where they move, how many opened or closed, how many workers they employed and their annual sales. The specific dataset used for this analysis contains more than 60 million American establishments, spanning 1990 through 2015.

By matching companies in the NETS database to firms known to have been provided state incentives, we can measure the performance of these firms and compare them to similar firms that

* The Good Jobs for Michigan proposal was adopted in part to help land the (now) infamous Foxconn manufacturing plant that ultimately went to Wisconsin. That Wisconsin deal has not panned out as promised. The program ended on Dec. 31, 2019.

† The National Establishment Time Series is produced by Walls & Associates using data from Dun & Bradstreet.

did not receive incentives. This is arguably the closest we can get to a controlled experiment when studying the efficacy of state economic development incentives. One group in the study is the treatment group — having been offered incentives — and the other serves as a control group, allowing for comparisons.

Did the treated firms (offered incentives) create more jobs or have higher sales than the control group? If so, at what cost? Those are research questions we intend to answer for nine types of Michigan incentive programs, including the previously studied MEGA and MBDP. This report will focus exclusively on firms that were offered incentives by the state of Michigan, analyzing more than 7,300 incentive deals from nine programs or program types going back to 1983.

Literature Review

We are far from the only scholars conducting original research into government-run economic development programs. State and local governments have tried to stimulate economic growth and development through a variety of incentive programs for decades. These programs have provided a rich source of research questions for scholars.

What follows is a brief description of select studies focused on economic development programs and that use the National Establishment Time Series database. The economic development-specific studies were culled from both a bibliography of publications that use the NETS database and from other reviews of recent scholarship. The bibliography of publications that use NETS data was provided by Don Walls of Don Walls & Associates.³ It contains 180 entries, featuring studies as varied as business survival rates in rural areas to “the state of entrepreneurship” in North Carolina and the impact of so-called living wage laws, to name just a few.⁴

A National Assessment

Of all the literature discussed below, this study’s approach most resembles a 2019 article published in *Urban Issues Review*, “Striking a Balance: A National Assessment of Economic Development Incentives.”⁵ The authors of that piece use three databases, including NETS.

Mary Donegan, T. William Lester and Nichola Lowe used a statistical sample of 2,486 incentive deals across 35 states, 180 of which were in Michigan.⁶ One implication of their findings was that “establishments that received an incentive experienced employment growth that was 3.7% slower than nonincentivized establishments.”* In other words, firms that did not get incentives performed better than those that did. The overall conclusions, however, may be driven by the negative performance of large firms, according to the authors. They also note that “incentives seem to be more effective for smaller enterprises.”⁷

* “Received” may include incentives that had approved, offered and announced by officials but not necessarily paid out. Mary Donegan, William T. Lester and Nichola Lowe, “Striking a Balance: A National Assessment of Economic Development Incentives (Working Paper)” (W.E. Upjohn Institute for Employment Research, 2018), 15, <https://perma.cc/AA86-X4ZR>.

By comparing incentivized establishments to a carefully selected control group, we cast doubt on the biggest claim made by incentive proponents that “but for” the incentive payment, job creation would not occur. This simple but direct finding — that incentives do not create jobs — should prove critical to policymakers. However, we also show *how* incentives can be more effective by examining the disparate impacts by firm size. Here, we find that incentives granted to smaller establishments have better performance in terms of job creation compared to very large establishments, which we find to have starkly negative employment effects.⁸

An Iowa Tax Credit Program

Another relevant study comes from Iowa. In December 2014, the Iowa Department of Revenue published a lengthy review of its venture capital tax credits program, the Qualifying Business or Community-Based Seed Capital Fund. This fund, like others nationwide, was designed to provide an incentive for investors to make very early investments in start-up firms. This credit first became available to qualified investors in 2002.⁹

As part of the state of Iowa’s review, scholars at the University of Iowa examined business employment and sales using the NETS database. As with the Donegan, Lester and Lowe study, these scholars tracked the performance of Iowa firms that had received investments from funds that were awarded the QBSC Tax Credit and compared its performance to a control group of firms that had not enjoyed investor support facilitated by the state tax credit program.

They found “there was no difference in firm survival” between treatment and control groups in Iowa. In a second analysis, the researchers found that the treatment group had higher employment and more sales than the control group. This came with an important qualification, however. The sample size used in the study was so small, the report said, that “the authors cannot rule out that the actual impact of the program on employment and sales is zero.”¹⁰

From a cost-benefit analysis perspective, however, the program appears to be negative.

The authors write that those firms that received an investment employed 200 people, just 36 more than they would have otherwise employed if not for inclusion in the Iowa tax credit program. This was accomplished thanks to tax credits, totaling \$10 million and offered for investments in just 30 businesses, between 2002 and 2007.¹¹

The Kansas PEAK Program

In 2014, the Ewing Marion Kauffman Foundation published “Evaluating Firm-Specific Location Incentives: An Application to the Kansas PEAK Program,” by economist Nathan Jensen. The PEAK program is similar to both Michigan’s Transformational Brownfield Plan and Good Jobs for Michigan programs in that it allows select businesses to capture taxes that would normally be paid to the government, including employees’ income taxes.¹² The program allows selected

corporations “to keep up to 95 percent of payroll withholding taxes of eligible employees.”¹³ Using NETS data and a control group like the one used in this study, Jensen concludes:

The paper’s main finding is that, when comparing firms receiving PEAK incentives to a similar set of “control” firms, PEAK incentives recipients are statistically not more likely to generate new jobs than similar firms not receiving incentives. A secondary set of findings shows that firms relocating to Kansas, with or without incentives, do not experience job growth at higher rates than existing firms.¹⁴

The Shell Game Study

In 2013, Good Jobs First — a Washington, D.C.-based nonprofit, watchdog of business incentives — published “The Job-Creation Shell Game.” This study looks at states’ willingness to pay “companies to jump state lines,” with offers of targeted incentives such as “property, sales and income tax breaks, land and infrastructure subsidies, low-interest loans, “‘deal-closing’ grants, and other subsidies to footloose companies.”¹⁵

The study demonstrated that corporate “border hopping” in search of incentives is an ineffective tool for creating jobs. At best, such efforts are just pilfered jobs from a nearby state at great expense to the “winning” state.

Good Jobs First used NETS data and calculated that Texas — as just one example — enjoyed a net gain of 28,375 jobs from 2003 through 2009 as a result of firms relocating within its borders. That may sound like a lot. But it is a tiny percentage of the total number of jobs in Texas over the period, amounting to only 0.3% of total job creation per year, on average.¹⁶ This analysis demonstrates the puny number of jobs added to a state’s employment rolls through business relocation. It also places a low ceiling on the potential impact of incentive programs designed for this purpose.

Pioneer Institute Research

A 2010 study published by the Pioneer Institute, “Playing the Lottery: The Impact of Interstate Relocation on Massachusetts Jobs,” uses the NETS database to track establishment and employment changes to and from the Bay State (and cities within Massachusetts) between 1990 and 2007.¹⁷ The authors note that state and local units in Massachusetts tried to induce companies to move from elsewhere (or to prevent Bay State firms from leaving) but have had little success.¹⁸

The authors found that, on balance, Massachusetts lost 2,152 establishments and more than 24,000 related jobs during the study period.¹⁹ Massachusetts, they found, generally lost these businesses and jobs “to lower cost and lower tax states, and gained from similarly high cost and tax states.”²⁰ Unlike Texas, Massachusetts suffered a net loss in both the number of firms and the number of jobs despite its efforts to influence its economic performance with incentive programs.

Two Themes in the Research Literature

Other studies using NETS data to track establishment and employment changes over time have been performed for Maine, New York, Illinois, Oklahoma, Vermont and California.²¹ Two consistent themes jump out from most of these analyses, including those involving Massachusetts, mentioned above, and Pennsylvania, referenced below.

The first theme is that business relocations into and out of states has a relatively small net effect, particularly when compared to each states' homegrown businesses. In other words, a state's economic performance appears to hinge more on how many new businesses are formed within it — and how much incumbent businesses expand — than on how many businesses relocate from other states. The second theme is that when relocations do occur, they typically come from nearby — often bordering — states. This makes sense because there are smaller moving and management costs associated with relocating over a nearby border. The rest of this section describes some of this literature.

“Do Some Enterprise Zones Create Jobs?” was published in the *Journal of Policy Analysis and Management* in 2010.²² Enterprise zones represent attempts to bring more economic development to a geographic area than would otherwise occur by providing targeted fiscal favors, such as tax incentives. These zones are typically used in poor or otherwise economically depressed areas.

The authors of this paper — Jed Kolko and David Neumark— employed NETS data drawn from between 1992 and 2004 to track employment and other differences within regions that included designated enterprise zones in the state of California.²³ A total of 31 zones were included in the analysis.²⁴ The authors' approach is nuanced, attempting to account for different characteristics of zones, including “locational factors and variations in implementation of administration.”²⁵ These include such things as public relations work to ensure businesses know of incentives available in the zone, offering worker training or “encouraging the building of additional infrastructure.”²⁶

Kolko and Neumark found that, on balance, enterprise zones in California “do not increase employment.”²⁷ The authors attribute this finding to the unique traits of California's program during the period of their study.²⁸

There was, however, better outcomes for employment in those zones that had a lower percentage of manufacturing businesses relative to other types of employers.²⁹ The authors also found that some zones had better employment outcomes, or “job-creating effects.”³⁰

Another 2010 study, “Boon or Boondoggle? Business Incubation as Entrepreneurship Policy,” used the NETS database, among other sources, to examine the impact of business incubators (many of which were publicly subsidized) as a factor in economic growth. The author compared incubated firms with nonincubated firms on growth in sales and employment, as well as firm survival between 1990 and 2009. Of the incubators included in the study, 32 came from Michigan.³¹

Alejandro S. Amezcua, now an assistant professor of entrepreneurship at Syracuse University, found that “incubation is not associated with a major increase in the survival, employment growth, or sales growth of new ventures on average.”³² In fact, incubated firms have somewhat lower survival rates than their nonincubated equivalents.³³ Sales and growth rates are higher in incubated firms but arguably not by enough to justify special treatment.³⁴ Notably, incubated firms that are underwritten by universities outperform other incubators.³⁵

The 2010 study, “Growing Pennsylvania’s High-Tech Economy: Choosing Effective Investments,” published by Good Jobs First, also uses the NETS database. It does not use a treatment and control group analysis, as other studies in this literature review have, but it finds targeted tax incentives to be ineffective. It also compares the Keystone State’s use of incentives to lure high-tech jobs and business to those of six competing states.³⁶

Doug Hoffer, one of the authors, finds that the in- and out-migration of jobs to and from Pennsylvania is tiny, relative to those establishments started in the state, along with those that died, expanded or contracted there. Specifically, between 1990 and 2006, there was a small net loss of 2,850 high-tech jobs from firm migration, despite the state’s efforts to offer incentives to grow tech-related employment.³⁷ The number of businesses moving in slightly exceeded the number moving out, by just 43.³⁸ Hoffer finds that establishment relocations into Pennsylvania are typically to and from neighboring states, a theme echoed in other studies using the NETS database.

Alan Peters and Peter Fisher authored a section of the report titled “How Taxes and Economic Incentives Affect Returns on New Manufacturing Investment in Pennsylvania and Surrounding States.”³⁹ They use what is known as a representative firm analysis to measure the importance of both taxes and targeted tax incentives to the post-tax profits of high-technology manufacturing businesses.

Their Tax and Incentive Model, or TAIM, was used to “compute how corporate taxes and incentives in an average city in each of the seven states [surrounding Pennsylvania] interact with typical financial statements of actual firms in eight manufacturing sectors.”⁴⁰ With their model, the authors try to measure the impact that both taxes and tax incentives have on location decisions for manufacturing firms in Pennsylvania.

They find in their first analysis — which focused solely on tax rates — that the “after-tax rates of return vary little among the states (with other factors held equal).”⁴¹ When incentives are included in their model, little changes, except in two states — Maryland and New York — that offer very generous tax credits in particular geographic zones.⁴² These states performed better.* They conclude, “For the vast majority of companies, tax breaks are windfalls, not determinants, and are therefore wasted.”⁴³

* It is worth mentioning that Ohio may be an “anomaly” in Peters’ and Fisher’s overall review, but they explain that its performance may have been a function of the tax and tax year (which included some reforms) they were modeling.

The studies above are only a few of the many involving NETS data, and those are only a subset of the larger literature universe on state and local economic development incentives. A larger review of peer-reviewed, academic studies and others on this topic goes beyond the scope of this paper.*

Data Sources and Programs

The dataset we used was of companies offered incentives by the state of Michigan, and it was built by the Mackinac Center for Public Policy, from 49 separate reports. They include early reports directly from Michigan Strategic Fund and others delivered to the Legislature by the Michigan Economic Development Corporation. Some reports focused directly on specific incentive programs, such as 21st Century Jobs Fund or Michigan Renaissance Zone Act legislative reports. These were acquired at the Library of Michigan, from the MEDC’s website and through Freedom of Information Act requests.

Other sources of data include a 1989 Senate Fiscal Agency report and a 2017 state performance audit of the Michigan Economic Growth Authority tax credit program. Also used was a database created by the Mackinac Center for its 2018 study, “An Assessment of the Michigan Business Development Program.” Finally, we also drew on a 1994 fax sent from the Michigan Jobs Commission to a state lawmaker regarding the “Vixen Motors Company.”†

No research dataset is without limitations. This one does not contain specifics for every company awarded incentives by the state. Over time, reporting styles, word choice and requirements of these state reports changed. Some reports were very explicit about which company got what incentive on what day and month, while others excluded the names of companies benefiting from some financial incentive. Some reports duplicated the efforts of others. We eliminated easy-to-identify duplications from the dataset.

In all, the database of companies offered incentives by the state of Michigan — from 1983 through 2015 — included 7,352 deals. These data contained the city and usually the county location of a project or firm plus the program and value of incentives offered. Not all offered incentives were earned and paid out, however.

Some companies were offered many incentives over time; others received many at the same time. For example, the Michigan Economic Growth Authority approved tax credit deals while the state also approved a host of other incentives (from job training to infrastructure) in conjunction with the MEGA tax credit. A local incentive was mandated as part of MEGA deals, but we did not

* “The Failures of Economic Development Incentives” by Alan Peters and Peter Fisher is just one example of a larger review. It was published in 2004, though little academic research has been produced since then, in our opinion, to challenge their conclusions. The authors conclude: “The most fundamental problem is that many public officials appear to believe that they can influence the course of their state and local economies through incentives and subsidies to a degree far beyond anything supported by even the most optimistic evidence.” Alan Peters and Peter Fisher, “The Failures of Economic Development Incentives,” *Journal of the American Planning Association* 70, no. 1 (2004): 35.

† Fax from Mark Morante of the Michigan Jobs Commission to State Rep. Greg Kaza regarding a \$1 million state loan to the now-defunct Vixen Motor Company.

include these local incentive contributions in this database. The impact of these local incentives remains a viable option for future research.

The database built by the Mackinac Center catalogued the recipients of incentive deals. We then organized these into nine major incentive programs or categories that comprise most of the incentive deals. The programs analyzed include the Michigan Economic Growth Authority; the 21st Century Jobs Fund; Community Development Block Grants; the Michigan Business Development Program; Private Activity Bonds; Renaissance Zones, the Seed Capital Program; various state loan programs; and various other business tax credits offered.

Michigan Economic Growth Authority: This was a state business tax incentive program created during the administration of Gov. John Engler. It was arguably the highest profile, and potentially the most expensive, state economic development program in recent decades, having offered up refundable state tax credits worth more than \$14 billion in state tax credits during its life.⁴⁴ The refundable tax credits were often offered in conjunction with other state and local business support programs. Administrators began signing deals in 1995 and stopped signing new ones in 2012. Despite its closure, it is still paying out on legacy credits to corporations statewide, worth as much as \$6.1 billion.⁴⁵

21st Century Jobs Fund: Gov. Jennifer Granholm launched a series of programs in 2005.⁴⁶ Her administration described them as “multiple individual programs each designed to support different parts of the entrepreneurial ecosystem in different ways.”⁴⁷ Those include, but are not limited to, the Centers of Energy Excellence, Competitive Edge Technology Grants and Loans and Michigan Supplier Diversification Fund programs.

The Centers of Energy Excellence program was started to help create jobs in alternative and advanced energy by creating partnerships between academia and business. These partnerships would be facilitated by state subsidies. According to one state report, the COEE program would target four clean energy areas: storage, solar manufacturing, wind manufacturing and bioenergy. The COEE program approved \$67 million in awards and disbursed \$64.1 million of it.⁴⁸

The Competitive Edge Technology Grants and Loans was designed to assist organizations in “competitive edge” arenas such as life science, high-technology manufacturing, the defense industry, materials and alternative energy. Administrators targeted early stage companies for support in 2006 and 2008.⁴⁹

The Michigan Supplier Diversification Fund was a loan program for manufacturers. The state’s description of the program has morphed over time from the “transition and diversify into growing markets such as alternative energy” (and specifically automobile manufacturers) to “help traditional manufacturers capitalize on growth opportunities and add new customers.”⁵⁰

Community Development Block Grants: This federal program provides grants to states and local units of government to help improve housing, infrastructure and economic opportunities. It is targeted to lower- and middle-income areas of the country. The grants have often been used

to spend money on roads or other infrastructure near sites that had been offered an incentive by the state.⁵¹

During the life of the Michigan Economic Growth Authority tax incentive program, these grants were frequently coupled to MEGA deals to help sweeten the incentive pot. For example, Howmet International's 1998 MEGA incentive apparently came with up to \$3 million in CDBG dollars "for an improved water system and extensive road improvements."⁵²

Other Grants or Loans: This category covers several initiatives — and 101 deals — found throughout state reports. Together, they include incentives offered to private business that don't clearly fit into other categories. For example, the Michigan Strategic Fund, created in 1984, inherited the loan portfolio of the Michigan Economic Development Authority.⁵³ "Certified Development Corporation" loans show up in a state report in 1991 but without any explanation of what these are.⁵⁴ Other incentive efforts under this heading include Michigan Strategic Fund Minority Direct Loans, State Research Fund grants, Michigan Strategic Fund Inducement, Center for Michigan's Renaissance, Follow-On Fund loans, and Small Business Innovation Research grants.

Michigan Business Development Program: The MBDP was created in 2011 to replace the Michigan Economic Growth Authority. It was smaller and more transparent than its predecessor and typically provides cash grants and loans to private, for-profit firms. The program is overseen by the Michigan Strategic Fund with administrative assistance provided by the Michigan Economic Development Corporation. State documents indicate that the program provides aid to firms who may create jobs in Michigan and "preference may be given to businesses in need of additional assistance for out-of-state competition, deal closing and second stage company gap financing."⁵⁵ The program is not used to help retain jobs that might otherwise be eliminated, nor is it for businesses in the retail sector.⁵⁶

This study looks at the MBDP from two unique angles. The first involves the use of the NETS data and our tracking of state subsidized MBDP grant and loan recipients. The second involves a different dataset that the authors constructed based on information about companies interested in the MBDP program.

Some firms may contact the MEDC with a general interest in subsidies and get directed from there toward an MBDP incentive. Others companies, though, may have a specific interest in the MBDP. Regardless, those who end up working toward obtaining an MBDP grant and either dropped out or were denied early, or who were ultimately approved but did not accept or earn their incentive, are part of our second database. This more narrowly focused performance measurement should add additional insight into the efficacy of the program.

If the MEDC thought candidates offered projects worthy of assistance and steered them toward an MBDP subsidy, how did those who ultimately did not get approved, or who were approved but failed to collect or win subsidies perform compared to those who actually received an MBDP subsidy?

Other Michigan Business Tax Credits: This category of incentives involves business tax credits that were approved by the same board that authorized the MEGA credits. They were “designed to advance new industries with the potential for significant growth,”⁵⁷ according to the MEDC.

These included refundable tax credits against the Michigan Business Tax for such things as research and development of batteries, defense contracting and technology for “photovoltaic energy, photovoltaic systems, and other photovoltaic technology.”⁵⁸ There was also an Anchor Jobs Credit targeted at high technology companies “to influence their suppliers and customers to move to Michigan.”⁵⁹ All of these credits were refundable, which permits a company to receive a cash subsidy if the size of the credit exceeds its actual tax liability.⁶⁰

Private Activity Bonds: This is the current name for state efforts to encourage financing for large economic development projects, through bonds offered to private, for-profit firms. Past state reports referred to these as tax-exempt bonds, industrial revenue bonds or industrial development revenue bonds.

Renaissance Zones: Renaissance Zones are typically geographic areas selected for special tax treatment. The first zones were created in 1996 and provided “nearly tax-free zones within regions for any business or resident presently in or moving into a zone for a period of 15 years.”⁶¹ There are today different types of RZs in Michigan, and some — such as agricultural processing renaissance zones — are drawn around a single enterprise. There are also other zones for forest products processing, renewable energy and a “Tool and Die Renaissance Recovery Zone.”⁶²

Seed Capital Program: The state’s Seed Capital Program was a creature of the 1980s and was designed “to finance the business pre-start-up stage that exists after having a good idea for a product and before producing the product.” According to the Senate Fiscal Agency’s 1989 report on Michigan Strategic Fund activities, \$8 million was approved for the program. It invested in funds that then took equity stakes in private, for-profit firms.⁶³

Analysis and Findings of Michigan Economic Development Programs

To measure the impact of state economic development efforts over past decades in Michigan, we obtained a census of businesses in the United States and matched it to one of our own creation. Later we created and used a second, much smaller dataset — constructed with data from the Michigan Economic Development Corporation — to take an additional and closer look at the performance of the Michigan Business Development Program.

The dataset created for this research contains more than 7,300 records, or incentive deals, taken from state reports dating back to the 1980s. This dataset was whittled down to aid in analyses of incentives for deals over \$100,000. This helped us limit the range of program areas in which we were working. For example, the state’s “Export Program” provided average incentive amounts of only \$3,613 across 732 deals. We found these to be trivial amounts and not worth including in a more discrete analysis of programs and their possible impact. Eliminating deals for programs that averaged less than \$100,000 meant a quick whittling of our database to 4,217 entries.

Some of these deals — 215 — did not have an assigned approval date. Unsure when these deals were approved, we removed them from our analysis — leaving records for 4,002 deals. Further, we removed deals where the recipients' DUNS number was not available, reducing the deals to be analyzed to 2,997.* We then attempted to identify matches from the establishments offered these deals to those included in the NETS database and dropped 695 deals that did not have matching DUNS number, leaving 2,302.

Of the 2,302 that remained, 1,890 had just a single incentive deal associated with them. It was important to identify only firms with a single deal for our initial analysis due to the complications associated with estimating impacts when firms struck multiple deals with different incentives and in different years. We analyzed this group first and then — as a robustness check — added back in the remaining 412 companies that had received more than one incentive.

For a comparative analysis of performance between incentivized and nonincentivized establishments, we created a control group that was delineated by what statisticians call “propensity score matching.” This means that we tried to match and compare incentivized firms to similar but nonincentivized firms.

There were five controls used for firms that were offered incentives by the state. These controls were identified by variables such as a shared Standard Industrial Classification Code, establishment category (branch, headquarters, etc.), whether the firm was a subsidiary and establishment size.

Our techniques and model identification strategy follow that used in the study, “Striking a Balance: A National Assessment of Economic Development Incentives,” by Mary Donegan, T. William Lester and Nichola Lowe. One notable difference is that our analysis factors in firms that received multiple incentive deals, whereas the other study captures just a firm's first incentive deal.

We designed the first model to measure any impact that incentives may have had on employment and sales, and it represents our baseline estimates. In all, we ran seven models that give alternative specifications of that baseline. In the results section that follows, we report the findings from our preferred specification, model two. The impact estimates from model two fall roughly in the middle of the other models' output.

Results

We find that providing incentives to firms in Michigan lifted both employment and sales at those firms by 7.1% and 9.9%, above their nonincentivized counterparts, respectively. The average incentive amount per job created, however, worked out to be \$593,913 per year. This is calculated by taking the average incentive offered (\$3.32 million) and dividing it by the average employment growth of firms that had received offers, then multiplying that by the effect size from our model

* A DUNS number is the Data Universal Numbering System developed by Dun & Bradstreet that is unique to each firm.

(7.1%). In other words, the incentivized establishment created more than six jobs on average, but at a high cost per job.*

The per-job cost of incentives is a vital measurement. The state repeatedly sells its programs to the public as a method for increasing employment. The questions are, do they add more jobs than would have existed otherwise, and at what cost? If the state forgoes tax dollars of \$100,000 to create a job that pays \$50,000, it would be hard to make the case that the economy or the state treasury has enjoyed a net gain. This is particularly true when you consider the opportunity costs associated with such programs. Allowing people and companies to keep more of what they earn would create jobs too, as would spending more state tax dollars on different priorities, such as improving Michigan's roads and infrastructure. In short, the incentive programs we examined are unlikely to pass a basic cost-benefit analysis.

The high cost of creating jobs through these incentive deals might come as little surprise to those who have read previous studies of Michigan's economic development programs. The Mackinac Center has been studying these initiatives since the late 1980s and has seen massive subsidy offers by state and local government to private, for-profit corporations, including multinationals such as Foxconn. Some of the details surrounding deals offered by the Michigan Economic Growth Authority remain remarkably secretive.

Michigan ranked first in a 2013 national accounting of the largest incentive deals. That study, published by Good Jobs First, was titled, "Megadeals: The Largest Economic Development Subsidy Packages Ever Awarded by State and Local Governments in the United States." It examined more than 240 deals, exceeding \$75 million each. Michigan had 29 such deals — more than any other state. The average incentive per job in that study came out to \$456,000.⁶⁴

To test the robustness of our estimates, we ran our model with seven different specifications and found similar outcomes. Across all the alternate specifications, the annual cost of incentives per job ranged from a low of \$128,000 to a high of \$461,000. (See Table 2 in the appendix for more details.) Further, we test the outcomes with employment levels at one year, two years and three years after a company received an incentive and find consistent results.

We then ran the first model with data from 1990 through 2015 for each of the nine types of incentive programs. This time, we did not include firms that received any specific incentive twice, or an incentive from any of the other programs included in this analysis. This found positive and statistically significant results for three incentive programs: the 21st Century Jobs Fund, Michigan Business Development Program and Michigan Economic Growth Authority. Results for five of the other six types of incentives programs revealed no statistically significant impact on employment. A sixth type of incentive, Seed Capital Funds, showed a statistically significant and negative impact.

* This is based on both incentivized and nonincentivized firms having the average of 79 jobs before the incentives were received.

We then limited our analysis to the period from 2010 through 2015 and find that employment effects are not statistically significant in the form of our model employing “fixed effects,” but they are in the form using “random” ones. The difference here is important.

Fixed effects models imply statistical control for what are known as “time invariant factors” that may change across firms but are often constant over time. These may include the size of the firm, technological change, profitability, pay, worker productivity and ownership. All of these are items that could be controlled for by using a fixed effects estimation. By contrast, in a random effects model, an estimation is made about the varying factors by relaxing such assumptions and allowing for estimation of individual firm effects.

The incentives offered in the model with random effects ranged from \$371,900 to \$500,500 per job per year.

When we add in the 412 firms that had received more than one incentive award (treatment) to the mix — whether from the same incentive category or not — we find that the annual incentive cost per job ranges from \$109,300 to \$547,400 over the larger pool of 2,302 firms. This analysis likewise was made across all programs and model specifications.

Program-specific results

Three programs showed statistically significant positive results. This next section discusses the findings about them.

The 21st Century Jobs Fund: \$274,800-\$330,600 annual cost per job created

This program was created during the administration of Gov. Jennifer Granholm and was supposed to improve economic development by subsidizing government investments in high-technology, commercialization of research and advanced manufacturing, among others. “The 21st Century Jobs Fund will enable us to take a giant leap towards diversifying our economy and create thousands of high-tech, high paying jobs,”⁶⁵ Gov. Granholm said in 2006.

The fund was previously reviewed by the Mackinac Center in 2016. That study, “An Evaluation of Michigan’s 21st Century Jobs Fund,” concluded that the program “had no clear objectives or overall guiding strategy,” and “does not hold any clear consistent performance benchmarks.”⁶⁶ The author, James Hohman, noted that between 2006 and 2015 the state had dedicated hundreds of millions from the fund to economic development programs, but could only claim that 6,549 jobs had been created as a result.⁶⁷

Even that small number of jobs is suspect, however, because the state could not offer evidence at that time that jobs would not have been created without the incentive. Nor does the program consider the opportunity cost involved in providing these incentives to select companies. Using the same dollars to build and repair roads may have very well created more jobs on net balance.

The Michigan Economic Development Corporation hired a consultant to look at a smaller slice of 21st Century Jobs Fund programs. Their report, “Michigan 21st Century Jobs Trust Fund—Entrepreneurship and Innovation Programs Impact and Effectiveness Study,” found a positive impact from the limited data on the program included in the review.

There were a few significant problems with the study, however. One is that it did not include nearly 400 deals that had apparently failed. According to the author, these firms had been supported by the 21st Century Jobs Fund, but were no longer “actively operating in Michigan in 2014.”⁶⁸ The study begins, then, by ignoring nearly 29% of companies that had been subsidized in some way but apparently failed to perform.⁶⁹

The MEDC has a long history paying consultants who leave out important data from their analyses — and in ways that make state economic development programs appear more successful than they likely are.* The Mackinac Center has catalogued such instances involving the 21st Century Jobs Fund, the state’s⁷⁰ (now defunct) film incentive program and the Pure Michigan advertising campaign.⁷¹

The Michigan Economic Growth Authority: \$125,000 annual cost per job created

The Michigan Economic Growth Authority was created by the Engler administration and Michigan Legislature in 1995. It was a refundable business tax credit. In addition to receiving tax credits, companies were often offered additional state-level incentives, such as property tax abatements or job training subsidies. Moreover, state law mandated that local units of government contributed something to the deal, which often involved local property tax abatements.

This study is now the sixth rigorous study of the MEGA program and the fifth to find negative results. Three of the studies have been published by the Mackinac Center for Public Policy. The first looked at MEGA’s impact on the state’s economy and three sectors and was published in 2005. It found that for every \$123,000 in tax credits offered, the program created just two construction jobs and these added jobs disappeared within two years. Employment and income in the manufacturing and warehousing sectors were essentially unaffected by the MEGA program.⁷² The second study, published in 2009, estimated that for every \$1 million in tax credits earned by manufacturing firms, there was an associated decline of 95 jobs in the county in which the MEGA project was located.⁷³

A third study, also published in 2009 by the Anderson Economic Group, found that the MEGA program came with an opportunity cost of at least 8,000 jobs. That is, if instead of providing tax incentives to companies state bureaucrats thought would be winners, policymakers reduced business taxes by an equal amount, thousands more jobs would have been created.⁷⁴

The fourth study of the MEGA program was published in the *American Review of Public Administration* in 2013. It was authored by Michigan State University scholar Laura Reese and titled, “If All You Have Is a Hammer: Finding Economic Development Policies that Matter.” This

* For more on this subject, see “A Plea for Skepticism about the MEDC: An Open Letter” on the Mackinac Center’s website.

review looked at the contributions of different economic development policies in Michigan, including MEGA, to local economic health, or performance. Reese found “no significant relationships between the number of MEGAs granted and residential health or health change over any period of time.”⁷⁵

The fifth study to look at MEGA was published in 2014 and remains the only study to find a positive impact. It was written by Timothy Bartik and George Erickcek and published in the journal *Economic Development Quarterly*. It is titled, “Simulating the Effects of Michigan's MEGA Tax Credit Program on Job Creation and Fiscal Benefits.” This paper used a software program called REMI to estimate the effects of the program. Specifically, it indirectly estimates the impact of the MEGA incentive program by simulating the likelihood that an incentive would actually be decisive, and it uses that figure to help generate employment and fiscal effects. According to the authors, “[T]he simulated probabilities are based on the incentive’s impacts on costs and on previous estimates of how business location and expansion decisions respond to costs.”⁷⁶

They find a range in which MEGA may have been a deciding factor in a business location decision: between 2.06% and 24.74% of MEGA incentive deals.⁷⁷

The five studies above use different techniques compared to this sixth analysis of the MEGA program. Perhaps the chief difference is that our analysis of MEGA is performed with actual employment measured at MEGA recipient firms using the NETS database over a long span of time.

In addition, the new analysis performed for this study examined the incentive database, using both single incentives to firms and multiple incentives to the same firms, and the results were effectively the same. This is important with respect to MEGA because a single tax credit deal may have been married to a host of other state incentives.

The Michigan Business Development Program: \$29,400 annual cost per job created

The MBDP was created by the administration of Gov. Rick Snyder to replace MEGA, which he had shuttered. It is a grant and loan subsidy program to assist businesses. Most of the grants and loans are associated with promises by firms to reach certain goals, such as creating jobs.

We have studied this program in depth and in 2018 published “An Evaluation of the Michigan Business Development Program.” Our study was built around a statistical model using program data from between 2012 and through 2016. It was designed to tease out the employment impact of the program from other economic phenomena. We found that for every \$500,000 in incentives the program disbursed, there was a corresponding loss of about 600 jobs in the county in which the project was located. Separately, we found that one-third of all MBDP deals during the study time frame either had been or were in some stage of default or dismissal.⁷⁸

The Mackinac Center for Public Policy is not the only institution to have analyzed the MBDP. In January 2019, the W.E. Upjohn Institute for Employment Research and Center for Regional Economic Competitiveness published the “Michigan Business Development Program

Effectiveness Study.” The thorough analysis — spanning 121 pages plus appendices — was commissioned by the Michigan Economic Development Corporation, the state administrative arm that runs the program.

After analyzing 239 deals, the study found a net positive ROI from the program of \$3.86. In other words, for every dollar spent on the MBDP, the authors estimate that there is a \$3.86 gain in per-capita income for residents of the Great Lake State. A second analysis within the study, involving just 32 projects that had been “formally completed and terminated,” reported a ROI of just over three dollars as well.⁷⁹

The Upjohn-CREC report estimated several possible impacts from the program, most of which were positive. The authors took pains to measure the effects while accounting for both “but for” and opportunity cost calculations. “But for” represents the percentage of business expansions that would not have occurred without the incentive. According to the authors, the MEDC’s own calculations have assumed that no business expansions would have occurred without the incentive. But the Upjohn-CREC study argues for significantly lower but-for percentages.⁸⁰ It does, however, say that the ROI for the MBDP is so large that it would still yield a net positive result even if the incentive had no impact on the decision of businesses more than 99% of the time.⁸¹

It is only in the category of opportunity costs where the study finds a possible impact from the MBDP that is negligible, if not negative. According to the study, the program’s ROI drops to a puny \$0.25 under the assumption that all 239 MBDP projects in the study’s database are funded by cuts to K-12 public education spending. The ROI comes out negative (\$-0.86) when considering just the 32 MBDP projects identified as being completed and terminated. The authors write, “[B]ased on returns from [sic] for the completed/terminated projects, the ROI to the state from K-12 spending is higher than the ROI achieved from the program. Cutting K-12 spending to pay for MBDP would result in net reductions in state residents’ per-capita income levels.”

We examined the MBDP with our NETS dataset by using another smaller group of 39 deals, which created a different type of treatment group. This database was built in part by obtaining a list of award-eligible firms that had been steered toward an MBDP incentive by state employees, but who ultimately did not receive them. Their performance was then compared to other MBDP eligible firms that had received an incentive award.

There were several reasons why a firm did not receive an incentive. They ranged from a firm withdrawing its application prior to being approved by the state, to not meeting initial performance goals, to rejecting the award after it was approved.

* The authors also recognized that cutting other areas of the state budget “might have considerable supply side effects in retarding the state economy, such as with cuts to infrastructure spending, but note that “such effects are likely to vary enormously with the particular infrastructure spending that is cut, so it would be speculative to include any such effects in the model.” Tim Bartik et al., “Michigan Business Development Program Effectiveness Study” (W.E. Upjohn Institute for Employment Research, 2019), 43, 71–72, <https://perma.cc/VVJ3-5MM4>.

This last approach to analyzing the MBDP allows us to search for causal effects on the program and its outcomes. The results of our modeling effort, which included controls for establishment category and size, random and fixed effects, time trends and more, found that the MBDP incentives did not influence employment when compared to the control group.

Conclusion

The state of Michigan — like many other states — operates a wide array of incentive programs that proponents believe will produce more benefits than costs. These benefits are often sold first and foremost as new, retained and perhaps even better jobs. Such programs have been operated for decades and provide scholars with robust datasets which can let them study their efficacy.

The Mackinac Center for Public Policy has been researching and writing on government economic development programs since the late 1980s. It has published three rigorous statistical analyses — including the one contained in this study — specific to the state’s Michigan Economic Growth Authority alone. We have also previously performed similar analyses or reviews of the state’s Pure Michigan tourism subsidy program, the Michigan Business Development Program, the 21st Century Jobs Fund and the state’s film incentive program.

For this study, the Mackinac Center created a database of 7,300-plus deals found across 49 documents, all but two of which were obtained directly from the state library and the Michigan Economic Development Corporation. We then matched each company that received a deal with their employment records found in the National Establishment Time Series database.

The NETS database tracks firm employment — among other data — over time. This makes it easier to measure the jobs being created at incentivized firms and to better measure the direct impact from offering incentives to them. It also allows scholars to compare the performance of incentivized firms to a control group of nonincentivized firms.

In total, we found that the average incentive offered per job from our complete database of deals was \$593,913. Furthermore, each incentivized firm created just over six jobs each, on average.

Across the nine program areas we examined, five showed no statistically significant impact and one produced a negative impact.

Three program areas demonstrated a positive impact but at a considerable cost, as measured by the amount of incentives offered per job. They included:

- The 21st Century Jobs Fund: Offered \$274,800-\$330,600 per job created per year.
- The Michigan Economic Growth Authority: Offered \$125,000 per job created per year.
- The Michigan Business Development Program: Offered \$29,400 per job created per year.

We also performed a separate analysis of the MBDP and found no statistically significant impact on job growth from MBDP incentive deals.

There is a broad and methodologically evolving literature on the role incentives play in business location decisions, and this study adds to that work. Incentives may influence the location of business. Several studies acknowledge they play a role in the decision of firms to locate or expand in a state or sub-state region. But the cost per job of incentivizing business location are often several orders of magnitude higher than the average annual wage of that job. While clearly identifying these effects present challenges, studies with careful identification strategies tend to report higher costs per job. This study provides a carefully identified analysis of the incentives offered per job in Michigan and finds similar results: the average cost per job of incentive deals is too large for these programs to pass a basic cost-benefit analysis.

Appendix: Data and Methodology

The data we deploy is constructed longitudinally, at the firm level using the establishment-level, annual database on employment and sales from National Establishment Time Series for the years 1990 through 2015. These form the basis for matching recipients of incentive offers to firm-level data and identification strategies.

We obtained data on incentives from the Michigan Economic Development Corporation, on nine types of incentive programs. These are the 21st Century Jobs Fund, Community Development Block Grants, Michigan Business Development Program, Michigan Economic Growth Authority, other Michigan Business Tax credit approvals, private activity bonds, renaissance zones, seed capital program funds and other uncategorized grants and loans.

The process required significant data matching and reconciliation. For example, our initial sample included 4,217 incentives across those nine programs. There were missing approval dates for 215 listed incentives. We excluded these firms from both the sample and control groups.

We manually identified the unique Dun & Bradstreet identifier, or DUNS numbers, for each establishment that was offered an incentive in Michigan from the NETS database. Out of 4,002 incentive deals, we were able to match the DUNS numbers for 2,997 of them. Among these, 1,962 single incentives were offered over the study period; while the other 1,035 firms were offered multiple awards across categories over time. After removing unmatched DUNS numbers, our final study sample had 1,890 firms that were offered only one incentive during the study period and 412 additional firms that received multiple incentive offers over time.

To eliminate any bias that might appear in the results from including firms that received multiple offers, we started the analysis with those firms that received only one incentive offer (N=1,890 establishments). Further as a robustness test, we did an additional analysis that included multiple incentive firms to our analysis (N=2,302 establishments) and estimate the effects.

We attempt to estimate the impact of incentives on employment and sales data. In order to account for endogeneity, we created a representative control group to isolate the treatment group's impact from contemporaneous changes in establishments. We selected firms for the control group using a propensity score matching without replacement method. In this way we identified a total of five controls for each treated establishment by also including matched observed covariates: type of industry (relying on firms' 2-digit SIC code), establishment category (whether the firm is a branch, headquarters or standalone), subsidiary firm or not, and establishment size (very small, small, medium, or large firms). The caliper width was set at 25% of standard deviation of the propensity scores.

We then convert the NETS data to a panel dataset to exploit the variation over time. We follow Donegan, Lester and Lowe to identify our models. We create our variable of interest — Incentive — which is equal to 1 if the current year is greater than or equal to the award approved year for the treated group. This variable is equal to zero if the establishment is a control group or the current year is less than the award year for the treated group.

With an identification strategy that includes both treatment and control group, our model specification is a straightforward treatment test, taking the form:

$$Y_{it} = \alpha + \beta \text{Incentive}_{it} + \gamma \text{linear time trend}_t + \delta_i + \lambda_t + \text{Matching group}_t + \varepsilon_{it} \quad (1)$$

Where subscripts i and t represents establishments and years, respectively. Y is the outcome variable of interest such as establishment employment and sales. We express the sales in 2015 dollars. The coefficient of interest, β , estimates the causal impact of offered incentives on establishment outcomes.

We include linear time trends to control for any unobserved trends that are common for all establishments. We include establishment fixed effects (δ_i) to control for heterogeneity across establishments. In alternate specifications, we also relax this assumption and estimate random effects. We also include year fixed effects (λ_t) to control for factors that cause year-to-year changes across all establishments. Further, we also control for matching group-specific time trends to capture unobserved factors that vary over time for a treated and its five other matched control establishments. The standard errors are clustered by establishment ID for all our analyses.

Importantly, these types of variations in the model are due to varying assumptions about the underlying data generation process. In the results section, we discuss the varying combinations and how they impact our interpretation of the data.

Results

Table 1 shows the estimates obtained from establishment fixed effects specification. Model 1 shows the baseline specification with establishment and year fixed effects. Model 2, our preferred specification, includes matching group specific time trends to the baseline model. We find that Michigan incentives increases establishment-level employment by 7.1% and sales by 9.9%. We also perform a test of overidentifying restrictions and find that fixed effects model is our preferred model [Sargan-Hansen statistic 2.2×10^{10} ; p-value <0.0001].

In order to find the effect size of job growth, we first find average incentive amount of the treated group, which is \$3.32 million per incentive. We then find the average employment of the treated group, which is about 79 jobs per establishment. The effect sizes expressed as dollar incentives per job can then be estimated as \$593,913 per job (i.e., \$3.323 million divided by 0.0709×78.9 jobs).

We prefer Model 2 because it accounts for the least restrictive set of assumptions, controlling for year, establishment and control group fixed effects. Importantly, the selection was based on controlling these assumptions, not on model results.

Table 1: Fixed effects estimates of incentives on employment and sales

	Model 1	Model 2	Model 1	Model 2
	(1)	(2)	(3)	(4)
VARIABLES	log of employment	log of employment	log of sales	log of sales
Incentive	0.0939*** (0.0240)	0.0709*** (0.0212)	0.124*** (0.0280)	0.0989*** (0.0250)
Linear time trend	0.0212*** (0.000870)	-0.00578 (0.00810)	0.0110*** (0.000971)	-0.0211** (0.00824)
Constant	-39.57*** (1.744)	-38.41*** (1.347)	-7.610*** (1.944)	-4.290*** (1.501)
Establishment fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Matching group specific time trends	No	Yes	No	Yes
Observations	132,967	132,967	132,691	132,691
R-squared	0.061	0.212	0.026	0.181
Number of treated establishments	1890	1890	1890	1890
Number of treated and control establishments	11,340	11,340	11,231	11,231
Effect sizes expressed in \$ incentives per job	\$448.4K	\$593.9K		

Standard errors clustered by establishment ID in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Alternate specifications

As a robustness test, we evaluate several different combinations of model specifications. We run Model 1 with random effects specification (Table 2; Models 1 and 2) and find consistent effects. We further include matching group fixed effects — where a group consists of one treated establishment and five control establishments (Table 2; Models 3 and 4) and find our results are robust. Finally, we include the age of firms as an additional control to our original specification (Model 1) and find consistent results (Table 2; Models 5, 6 and 7). Across the specifications, we find the effect size of incentives ranging from \$128K per job to \$461K per job.

Table 2: Alternate Specifications and controlling for age of firm

Model	Random effects	Random effects	OLS with matching group fixed effects	OLS with matching group fixed effects	Fixed effects with age as additional control	Random effects with age as additional control	OLS with matching group fixed effects and age as additional control
Variables	(1) log of employment	(2) log of employment	(3) log of employment	(4) log of employment	(5) log of employment	(6) log of employment	(7) log of employment
Incentive	0.109*** (0.0229)	0.0946*** (0.0190)	0.180*** (0.0342)	0.328*** (0.0260)	0.0913*** (0.0251)	0.113*** (0.0239)	0.248*** (0.0338)
Age					0.0226*** (0.000937)	0.0263*** (0.000864)	0.0199*** (0.000713)
Linear time trend	0.0196*** (0.000815)	-0.00592 (0.00767)	0.00551*** (0.000956)	0.00776*** (0.000814)		-0.00479*** (0.00113)	-0.00220** (0.00106)
Establishment Category HQ	0.350*** (0.0624)	-0.167*** (0.0587)		-0.301*** (0.0565)		0.849*** (0.192)	
Establishment Category Standalone	-1.622*** (0.0421)	-0.987*** (0.0413)		-0.982*** (0.0445)		-0.517*** (0.186)	
Constant	-38.43*** (1.690)	16.94 (15.39)	-8.213*** (1.915)	-11.72*** (1.679)	2.180*** (0.0256)	8.646*** (2.288)	6.662*** (2.113)
Establishment fixed effects	No	No	No	No	Yes	No	No
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Matching group specific time trends	No	Yes	No	No	No	No	No
County fixed effects	Yes	Yes	No	Yes	NA	Yes	No
Industry fixed effects	Yes	Yes	No	Yes	NA	Yes	No
Matching group fixed effects	No	No	Yes	Yes	No	No	Yes
Establishment category recode	Yes	Yes	No	Yes	NA	Yes	No
Observations	132,967	132,967	132,967	132,967	112,078	112,078	112,078
R-squared			0.586	0.751	0.070		0.656
Number of establishments	11,340	11,340			8,422	8,422	
Effect sizes (\$ incentives per job)	\$386.3K	\$445.1K	\$233.9K	\$128.4K	\$461.2K	\$372.6K	\$169.8K

Standard errors clustered by establishment ID in parentheses

*** p<0.01, ** p<0.05, * p<0.1

It is plausible that the effects of incentives would be reflective on job growth in the future years. To test that possibility as a robustness test, we include three additional outcome variables — employment at 1 year after incentive, 2 years after incentive and 3 years after incentive. Table 3 shows estimates from our preferred fixed effects specification. We find that Michigan incentives increases employment by 6.92% to 7.54% in the next three years of receiving incentives.

Table 3: Incentive effects on future employment

	Model 1	Model 2	Model 3
	(1)	(2)	(3)
Variables	log of employment in year (t+1)	log of employment in year (t+2)	log of employment in year (t+3)
Incentive	0.0736*** (0.0208)	0.0754*** (0.0206)	0.0692*** (0.0210)
Linear time trend	-0.00621 (0.00882)	-0.00535 (0.00963)	-0.00503 (0.0106)
Constant	-37.50*** (1.340)	-39.20*** (1.396)	-40.73*** (1.437)
Establishment fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Matching group specific time trends	Yes	Yes	Yes
Observations	128,663	124,323	119,939
R-squared	0.209	0.206	0.202
Number of treated and control establishments	11,205	11,067	10,908

Standard errors clustered by establishment ID in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Analysis by type of incentive

We ran Model 1 again separately for each of the nine incentive programs. For a particular incentive, while matching control establishments for a treated firm, we do not include firms that received any of the other eight incentive offers. Table 4 shows the results of the coefficient (β) for each incentive analysis. We find that three incentive categories – 21st Century Job Funds, MBDP and MEG — had positive and statistically significant effects on establishment employment.

Table 4: Fixed effects estimates of incentives on employment by type of incentive

Type of Incentives	(1) log of employment	(2) log of employment	Effect Sizes (\$ incentives per job)
21st Century Jobs Fund	0.154*** (0.0438)	0.128*** (0.0415)	\$274.8K to \$330.6K
CDBG	0.0383 (0.105)	0.0465 (0.0876)	No effect
Grants or Loans	-0.124 (0.168)	0.0639 (0.179)	No effect
MBDP	0.157 (0.122)	0.211** (0.102)	\$29.4K
MEGA	0.202*** (0.0674)	0.202*** (0.0589)	\$125.0K
Other MBT Credit	0.0234 (0.360)	0.0664 (0.379)	No effect
Private Activity Bonds	0.0256 (0.0479)	0.0465 (0.0439)	No effect
Renaissance Zones	-0.0210 (0.0474)	-0.0562 (0.0428)	No effect
Seed Capital Funds	-0.386* (0.209)	-0.461* (0.274)	Negative effect
Establishment fixed effects	Yes	Yes	
Year fixed effects	Yes	Yes	
Matching group specific time trends	No	Yes	

Standard errors clustered by establishment ID in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Analysis of post-recession sample

We then limited our analysis to the post-Great Recession era — 2010 and later — and find that the employment effects are statistically insignificant using fixed effects specification and positive and significant for random effects specification; however, their effect sizes are larger — between \$371.9K and \$500.5K per job (see Table 5).

Table 5: Analysis of post-recession sample

Model	Fixed effects on post-recession sample	Fixed effects on post-recession sample	Random effects on post-recession sample	Random effects on post-recession sample
Variables	(1) log of employment	(2) log of employment	(3) log of employment	(4) log of employment
Incentive	0.0486 (0.0299)	0.0402 (0.0260)	0.0862*** (0.0272)	0.116*** (0.0212)
Linear time trend	0.0211*** (0.00178)	0.0481 (0.0589)	-0.00112*** (0.000118)	0.00254*** (0.000326)
Establishment Category HQ			0.296*** (0.0770)	-0.138* (0.0714)
Establishment Category Standalone			-1.624*** (0.0584)	-0.903*** (0.0539)
Constant	-39.88*** (3.584)	-41.25*** (3.000)		
Establishment fixed effects	Yes	Yes	No	No
Year fixed effects	Yes	Yes	Yes	Yes
Matching group specific time trends	No	Yes	No	Yes
County fixed effects	NA	NA	Yes	Yes
Industry fixed effects	NA	NA	Yes	Yes
Establishment category recode	NA	NA	Yes	Yes
Observations	33,307	33,307	33,307	33,307
R-squared	0.019	0.230		
Number of establishments	6,949	6,949	6,949	6,949
Effect sizes (\$ incentives per job)	No effect	No effect	\$500.5K	\$371.9K

Standard errors clustered by establishment ID in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Analysis including establishments that were offered multiple awards over time

We also analyzed just the 412 additional firms that received multiple incentive offers over time. We code the **Incentive** variable as a continuous cumulative measure of number of incentives received until a given year in the panel. Table 6 shows the results of this analysis across alternate specifications. We find that our original results are still consistent in terms of positive and significant effects of employment and sales growth among firms that received multiple incentives. We also find that the effect sizes determined by incentive dollars per job among 2,302 firms range between \$109.3K to \$547.4K per job.

Table 6: Analysis including multiple award firms

Model	Fixed effects	Fixed effects	Random effects	Random effects	OLS	OLS	Fixed effects	Fixed effects
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	log of employment	log of employment	log of employment	log of employment	log of employment	log of employment	log of sales	log of sales
Incentive	0.0792*** (0.0204)	0.0689*** (0.0176)	0.0965*** (0.0191)	0.0979*** (0.0156)	0.228*** (0.0270)	0.345*** (0.0206)	0.107*** (0.0225)	0.0851*** (0.0200)
Linear time trend	0.0241*** (0.000795)	-0.00184 (0.00303)	0.0224*** (0.000754)	-0.00265 (0.00450)	0.00787*** (0.000885)	0.00990*** (0.000759)	0.0128*** (0.000856)	-0.00615** (0.00279)
Establishment Category HQ			0.335*** (0.0559)	-0.608*** (0.0458)		-0.737*** (0.0439)		
Establishment Category Standalone			-1.635*** (0.0389)	-1.217*** (0.0329)		-1.241*** (0.0348)		
Constant	-45.29*** (1.592)	-44.08*** (1.268)	-42.88*** (1.522)	7.425 (9.283)	-12.87*** (1.774)	-14.28*** (1.533)	-11.11*** (1.714)	-7.812*** (1.358)
Establishment fixed effects	Yes	Yes	No	No	No	No	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Matching group specific time trends	No	Yes	No	Yes	No	No	No	Yes
County fixed effects	NA	NA	Yes	Yes	No	Yes	NA	NA
Industry fixed effects	NA	NA	Yes	Yes	No	Yes	NA	NA
Matching group fixed effects	No	No	No	No	Yes	Yes	No	No
Establishment category recode	NA	NA	Yes	Yes	No	Yes	NA	NA
Observations	164,521	164,521	164,521	164,521	164,521	164,521	164,219	164,219
R-squared	0.077	0.219			0.601	0.750	0.030	0.179
Number of treated establishments	2302	2302	2302	2302	2302	2302	2302	2302
Number of treated and control establishments	13,812	13,812	13,812	13,812	13,812	13,812	13,680	13,680
Effect sizes (\$ incentives per job)	\$476.2K	\$547.4K	\$390.8K	\$385.2K	\$165.4K	\$109.3K		

Standard errors clustered by establishment ID in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Quasi-experimental analysis using MBDP award data

We also perform a secondary analysis on 58 firms that received MBDP awards in 2012 with a narrower (and albeit, smaller) database of MBDP deals. This was done for additional insights into the performance of MBDP-related firms. For the control group, we then identified 39 firms that were eligible to receive MBDP awards but did not receive them. Since both treated and control

groups were award eligible, a difference-in-difference estimation was used to find the causal effects of the MBDP program on establishment outcomes.

We use the following specification:

$$Y_{it} = \alpha + \beta \text{treat}_i + \theta \text{period}_t + \eta(\text{treat}_i \times \text{period}_t) + X_i + \gamma \text{linear trend}_t + \delta_i + \lambda_t + \varepsilon_{it} \quad (2)$$

Period was equal to 1 if the year was greater than or equal to 2012. **Treat** is a binary variable and equal to 1 for establishments that received MBDP awards. The interaction term of **Treat** and **Period** captures the average impact of MBDP awards to establishments comparing the post-award outcomes to pre-award among the MBDP award recipients relative to eligible, but nonrecipients. We also include establishment size, linear time trends, year fixed effects, industry fixed effects, county fixed effects and establishment category.

We also run both random and fixed effects specification on equation (2). We find that MBDP awards did not have an effect on establishment employment relative to the control group (Table 7).

Table 7: MBDP quasi-control group analysis

Model	Random effects	Fixed effects
Variables	(1) log of employment	(2) log of employment
Period	0.788*** (0.228)	-2.278 (1.729)
MBDP Treat	-0.297 (0.206)	
Period x MBDP Treat	0.304 (0.193)	0.306 (0.197)
Employment size 20 to 99	2.262*** (0.221)	
Employment size 100 to 499	3.839*** (0.256)	
Employment size 500 to 4999	5.481*** (0.541)	
Linear time trend	-5.14e-05 (0.000244)	0.122* (0.0713)
Establishment Category HQ	-0.147 (0.286)	
Establishment Category Standalone	-0.549** (0.255)	
Constant		-240.0* (141.9)
Year fixed effects	Yes	Yes
Industry fixed effects (2-digit)	Yes	
County Fixed effects	Yes	
Observations	2,079	2,079
Number of establishments	172	172

Standard errors clustered by establishment ID in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Acknowledgements

The authors would like to thank the following individuals for their contributions to this study:

- James Hohman, director of fiscal policy, Mackinac Center
- Andrew Houser, research intern, Mackinac Center
- Chase Slasinski, research intern, Mackinac Center
- Kara Malkowski, operations office assistant, Mackinac Center
- Dale Anderson, information systems administrator, Mackinac Center

Endnotes

- 1 Michael D. LaFaive and Michael Hicks, “MEGA: A Retrospective Assessment” (Mackinac Center for Public Policy, 2005), <https://perma.cc/8DTZ-N4X9>; Michael D. LaFaive and James M. Hohman, “Michigan Economic Development Corporation: A Review and Analysis” (Mackinac Center for Public Policy, 2009), <https://perma.cc/T8T5-AKB8>; Michael Hicks and Michael D. LaFaive, “An Analysis of State-Funded Tourism Promotion” (Mackinac Center for Public Policy, 2016), <https://perma.cc/44TL-5FQ5>; Michael D. LaFaive and Michael Hicks, “An Assessment of the Michigan Business Development Program” (Mackinac Center for Public Policy, 2018), <https://perma.cc/ZH8T-KYA2>.
- 2 Don Walls, “NETS Data for Michigan” (Denver, CO: Don Walls & Associates, 2018), electronic correspondence.
- 3 Don Walls, “Publications and Reports Utilizing the National Establishment Time-Series (NETS) Database” (Denver, CO: Walls & Associates, 2017).
- 4 Ibid.
- 5 Mary Donegan, William T. Lester and Nichola Lowe, “Striking a Balance: A National Assessment of Economic Development Incentives (Working Paper)” (W.E. Upjohn Institute for Employment Research, Aug. 1, 2018), 11, <https://perma.cc/AA86-X4ZR>.
- 6 Ibid.
- 7 Ibid., 15.
- 8 Ibid., 2.
- 9 Angela Gullickson, “Iowa’s Venture Capital Tax Credits: Tax Credits Program Evaluation” (State of Iowa: Iowa Department of Revenue, 2014), 5, <https://perma.cc/GDX7-A3SS>.
- 10 Ibid., 22.
- 11 Ibid.
- 12 “Transformational Brownfield Plan: Program Guidelines” (State of Michigan, Apr. 23, 2019), <https://perma.cc/SP6A-TXEY>.
- 13 Nathan M. Jensen, “Evaluating Firm-Specific Location Incentives: An Application to the Kansas Peak Program” (Ewing Marion Kauffman Foundation, 2014), 6, <https://perma.cc/8ENA-KGN6>.
- 14 Ibid., 2.
- 15 Greg Leroy et al., “The Job Creation Shell Game: Ending the Wasteful Practice of Subsidizing Companies That Move Jobs from One State to Another” (Good Jobs First, 2013), i, <https://perma.cc/BMN2-CBXP>.
- 16 Ibid., 4-5.
- 17 John Friar and Megan Gay, “Playing the Lottery: The Impact of Interstate Relocation on Massachusetts Jobs” (Pioneer Institute, 2010), 2, <https://perma.cc/AW9K-EVCX>.
- 18 Ibid.
- 19 Ibid.
- 20 Ibid., 12.
- 21 J. Scott Moody, “Maine Job Creation from the In- or Out-Migration of Establishments” (The Maine Heritage Policy Center, June 23, 2010), <https://perma.cc/SZK7-3HLC>; J. Scott Moody, “Maine Job Creation from the Expansion or Contraction of Establishments” (The Maine Heritage Policy Center, June 22, 2010), <https://perma.cc/6TSG-VDBK>; J. Scott Moody, “Enterprising NY: Tracking Firms, Jobs and Economic Growth in

Endnotes (cont.)

the Empire State” (Albany: Empire Center of New York, Oct. 25, 2010), 1, <https://perma.cc/UBY2-JC2S>; J. Scott Moody and Wendy Warcholik, “Illinois Job Creation from the Expansion or Contraction of Existing Establishments” (Illinois Policy Institute, 2014), <https://perma.cc/K9AD-DR4V>; J. Scott Moody, “A Look at Oklahoma Business Expansions and Contractions” (Oklahoma Center for Public Affairs, Jan. 3, 2011), <https://perma.cc/9EKM-LPMQ>; “The Role of Taxes in Business Location Decisions” (Burlington: University of Vermont, 2008), <https://perma.cc/JYQ3-MN7N>; Michael Mazerov and Michael Leachman, “State Job Creation Strategies Often Off Base” (Center for Budget and Policy Priorities, Feb. 3, 2016), 6, <https://perma.cc/4W5G-QRX7>.

22 Jed Kolko and David Neumark, “Do Some Enterprise Zones Create Jobs?,” *Journal of Policy Analysis and Management* 29, no. 1 (2010): 5–38, <https://perma.cc/6N2A-AWJ7>.

23 Ibid.

24 Ibid.

25 Ibid.

26 Ibid.

27 Ibid.

28 Ibid.

29 Ibid.

30 Ibid.

31 Alejandro Amezcua, “Boon or Boondoggle: Business Incubation as Entrepreneurship Policy: A Report from the National Census of Business Incubators and Their Tenants” (Syracuse University, Whitman School of Management, 2010), Table 1, <https://perma.cc/9RHH-VZB6>.

32 Ibid., 10.

33 Alejandro Amezcua, “Boon or Boondoggle: Business Incubation as Entrepreneurship Policy: A Report from the National Census of Business Incubators and Their Tenants” (Syracuse University, Whitman School of Management, 2010), <https://perma.cc/9RHH-VZB6>.

34 Ibid., 15.

35 Alejandro Amezcua, “Boon or Boondoggle: Business Incubation as Entrepreneurship Policy: A Report from the National Census of Business Incubators and Their Tenants” (Syracuse University, Whitman School of Management, 2010), <https://perma.cc/9RHH-VZB6>.

36 Greg LeRoy et al., “Growing Pennsylvania’s High-Tech Economy: Choosing Effective Investments” (Good Jobs First, 2010), 1, <https://perma.cc/FV22-3XR6>.

37 Ibid., 19.

38 Ibid.

39 Ibid., 9.

40 Ibid., 1.

41 Ibid., 13.

42 Ibid.

43 Ibid., 9.

44 “Performance Audit Report: Michigan Economic Growth Authority Tax Credit Program” (Michigan Office of the Auditor General, September 2017), 53, <https://perma.cc/SNF6-P6XQ>.

Endnotes (cont.)

- 45 “MEGA and Other Certificated Credits 2019 Annual Report” (State of Michigan: Michigan Strategic Fund, 2019), Table 3, <https://perma.cc/PH7T-C2F3>.
- 46 James M. Hohman, “An Evaluation of Michigan’s 21st Century Jobs Fund” (Mackinac Center for Public Policy, 2016), 1, <https://perma.cc/WG7U-AHE7>.
- 47 Liz Boyd, “Granolm: New Report Highlights Impact of 21st Century Jobs Fund” (State of Michigan), <https://perma.cc/F2XH-SY89>.
- 48 “21st Century Jobs Trust Fund -- 2013 Annual Report” (State of Michigan: Michigan Strategic Fund, March 31, 2014), 10, <https://perma.cc/T8DS-BQ7Z>.
- 49 “21st Century Jobs Trust Fund Report: Year-End Report to the Legislature 2012” (State of Michigan: Michigan Strategic Fund, 2013), 3–5, <https://perma.cc/8HST-M3BZ>.
- 50 “Year-End Report to the Legislature for Fiscal Year 2010” (State of Michigan: Michigan Economic Development Corporation, 2011), 5, <https://perma.cc/GYWS-5GMB>; “FY 2018 MSF-MEDC Annual Report” (State of Michigan: Michigan Strategic Fund, 2019), 78, <https://perma.cc/647F-QVMX>.
- 51 See, for instance, Douglas E. Stites, “Briefing Memo - Weyburn Acquisition Corporation” (State of Michigan: Michigan Jobs Commission, 1997), 3, <https://perma.cc/ZH2H-EVJA>.
- 52 Kathleen Blake, “Briefing Memo: Howmet International” (Michigan Jobs Commission, 1998), 3; “Community Development Block Grant: Revolving Loan Fund” (State of Michigan: Michigan Economic Development Corporation, 2016), <https://perma.cc/VP97-VJZ4>.
- 53 Jane Schultz, “Department of Commerce -- The Michigan Strategic Fund: A Summary of Its Origin, Sources of Revenue, and Programs” (State of Michigan: Senate Fiscal Agency, 1989), 6, <https://perma.cc/XPA6-YGUD>.
- 54 “Michigan Strategic Fund: Annual Report -- 1991” (State of Michigan), <https://perma.cc/7APY-CAJ6>.
- 55 “Michigan Business Development Program: Process Overview” (State of Michigan: Michigan Economic Development Corporation, 2015), <https://perma.cc/Z8TZ-2YDQ>.
- 56 Ibid.
- 57 “Year-End Report to the Legislature for Fiscal Year 2010” (State of Michigan: Michigan Economic Development Corporation, 2011), 43, <https://perma.cc/GYWS-5GMB>.
- 58 Ibid.
- 59 Ibid.
- 60 Ibid.
- 61 Ibid., 30.
- 62 Ibid., 33.
- 63 Jane Schultz, “Department of Commerce -- The Michigan Strategic Fund: A Summary of Its Origin, Sources of Revenue, and Programs” (State of Michigan: Senate Fiscal Agency, 1989), 4, <https://perma.cc/XPA6-YGUD>.
- 64 Philip Mattera, Kasia Tarczynska and Greg Leroy, “Megadeals: The Largest Economic Development Subsidy Packages Ever Awarded by State and Local Governments in the United States” (Good Jobs First, 2013), i, <https://perma.cc/FUZ5-MUDP>.
- 65 Katherine Yung, “21st Century Jobs Fund: Mixed Results,” *Detroit Free Press* (Detroit, May 23, 2010), 6-B.
- 66 James M Hohman, “An Evaluation of Michigan’s 21st Century Jobs Fund” (Mackinac Center for Public Policy, 2016), 1, <https://perma.cc/WG7U-AHE7>.
- 67 Ibid., 17.

Endnotes (cont.)

- 68 “Michigan 21st Century Jobs Trust Fund — Entrepreneurship and Innovation Programs Impact and Effectiveness Study” (TEconomy Partners, LLC, 2016), Executive Summary, <https://perma.cc/YHW8-QZRR>.
- 69 Michael D. LaFaive, “A Plea for Skepticism about the MEDC: An Open Letter” (Mackinac Center for Public Policy, 2018), <https://perma.cc/WPL8-G59U>.
- 70 “Hohman on Film Incentives: Price Tag of \$500 Million for No Industry Growth” (Mackinac Center for Public Policy, 2015), <https://perma.cc/LPN9-CQJ3>.
- 71 Michael D. LaFaive, “Pure Fiction: State Tourism Cost-Benefit Analysis Ignores Costs” (Mackinac Center for Public Policy, 2018), <https://perma.cc/S74D-PLPK>.
- 72 Michael D. LaFaive and Michael Hicks, “MEGA: A Retrospective Assessment” (Mackinac Center for Public Policy, 2005), 37, <https://perma.cc/H282-KMMB>.
- 73 Michael D. LaFaive and James Hohman, “The Michigan Economic Development Corporation: A Review and Analysis” (Mackinac Center for Public Policy, 2009), 26, <https://perma.cc/DSA7-BC25>.
- 74 Patrick L. Anderson, Theodore R. Bolema and Alex L. Rosaen, “Michigan’s Business Tax Incentives” (Anderson Economic Group, LLC, 2009), 9, <https://perma.cc/4942-QJJY>.
- 75 Laura Reese, “If All You Have Is a Hammer: Finding Economic Development Policies That Matter,” *American Review of Public Administration* 44, no. 627–655 (2013): 642.
- 76 Timothy J. Bartik and George Erickcek, “Simulating the Effects of the Tax Credit Program of the Michigan Economic Growth Authority on Job Creation and Fiscal Benefits,” *Economic Development Quarterly* 28, no. 4 (2014): 314, <https://perma.cc/WV24-MFMT>.
- 77 *Ibid.*, 320.
- 78 Michael D. LaFaive and Michael Hicks, “An Assessment of the Michigan Business Development Program” (Mackinac Center for Public Policy, 2018), iii, <https://perma.cc/ZH8T-KYA2>.
- 79 Tim Bartik et al., “Michigan Business Development Program Effectiveness Study” (W.E. Upjohn Institute for Employment Research, 2019), 13, <https://perma.cc/VVJ3-SMM4>.
- 80 *Ibid.*, 4.
- 81 *Ibid.*, 3-4.

BOARD OF DIRECTORS

Hon. Clifford W. Taylor

*Board Chairman
Retired Chief Justice
Michigan Supreme Court*

Rodney M. Lockwood Jr.

*Board Vice Chairman
President
Lockwood Construction Co., Inc.*

Joseph G. Lehman

*President
Mackinac Center for Public Policy*

Jim Barrett

*Retired President and CEO
Michigan Chamber of Commerce*

Daniel J. Graf

*Chief Investment Officer
Amerisure Mutual Holdings, Inc.*

Dulce M. Fuller

*Owner
Woodward and Maple*

Richard G. Haworth

*Chairman Emeritus
Haworth, Inc.*

J.C. Huizenga

*President
Westwater Group*

Edward C. Levy Jr.

*Executive Chairman for
Edw. C. Levy Co.*

Joseph P. Maguire

*President and CEO
Wolverine Development Corp.*

Richard D. McLellan

*Attorney
McLellan Law Offices*

D. Joseph Olson

*Retired Senior Vice President
and General Counsel
Amerisure Companies*

BOARD OF SCHOLARS

Dr. Donald Alexander

Western Michigan University

Dr. Thomas Bertonneau

SUNY-Oswego

Dr. Brad Birzer

Hillsdale College

Dr. Peter Boettke

George Mason University

Dr. Theodore Bolema

Wichita State University

Dr. Alex Cartwright

Ferris State University

Dr. Michael Clark

Hillsdale College

Matthew Coffey

Central Michigan University

Dr. Dan Crane

University of Michigan Law School

Shikha Dalmia

Reason Foundation

Dr. Chris Douglas

University of Michigan-Flint

Dr. Jefferson Edgens

University of Wyoming

Dr. Ross Emmett

Arizona State University

Dr. Sarah Estelle

Hope College

Dr. Hugo Eyzaguirre

Northern Michigan University

Dr. Tawni Ferrarini

Northern Michigan University

Dr. Burton Folsom

Hillsdale College (ret.)

John Grether

Kettering University

Dr. David Hebert

Aquinas College

Thomas A. Hemphill

University of Michigan-Flint

Dr. Michael Hicks

Ball State University

Dr. Ormand Hook

Mecosta-Osceola ISD

Prof. Harry Hutchison

George Mason University School of Law

Dr. David Janda

Institute for Preventative Sports Medicine

Annette Kirk

Russell Kirk Center

David Littmann

Mackinac Center for Public Policy

Dr. Dale Matcheck

Northwood University

Charles Meiser

Lake Superior State University (ret.)

Dr. Glenn Moots

Northwood University

Dr. George Nastas III

Marketing Consultants

Dr. Todd Nesbit

Ball State University

Dr. John Pafford

Northwood University (ret.)

Dr. Mark Perry

University of Michigan-Flint

Lawrence W. Reed

Foundation for Economic Education

Gregory Rehmke

Economic Thinking

Dr. Steve Safranek

Wiss, Janney, Elstner Associates, Inc.

Dr. Howard Schwartz

Oakland University

Dr. Martha Seger

Federal Reserve Board (ret.)

James Sheehan

SunTrust Robinson Humphrey

Rev. Robert Sirico

Acton Institute

Dr. Bradley Smith

Capital University Law School

Dr. Chris Surprenant

University of New Orleans

Dr. Jason Taylor

Central Michigan University

Dr. John Taylor

Wayne State University

Dr. Richard K. Vedder

Ohio University

Prof. Harry Veryser Jr.

University of Detroit Mercy

John Walter Jr.

Dow Corning Corporation (ret.)

Mike Winther

Institute for Principle Studies

Dr. Gary Wolfram

Hillsdale College



Michael D. LaFaive is senior director of the Morey Fiscal Policy Initiative for the Mackinac Center for Public Policy. He has undergraduate and graduate degrees in economics from Central Michigan University.



Srikant Devaraj, Ph.D., is a research economist and research assistant professor in the Center for Business and Economic Research at Ball State University. Devaraj earned a doctorate in economics from Indiana University, Indianapolis in 2016 with fields in health economics, applied econometrics and health informatics.



Michael Hicks, Ph.D., is director of the Center for Business and Economic Research and professor of economics at Ball State University. He is also an adjunct scholar with the Mackinac Center for Public Policy.



The Mackinac Center for Public Policy is dedicated to improving the understanding of economic and political principles among citizens, public officials, policymakers and opinion leaders. The Center has emerged as one of the largest and most prolific of the more than 50 state-based free-market “think tanks” in America. Additional information about the Mackinac Center and its publications can be found at www.mackinac.org.

Additional copies of this report are available for order from the Mackinac Center.

For more information, call 989-631-0900, or see our website, www.mackinac.org.