ADVANTAGE
CAPITAL

9/27/17

The Honorable Senator John Eklund
Chairman
Senate Ways and Means Committee
1 Capitol Square, Ground Floor
Columbus, OH 43215

RE: The Ohio Rural Jobs Act, Sub. SB 147

Dear Chairman Eklund,

Thank you for the opportunity to testify in support of Sub. SB 147, the Ohio Rural Jobs Act. Advantage Capital provides equity and debt financing to established and emerging companies located in communities underserved by conventional sources of capital. Since 1992, the firm has invested more than $2 billion in companies from a diverse array of industry sectors, including manufacturing, technology, agribusiness and business services, among others and has primary offices in New Orleans, St. Louis, New York, Austin and California and local offices in a half dozen other states including Ohio. In 2014, Advantage Capital Partners raised a $12.8 million Ohio-based fund under the New Markets Tax Credit program for investment in small businesses. We have fully invested that fund in five different companies, three of which are in rural areas.

To date, we have raised funds in 28 states and D.C. under as many different state and federal economic development initiatives and have invested in more than 700 unique small businesses. Each state program is unique and we've found the most impactful programs to be ones where all interests are aligned, new private market investment behavior is incented and a positive return on investment through permanent job creation is a top priority. We believe the Ohio Rural Jobs Act meets these criteria and more.

Included as a part of this testimony is a study titled *The Economic and Fiscal Impacts of the Ohio Rural Jobs Act* (Appendix A). Completed by the nationally recognized Regional Economic Models, Inc. (REMI), the economic impact study analyzed over 200 investments made in small businesses under similar programs across 13 states. This data was used to estimate the impact of the proposed Ohio Rural Jobs Act. While no study can perfectly predict the future, this study used actual financial statements and statistics from a substantial number of real life examples lending the study results additional credibility. Based on the results, the projected return on

investment for the state of Ohio, considering both created and retained jobs, is $3.88 of new tax revenue for every $1 of state tax credits. In addition to the REMI report, nine rural investment case studies (Appendix B) from other states have been provided to showcase the types of businesses that could benefit in Ohio.

Rural communities represent one of the most underserved geographies in Ohio as it relates to private capital. Based on current PitchBook: Global Private Equity and Venture Capital data, rural Ohio received only 4.7% of all private equity and venture capital investments since 2004 and only 2.6% since 2012 despite representing 18.4% of Ohio's residents. The trend is going in the wrong direction with rural Ohio businesses attracting less than 1/8th of its expected pro rata share of capital each year.

The State of Ohio has over 47 business-focused economic development programs, yet rural areas remain underserved. We urge your support of the Ohio Rural Jobs Act which would provide much needed affordable and flexible risk capital for rural and agribusiness entrepreneurs.

Thank you for your time and consideration,

Ryan C Dressler

Ryan C. Dressler
Vice President
Advantage Capital Partners

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The Economic and Fiscal Impacts of the Ohio Rural Jobs Act (ORJA)

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Friday, March 20, 2015

Executive Summary

This study examines the economic and fiscal implications of the Ohio Rural Jobs Act (ORJA) and its implementation of tax credits for rural economic development in Ohio. It relies on relating historical data from other states and investment portfolios to Ohio and then presumes the trends and averages with previous rural credits in other states—with adjustments to the local industry mixture—hold. Most states with the largest effects from new market tax credits (NMTCs), a similar program to the ORJA without restrictions on geography, have a large degree of involvement from such industries as light- and medium-manufacturers and personal service firms. The former are specialties of rural counties in Ohio. To perform an impact analysis, the direct impacts of credit allocation based on historical trends are inputs into the REMI model, a dynamic, regional model of the state's economy. **The results here show the potential for a positive economic impact and a positive benefit-cost ratio (BCR) for the state.** If the ORJA proceeds as NMTCs in the rural areas of other states, the $60 million allocation could generate 1,200 to 4,000 new jobs. The range depends on the definition of the jobs, counting either just new jobs created or those jobs created and retained from the funding and investment of capital under the credit program. The results are similar for gross state product (GSP) and personal income, and the extra economic activity is enough to bring in an additional $5 million to $22 million in annual revenue to Columbus' budget. Balancing this additional revenue from such sources as personal income and state sales taxes leaves a return on the state budget of between a BCR of 1.1 under most conservative assumptions and 3.8 under the most inclusive of assumptions (including all retained jobs as a part of the direct impact)).

Benefit-Cost Analysis (BCA) and Return-on-Investment (ROI)

JOBS CREATED

	3% discount	7% discount
Present Value of Benefits (revenues)	$53.31	$45.25
Present Value of Costs (tax credits)	$42.43	$39.36
Net Present Value (NPV)	$10.88	$5.88
Benefit-Cost Ratio (BCR)	1.26	1.15

JOBS CREATED/RETAINED

	3% discount	7% discount
Present Value of Benefits (revenues)	$164.65	$139.86
Present Value of Costs (tax credits)	$42.43	$39.36
Net Present Value (NPV)	$122.22	$100.49
Benefit-Cost Ratio (BCR)	3.88	3.55

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Introduction

This study examines the prospective economic and fiscal impacts of rural business investment credits (RBIC) in the state of Ohio. RBIC programs are similar to new market tax credits (or NMTC); though, RBICs require a concentration of the investment dollars in rural and relatively underdeveloped areas for credit eligibility. An NMTC or RBIC program is a provision in the state or federal tax code to offer incentives for private capital to invest in small businesses, startups, low-income areas, or regions otherwise of economic distress. Ohio and many other states have existing NMTC programs, and they oftentimes include special criteria for a certain quantity of the credit to focus on rural or underdeveloped areas. The federal government has the largest credit through the Community Development Financial Institutions Fund (CDFI Fund),[1] and many states supplement this with their own. With general NMTC programs, the list of states includes Alabama, Alaska, Arkansas, Florida, Illinois, Kentucky, Louisiana, Maine, Mississippi, Nebraska, Nevada, Ohio, Oregon, and Utah.[2] This study will look at the addition of a similar program with a rural focus for the state of Ohio.

This study is from the consulting wing of Regional Economic Models, Inc. (REMI) based in Washington, DC.[3] This report includes a technical appendix with more details on the raw data and simulations in an appendix, but a short summary of methodology is in this introduction. Given that RBICs are tax credits, there are always questions about their impact on the state's economy and the eventual upshot for the state budget. These questions involve the degree for the attraction of private capital, job creation, new economic activity generated, the fiscal cost of the credit, and the net return-on-investment (ROI) for the state by various metrics. The analysis uses standard statistical techniques and regional modeling to assess such questions for the state of Ohio and the proposed Ohio Rural Jobs Act (ORJA). When modeling a RBIC or a NMTC program, the largest, initial question is to determine the degree of job creation and economic growth from the ensuing private investment. This report addresses this by examining historical data from peer programs and investments in other states.

This study uses statistics derived from historical performance to guide the expected level of investments and economic performance for the ORJA. An assorted set of private equity firms provided REMI with portfolio data on past investments and existing firms associated with NMTC programs in rural areas from other states. The data set included the NAICS of the firm,[4] its initial and total state tax credit allocation, and the number of jobs self-reported as "created" or "retained" by the companies. *"Created" jobs would include those that came about directly from outside investment aided by the tax credits. "Retained" jobs include those preserved by outside investment that prevented a firm from downsizing its staff or shuttering entirely.* The data set also included a column for "rural yes" or "rural no," and the data for this analysis used only the rural examples owing to the nature of the ORJA's qualification standards. This created

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[1] U.S. Department of the Treasury, <http://www.cdfifund.gov/>

[2] New Markets Tax Credit Resource Center, <http://www.novoco.com/new_markets/nmtc/state_nmtc_programs.php>

[3] <http://www.remi.com/>

[4] North American Industrial Classification System (NAICS), or the U.S. Census' definition of a collection of like firms in a common "industry" in competition with one another provided similar goods or services on the market, such as "Big Box" establishments in a suburb all being part of the "Retail" (44-45) industry in NAICS, please see, <http://www.census.gov/eos/www/naics/>

an association, or elasticity, of dollars in claimed credits for every job either created or retained in the data. ORJA provides for $45 million in credits to claim over a three-year period. Therefore, historical data forms the backbone of how many new jobs ORJA might create directly before using regional economic modeling to illustrate how this would affect the other businesses and industries in the state as well as Columbus' budget.

New, expanded, or retained jobs and firms would interact with the general Ohioan economy, which the REMI model illustrates. The REMI model is a dynamic, structural model of custom subnational geographies of the United States.[5] The direct inputs from the analysis of historical data from other states are the backbone to this analysis. Nonetheless, they are only "step one" before the "direct" firms and jobs from the ORJA interact supply-chains, payrolls, and the local tax base. The supply-chain effect in the model includes the intermediate sourcing of materials and services from one business from another—such as the purchase of glass containers from a glassmaker by a food processor to use to store and ship product. New firms and their suppliers will also create a payroll effect where those working for those businesses will distribute their paychecks as consumption. This spending primary affects consumer-centric industries such as housing, retail, food service, healthcare, entertainment, other services, and the purchase of household implements and durable goods (such as vehicles and furniture). These transactions are a "static" view of the economy, however, and the REMI model includes more responses to make a "dynamic" response in the housing market and state budget.

Additional payroll and consumer income will induce changes in the housing market and within governmental budgets. For instance, some addition of jobs in rural Ohio may tax the existing housing stock beyond its current capacity (either in raw quantity or in the quality of the houses desired by buyers) because more workers relocate to the area to be closer to work. This creates construction activity for new infrastructure, adding to the number of properties, or puts upward pressure on prices. The combination of the above effects from household income from the labor market, consumption, and the housing market changes the fiscal situation through state income taxes, the state sales tax, and local property taxes, respectively. This technique—looking at the underlying change in consumer income, consumption, and behavior and it relates to revenues—forms the basis for the fiscal impact results in this report.

Given the different layers in the initial data here between jobs created and jobs retained, the results present both as a "sensitivity" analysis between the "most inclusive" definition of new jobs created by RBICs (created/retained) or the "most conservative" (created only). Results here are multifaceted: economic, demographic, and fiscal. The main elements include the impacts on employment, gross state product (GSP),[6] real personal income, and output and employment by the 70-sectors in the version of the REMI model here. Demographic results look at the impact to the state's population as well as the types of jobs created. The fiscal results include the gross amount of new revenues, the net present value of those revenues versus the $60 million worth of tax credits in 2016 through 2018, a benefit-cost analysis (BCA) and ratio (BCR) over a decade window, and some concepts of ROI in terms of jobs and state output.

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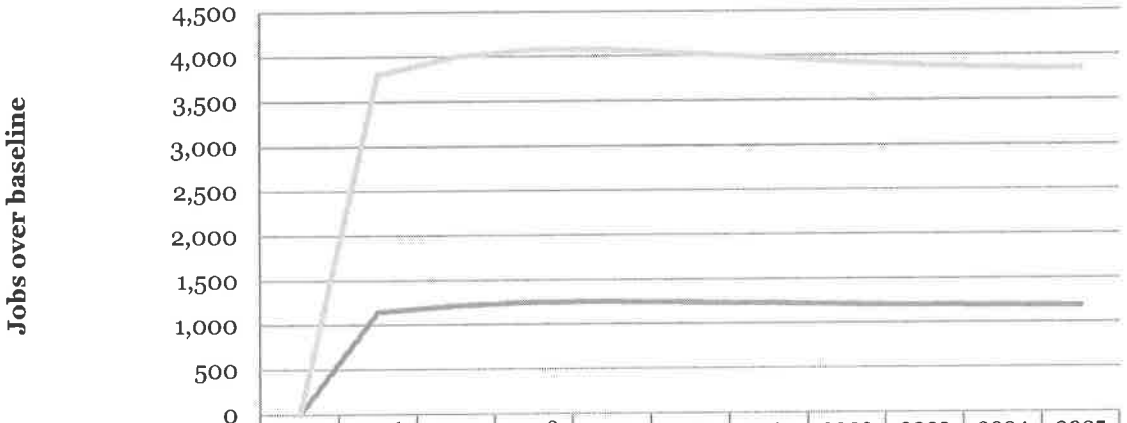
[5] For a high-level introduction, please see, <http://www.remi.com/the-remi-model>
[6] The equivalent to gross domestic product (GDP) at the state-level

Economic Impact Results

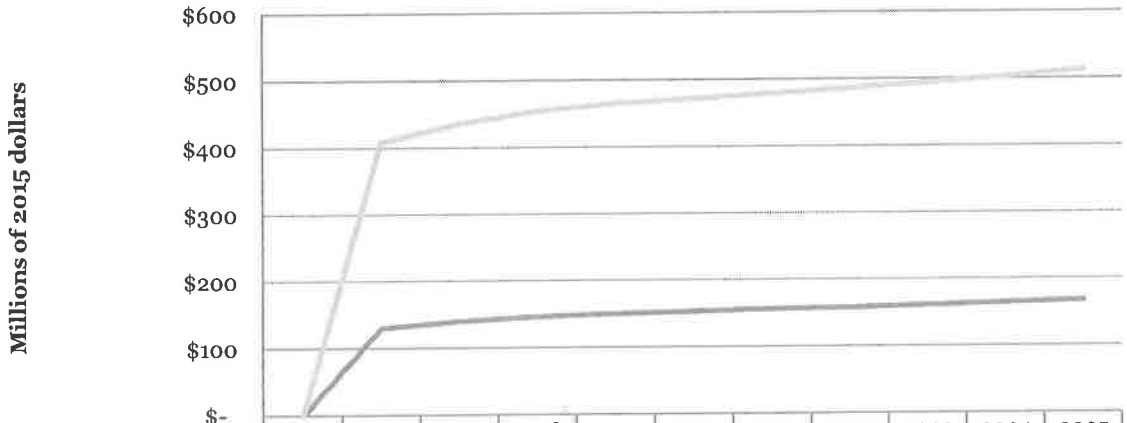
Total Employment



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Created	-	1,148	1,216	1,248	1,251	1,239	1,227	1,212	1,200	1,193	1,187
Created/Retained	-	3,802	4,000	4,076	4,071	4,027	3,978	3,926	3,884	3,858	3,845

Figure 1.1 – The above lines are new jobs in Ohio attributable to the RBIC program. Note these are "jobs over the baseline," not job creation, which means there are 1,200 or so new jobs created in Ohio in 2025 and not the cumulative of around 12,000 (10x) after a decade. There is an increase with the initial investments. After that, there is long-term stability or even a slight decline as the productivity of the Ohio economy continues to increase and requires fewer jobs.

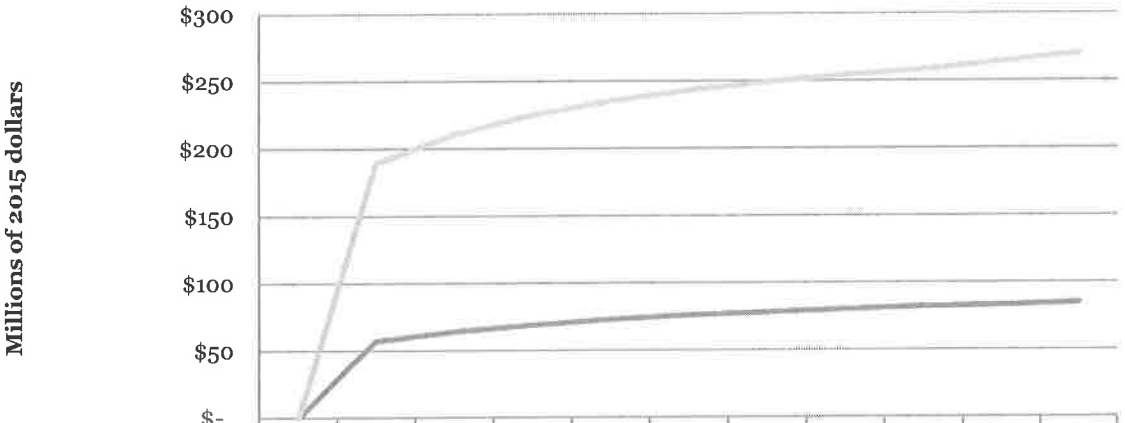
Gross State Product (GSP)



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Created	$-	$130	$140	$146	$150	$153	$156	$158	$161	$164	$168
Created/Retained	$-	$408	$436	$454	$465	$472	$479	$486	$494	$503	$513

Figure 1.2 – The results for GSP, or the total of new economic activity in the state, mirrors the same pattern as the results for employment. The Ohio economy current has a GSP of around $650 billion, which means the above results represent a 0.2% to a 0.6% increase in the total size of the state's economy with the capital investments under the RBIC program.

Real Disposable Personal Income (RDPI)

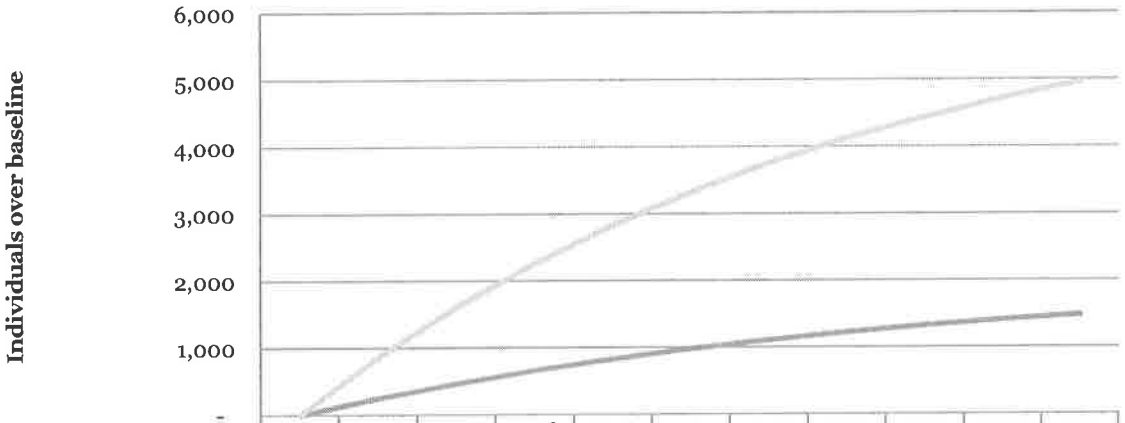


	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Created	$-	$57	$64	$69	$73	$76	$78	$80	$82	$83	$85
Created/Retained	$-	$189	$210	$225	$235	$243	$249	$254	$258	$264	$270

Figure 1.3 – RDPI in REMI is the net of additional income on the labor market, minus taxes, divided by any change in the cost of living. Labor income typically constitutes between 60% and 80% of GSP. The results above are similar where the RBIC program adds enough jobs to generate the GDP results in Figure 1.2 and the personal income results.

Demographic Impact Results

Population



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Created	-	248	468	666	832	986	1,111	1,223	1,322	1,411	1,481
Created/Retained	-	856	1,608	2,257	2,831	3,321	3,754	4,120	4,437	4,725	4,964

Figure 2.1 – The increase in the availability of jobs and additional wages in the state induces what the REMI model terms "economic migration"—households relocating to a new area in search of stronger opportunities on the labor market. Adding a few hundred to a few thousand jobs, thus, adds a similar number of people to Ohio, though lagging the labor market.

Table 1 - GSP by Industry (average, millions of 2015 dollars)

NAICS Industries	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Chemical manufacturing	$25.3	$26.3	$27.3	$28.4	$29.4	$30.5	$31.7	$32.9	$34.2	$35.5
Construction	$14.1	$20.4	$23.5	$24.5	$24.4	$23.7	$22.6	$21.4	$20.5	$19.7
State and local government	$18.8	$20.1	$20.9	$21.4	$21.6	$21.8	$22.0	$22.3	$22.5	$22.9
Motor vehicles, bodies, and parts	$18.3	$18.8	$19.2	$19.7	$20.2	$20.7	$21.3	$21.8	$22.4	$23.0
Professional and technical services	$15.4	$16.6	$17.4	$18.0	$18.5	$18.9	$19.3	$19.9	$20.5	$21.2
Wholesale trade	$16.0	$16.6	$17.1	$17.4	$17.8	$18.1	$18.4	$18.9	$19.4	$20.0
Plastics and rubber product	$13.1	$13.5	$13.8	$14.2	$14.5	$14.9	$15.3	$15.7	$16.0	$16.4
Retail trade	$10.8	$11.7	$12.3	$12.7	$12.9	$13.0	$13.2	$13.4	$13.7	$14.0
Food manufacturing	$11.4	$11.6	$11.8	$12.0	$12.2	$12.4	$12.6	$12.8	$13.0	$13.2
Fabricated metal product	$11.2	$11.4	$11.7	$12.0	$12.2	$12.5	$12.7	$12.8	$13.1	$13.2
Real estate	$8.4	$10.3	$11.6	$12.2	$12.6	$12.8	$13.0	$13.1	$13.3	$13.4
Telecommunications	$7.8	$8.2	$8.6	$8.9	$9.2	$9.5	$9.8	$10.1	$10.5	$10.8
Publishing industries, except Internet	$7.3	$7.7	$8.1	$8.4	$8.8	$9.2	$9.6	$10.1	$10.6	$11.1
Machinery manufacturing	$7.2	$7.4	$7.7	$7.9	$8.1	$8.3	$8.6	$8.8	$9.1	$9.3
Management of companies	$7.6	$7.8	$7.8	$7.8	$7.9	$7.9	$8.0	$8.2	$8.5	$8.8
Ambulatory health care services	$7.9	$7.8	$7.7	$7.4	$7.2	$7.0	$6.9	$6.8	$6.8	$6.8
Monetary authorities	$6.5	$6.7	$6.8	$6.8	$6.7	$6.7	$6.6	$6.6	$6.6	$6.7
Administrative and support services	$5.4	$5.7	$5.8	$5.9	$6.0	$6.1	$6.2	$6.3	$6.4	$6.6
Paper manufacturing	$5.2	$5.3	$5.4	$5.5	$5.7	$5.8	$5.9	$6.0	$6.1	$6.3
Utilities	$4.7	$4.9	$5.2	$5.3	$5.5	$5.6	$5.8	$5.9	$6.1	$6.3
Furniture and related product	$3.9	$4.0	$4.2	$4.3	$4.4	$4.5	$4.6	$4.7	$4.8	$5.0
Primary metal manufacturing	$3.5	$3.6	$3.7	$3.8	$3.8	$4.0	$4.1	$4.1	$4.2	$4.2
Food services and drinking places	$2.7	$3.0	$3.3	$3.5	$3.7	$3.9	$4.1	$4.2	$4.3	$4.5
Hospitals	$2.9	$3.0	$3.2	$3.3	$3.4	$3.5	$3.6	$3.7	$3.8	$3.9
Nonmetallic mineral product	$2.9	$3.0	$3.2	$3.3	$3.3	$3.4	$3.4	$3.5	$3.5	$3.6
Petroleum and coal products	$3.2	$3.3	$3.2	$3.2	$3.1	$3.0	$3.0	$3.0	$3.0	$3.1
Printing and related support activities	$2.6	$2.6	$2.7	$2.7	$2.7	$2.8	$2.8	$2.9	$2.9	$3.0
Electrical equipment and appliance	$2.3	$2.4	$2.5	$2.6	$2.7	$2.8	$2.9	$2.9	$3.0	$3.1
Insurance carriers and related activities	$2.3	$2.4	$2.5	$2.5	$2.5	$2.5	$2.6	$2.6	$2.6	$2.6
Waste management and remediation	$2.4	$2.4	$2.5	$2.5	$2.5	$2.5	$2.5	$2.6	$2.6	$2.6
Rental and leasing services	$1.8	$2.0	$2.1	$2.2	$2.2	$2.2	$2.3	$2.3	$2.4	$2.4
Oil and gas extraction	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.2	$2.2	$2.3
Wood product manufacturing	$1.6	$1.7	$1.8	$1.8	$1.8	$1.8	$1.9	$1.9	$1.9	$1.9
Computer and electronic product	$2.2	$2.1	$2.0	$1.9	$1.7	$1.6	$1.5	$1.5	$1.5	$1.5
Truck transportation	$1.8	$1.8	$1.8	$1.7	$1.7	$1.6	$1.6	$1.5	$1.5	$1.5
Repair and maintenance	$1.5	$1.5	$1.6	$1.6	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5
Miscellaneous manufacturing	$1.3	$1.3	$1.4	$1.4	$1.4	$1.4	$1.5	$1.6	$1.6	$1.7
Personal and laundry services	$1.6	$1.6	$1.5	$1.4	$1.4	$1.4	$1.4	$1.3	$1.3	$1.3
Accommodation	$1.2	$1.3	$1.3	$1.4	$1.4	$1.4	$1.4	$1.5	$1.5	$1.5
Nursing and residential care facilities	$1.0	$1.1	$1.1	$1.1	$1.1	$1.1	$1.1	$1.1	$1.2	$1.2
Internet publishing and broadcasting	$0.8	$0.9	$0.9	$1.0	$1.0	$1.1	$1.1	$1.2	$1.2	$1.3
Beverage and tobacco product	$0.7	$0.8	$0.9	$0.9	$0.9	$1.0	$1.0	$1.1	$1.1	$1.1
Securities, commodity contracts	$0.9	$0.9	$0.9	$0.9	$0.9	$0.8	$0.8	$0.7	$0.7	$0.8
Educational services	$0.6	$0.7	$0.8	$0.8	$0.8	$0.8	$0.9	$0.9	$0.9	$1.0
Warehousing and storage	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8
Mining (except oil and gas)	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8
Performing arts and spectator sports	$0.6	$0.6	$0.6	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	$0.8
Membership associations	$0.5	$0.6	$0.6	$0.6	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7
Social assistance	$0.4	$0.5	$0.6	$0.6	$0.6	$0.7	$0.7	$0.7	$0.8	$0.8
Scenic and sightseeing transportation	$0.4	$0.5	$0.5	$0.5	$0.5	$0.5	$0.5	$0.6	$0.6	$0.6
Amusement, gambling, and recreation	$0.5	$0.5	$0.5	$0.5	$0.5	$0.5	$0.5	$0.5	$0.5	$0.5
Broadcasting, except Internet	$0.4	$0.5	$0.5	$0.5	$0.5	$0.5	$0.6	$0.6	$0.6	$0.6
Support activities for mining	$0.2	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4
Couriers and messengers	$0.5	$0.5	$0.4	$0.4	$0.3	$0.3	$0.3	$0.3	$0.3	$0.3
Rail transportation	$0.3	$0.3	$0.3	$0.3	$0.3	$0.3	$0.3	$0.2	$0.2	$0.3
Transit and ground passenger	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2
Air transportation	$0.1	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2
Textile mills; Textile product mills	$0.3	$0.2	$0.2	$0.2	$0.2	$0.1	$0.1	$0.1	$0.1	$0.1
Forestry, fishing, and hunting	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2
Pipeline transportation	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2
Private households	$0.2	$0.2	$0.2	$0.2	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Other transportation equipment	$0.1	$0.1	$0.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Agriculture and forestry support	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Water transportation	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Motion picture and sound recording	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Museums, historical sites, and parks	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Apparel manufacturing	$0.0	$0.0	-$0.1	-$0.1	-$0.1	-$0.2	-$0.2	-$0.2	-$0.2	-$0.2

Table 2 - Employment by Industry (average, over baseline)

NAICS Industries	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Construction	204	287	322	328	319	302	281	261	243	229
State and local government	243	259	269	274	276	277	277	278	280	281
Retail trade	179	188	192	192	189	186	183	181	180	179
Professional and technical services	151	160	165	167	169	170	171	174	176	179
Motor vehicles, bodies, and parts	134	133	132	131	130	129	129	128	127	127
Administrative and support services	123	126	128	128	127	126	126	127	128	130
Food services and drinking places	82	91	97	102	106	109	113	115	118	120
Fabricated metal product	105	104	103	102	102	100	100	99	99	98
Wholesale trade	102	102	102	100	99	98	96	95	95	95
Plastics and rubber product	94	93	93	92	91	90	90	90	89	89
Food manufacturing	91	90	90	90	89	89	89	88	88	88
Ambulatory health care services	98	96	93	89	85	82	80	78	77	76
Chemical manufacturing	70	69	69	69	69	68	68	67	67	67
Furniture and related product	47	47	46	46	45	45	45	45	45	45
Publishing industries, except Internet	44	44	44	44	44	43	43	43	43	43
Machinery manufacturing	46	45	44	44	43	42	42	41	41	41
Management of companies	47	46	44	43	42	40	39	39	38	38
Hospitals	36	38	39	39	40	41	41	43	43	44
Real estate	30	36	39	41	41	42	42	41	41	41
Personal and laundry services	42	39	38	36	34	32	31	30	29	29
Monetary authorities	35	35	35	33	32	31	30	29	29	28
Paper manufacturing	32	32	32	31	31	31	31	31	30	30
Printing and related support activities	32	31	31	31	31	31	31	30	30	30
Nonmetallic mineral product	24	25	25	25	25	25	24	24	23	23
Social assistance	17	19	21	23	24	25	26	28	29	30
Accommodation	21	21	21	22	22	22	22	22	23	23
Wood product manufacturing	21	22	22	22	22	22	21	21	21	21
Nursing and residential care facilities	21	21	21	21	21	21	21	22	22	22
Educational services	17	18	19	20	21	21	21	22	22	23
Telecommunications	20	20	20	20	20	19	19	19	19	19
Membership associations	16	18	19	19	20	20	20	20	20	21
Securities, commodity contracts	25	23	22	20	19	17	16	15	15	14
Repair and maintenance	19	19	19	19	19	18	18	17	17	17
Primary metal manufacturing	20	20	19	18	18	18	18	17	17	17
Waste management and remediation	18	18	18	18	18	18	18	18	18	18
Truck transportation	21	21	19	18	17	16	14	14	14	13
Insurance carriers and related activities	15	15	15	15	15	15	14	14	14	14
Electrical equipment and appliance	15	14	14	14	14	14	13	13	13	13
Amusement, gambling, and recreation	14	14	14	14	14	13	13	13	13	13
Performing arts and spectator sports	13	13	14	13	13	13	13	13	13	13
Warehousing and storage	12	12	12	12	12	11	11	11	11	11
Oil and gas extraction	10	10	10	10	10	10	10	10	10	11
Utilities	8	8	8	8	8	8	8	8	8	8
Miscellaneous manufacturing	9	9	9	8	8	8	8	7	7	7
Private households	11	10	9	8	7	7	6	5	5	5
Rental and leasing services	7	7	7	7	7	7	7	7	7	7
Scenic and sightseeing transportation	5	5	5	6	6	6	6	6	6	6
Computer and electronic product	8	8	7	6	5	5	4	4	3	3
Internet publishing and broadcasting	5	5	5	5	5	5	5	5	5	5
Transit and ground passenger	4	4	4	4	4	4	4	4	5	5
Support activities for mining	3	4	4	4	4	4	4	4	4	4
Broadcasting, except Internet	4	4	4	4	4	4	4	4	4	4
Mining (except oil and gas)	3	3	3	3	3	3	3	3	3	3
Couriers and messengers	5	5	4	3	3	3	3	2	2	2
Petroleum and coal products	3	3	3	3	2	2	2	2	2	2
Forestry, fishing, and hunting	2	2	2	2	2	2	2	2	2	2
Beverage and tobacco product	2	2	2	2	2	2	2	2	2	2
Textile mills; Textile product mills	3	3	2	2	2	1	1	1	1	1
Rail transportation	2	2	2	2	2	1	1	1	1	1
Air transportation	1	1	1	1	1	1	1	1	1	1
Motion picture and sound recording	1	1	1	1	0	0	0	0	0	0
Agriculture and forestry support	1	1	0	0	0	0	0	0	0	0
Water transportation	0	0	0	0	0	0	0	0	0	0
Pipeline transportation	0	0	0	0	0	0	0	0	0	0
Museums, historical sites, and parks	0	0	0	0	0	0	0	0	0	0
Other transportation equipment	0	0	0	0	0	0	0	0	-1	-1
Apparel manufacturing	0	0	-1	-1	-2	-2	-2	-2	-2	-2

Table 3 - Employment by Occupation (average, over baseline)

SOC Occupations	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Construction trades workers	126	169	187	190	185	177	166	155	146	139
Other production	131	131	130	129	128	127	126	125	124	124
Metal workers and plastic workers	121	121	119	118	116	115	114	113	112	111
Retail sales workers	105	110	113	112	111	110	108	107	106	106
Material moving workers	109	111	111	109	108	106	105	104	104	103
Assemblers and fabricators	100	100	99	99	98	97	96	96	96	95
Information and record clerks	86	88	89	87	86	85	84	84	83	83
Other installation, maintenance, and repair	73	81	84	85	83	83	81	79	78	77
Business operations specialists	74	78	80	80	80	79	79	78	78	78
Computer	70	73	73	74	74	75	75	75	76	77
Food and beverage serving workers	58	64	68	70	72	74	76	77	79	80
Other office and administrative support workers	67	71	72	71	70	68	67	66	65	64
Secretaries and administrative assistants	64	68	70	69	68	67	66	65	65	64
Motor vehicle operators	64	66	67	66	65	63	61	61	60	59
Material recording, scheduling, dispatching	64	66	66	65	64	63	61	61	60	60
Financial clerks	61	65	65	65	64	62	61	60	60	60
Primary, secondary, and special education	47	50	52	54	54	55	56	56	56	57
Health diagnosing and treating practitioners	52	53	53	53	52	52	52	52	52	52
Top executives	49	52	53	53	52	51	51	50	49	49
Financial specialists	46	47	47	47	46	45	45	44	44	44
Sales, wholesale and manufacturing	45	46	47	46	46	45	45	44	44	44
Engineers	41	42	42	42	42	42	41	41	41	41
Other management	34	38	40	40	40	39	39	38	38	37
Operations specialties managers	38	38	38	38	37	37	37	37	36	36
Building cleaning and pest control workers	36	37	38	38	38	37	37	36	36	36
Health technologists and technicians	34	35	35	34	34	34	34	33	34	34
Cooks and food preparation workers	26	28	30	31	32	32	33	34	34	35
Supervisors of production workers	32	32	31	31	30	30	30	30	30	29
Other personal care and service workers	29	29	30	30	30	30	30	31	31	31
Food processing workers	30	30	30	30	30	30	30	30	30	30
Sales representatives, services	28	29	29	28	28	27	26	26	26	26
Supervisors of office and administrative support	23	24	25	24	24	23	23	23	23	23
Nursing, psychiatric, and home health aides	22	23	23	23	23	23	24	24	24	24
Other protective service workers	22	23	23	23	23	23	23	23	23	23
Vehicle and mobile equipment mechanics	22	23	23	23	23	22	22	21	21	21
Supervisors of sales workers	20	21	22	22	21	21	21	21	21	21
Postsecondary teachers	18	19	20	21	21	21	21	21	22	22
Supervisors of construction and extraction	15	20	22	23	22	21	20	19	18	17
Other education, training, and library	16	18	18	18	19	19	19	19	19	20
Other healthcare support	20	20	19	19	18	17	17	17	17	17
Woodworkers	18	18	18	18	18	18	17	17	17	17
Law enforcement workers	15	17	17	17	17	17	18	18	18	18
Drafters, engineering, and mapping technicians	17	17	17	17	17	17	17	17	17	17
Grounds maintenance workers	15	16	17	17	16	16	16	16	16	16
Printing workers	16	16	16	16	15	15	15	15	15	15
Other sales and related workers	14	15	16	16	16	16	16	15	15	15
Counselors and social workers	13	13	14	14	14	14	14	14	14	15
Other food preparation and serving related	11	12	13	14	14	14	14	15	15	15
Advertising and marketing	13	14	14	14	13	13	13	13	13	13
Other teachers and instructors	12	13	13	13	13	13	13	14	14	14
Electrical and electronic equipment mechanics	12	13	14	14	13	13	12	12	12	12
Media and communication workers	13	13	13	13	13	13	12	12	12	13
Personal appearance workers	15	14	14	13	12	12	11	11	11	11
Textile, apparel, and furnishings workers	14	13	13	13	12	11	11	11	11	11
Art and design workers	12	12	12	12	12	12	12	12	12	12
Lawyers, judges, and related workers	11	11	12	12	12	12	12	12	12	12
Supervisors of food preparation and serving	9	10	10	10	11	11	11	12	12	12
Helpers, construction trades	8	10	12	12	12	11	10	10	9	9
Supervisors of installation and maintenance	10	10	11	11	10	10	10	10	10	10
Other construction and related workers	8	10	10	10	10	10	10	10	9	9
Plant and system operators	8	8	8	8	8	8	8	8	8	8
Supervisors of transportation and material	8	9	9	8	8	8	8	8	7	7
Miscellaneous community and social service	7	7	7	7	8	8	8	8	8	8
Life, physical, and social science technicians	7	7	7	7	7	7	7	7	7	7
Physical scientists	7	7	7	7	7	7	7	7	7	7
Entertainment attendants and related workers	7	7	7	7	7	7	7	7	7	7
Legal support workers	6	7	7	7	7	7	7	7	7	8
Entertainers and performers, sports and related	7	7	7	7	7	7	7	7	7	7
Life scientists	6	6	6	6	6	6	6	6	6	6

Other transportation workers	6	6	6	6	5	5	5	5	5	5
Extraction workers	4	5	5	5	5	5	5	5	5	5
Fire fighting and prevention workers	4	5	5	5	5	5	5	5	5	5
Supervisors of protective service workers	4	4	4	4	4	4	4	4	4	4
Librarians, curators, and archivists	4	4	4	4	4	4	4	4	4	4
Supervisors of building and grounds cleaning	4	4	4	4	4	4	4	4	4	4
Animal care and service workers	4	4	4	4	4	4	4	4	4	4
Architects, surveyors, and cartographers	3	4	4	4	4	4	4	4	4	4
Social scientists and related workers	3	3	3	3	3	4	4	4	4	4
Media and communication equipment workers	3	3	3	3	3	3	3	3	3	3
Other healthcare practitioners and technical	3	3	3	3	3	3	3	3	3	3
Agricultural workers	3	3	3	3	3	3	2	2	2	2
Mathematical science	2	2	2	2	2	2	2	2	2	2
Occupational therapy and physical therapist	2	2	2	2	2	2	2	2	2	2
Supervisors of personal care and service workers	2	2	2	2	2	2	2	2	2	2
Communications equipment operators	2	2	2	2	2	2	2	2	2	2
Funeral service workers	2	2	2	2	2	2	2	2	2	2
Forest, conservation, and logging workers	2	2	2	2	2	2	2	2	2	2
Baggage porters, bellhops, and concierges	1	2	2	2	2	2	2	2	2	2
Fishing and hunting workers	1	1	1	1	1	1	1	1	1	1
Air transportation workers	1	1	1	1	1	1	1	1	1	1
Rail transportation workers	1	1	1	1	1	1	1	1	1	1
Water transportation workers	1	1	1	1	1	1	1	1	1	1
Religious workers	0	0	0	0	0	0	0	0	0	0
Supervisors of farming, fishing, and forestry	0	0	0	0	0	0	0	0	0	0
Military	0	0	0	0	0	0	0	0	0	0

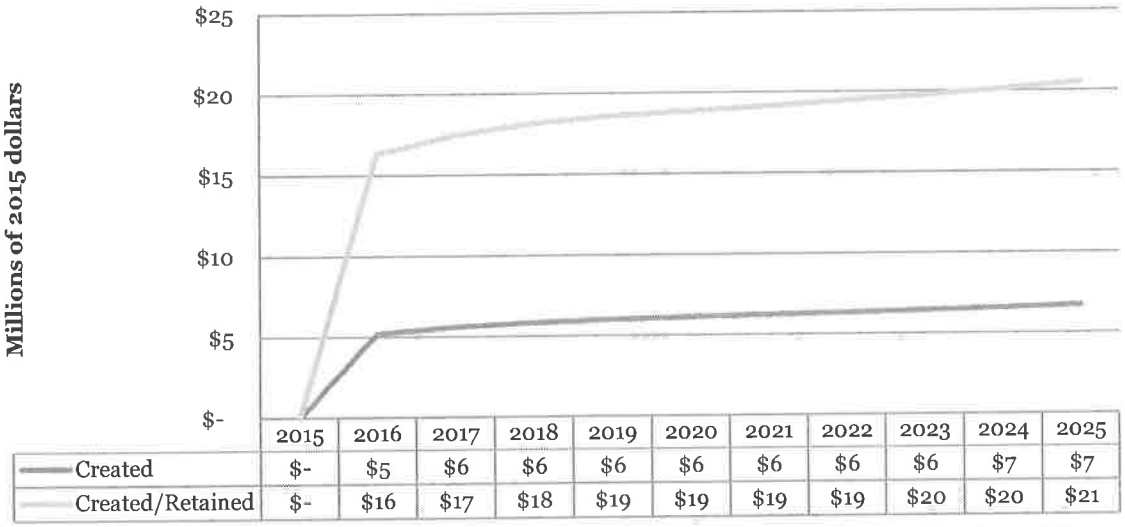
The categories from *Table 1* and *Table 2* (in blue and gold, respectively) are with the NAICS classifications from the U.S. Census on like firms in the same industry. *Table 3* (in red) works based on the Standard Occupational Classification (SOC), which classifies the job by the type of task rather than the industry of the employer.[7] For instance, a computer or IT professional can work for almost any industry. According to NAICS, one such employee working for a car or aerospace manufacturing firm counts as a "manufacturing" worker even if their daily tasks would have little to do with the production occupations normally associated with that industry. The same would be true in conceiving of them as a "healthcare worker" if doing server work or data management for a hospital. The SOC codes above, in red, corrects for this by looking at the type of job and then sorting the results into the categories.

The results above concentrate in certain industries for two reasons. Foremost, the economy of rural Ohio heavily relies on the agribusiness supply-chain, including farm itself, chemical manufacturing, transportation of bulk commodities, and food processing and manufacturing. These are many of the industries that the data from other states shows as the ones most likely to receive a boost from NMTC or RBIC.[8] Such states include Florida, Illinois, Louisiana, Missouri, and Mississippi, with the Prairie State and the Show Me State being the closest analogs to the rural Ohio economy. Furthermore, when calculating the inputs for the REMI model, the model results above include an adjustment made for the industry mixture of the Ohio economy. Some of the NMTC data showed industries such as paper manufacturing and petroleum products having a benefit under those programs; however, in order for those industries to benefit, there needs to be the underlying business conditions in a region (a resource endowment, a strong industry cluster, or some other factor) for them to thrive in the first place. The addition of the adjustment to industry mixture increases the initial allocation to industries such as food manufacturing above, which contributes to the degree of the results.

[7] <http://www.bls.gov/soc/>
[8] More detail is available in the appendix

Fiscal Impact Results

Tax Revenues



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Created	$-	$5	$6	$6	$6	$6	$6	$6	$6	$7	$7
Created/Retained	$-	$16	$17	$18	$19	$19	$19	$19	$20	$20	$21

Figure 3.1 – This illustrates the tax revenue for the state of Ohio associated with the additional business activity, payroll, and consumer spending in the simulations. The "pickup" for the state is anywhere from $5 million to $21 million per year. This depends on the initial assumption about the type of job counted, which balances against the credit costs below.

Benefit-Cost Analysis (BCA) and Return-on-Investment (ROI)

JOBS CREATED

	3% discount	7% discount
Present Value of Benefits (revenues)	$53.31	$45.25
Present Value of Costs (tax credits)	$42.43	$39.36
Net Present Value (NPV)	$10.88	$5.88
Benefit-Cost Ratio (BCR)	1.26	1.15

JOBS CREATED/RETAINED

	3% discount	7% discount
Present Value of Benefits (revenues)	$164.65	$139.86
Present Value of Costs (tax credits)	$42.43	$39.36
Net Present Value (NPV)	$122.22	$100.49
Benefit-Cost Ratio (BCR)	3.88	3.55

The above shows the calculation of the fiscal benefit (the tax revenues) versus the fiscal cost (the liability represented by the tax credits) versus each other. Under the most expansive definition of job creation, the fiscal benefits of RBICs in Ohio approach 4:1. However, in the conservative case, the state budget is close to a breakeven point. These results are over a decade, which is a typical window for assessing these types of programs in many states (and a standard with such programs federally, though some state do rely on three or five years).

Regional Economic Models, Inc. (REMI)

REMI is an economics and policy analysis firm specializing in services related to modeling. The headquarters of the firm is in Amherst, MA. Its consulting practice resides in the Washington, DC office. It started as a research project at the University of Massachusetts-Amherst (UMass) by a professor named Dr. George I. Treyz. In the late 1970s, Dr. Treyz developed an economic model to assess the potential impact of expanding and tolling the "MassPike," or Interstate 90 from Boston west to Worcester, Springfield, and connecting into the New York State Thruway in Albany. He later generalized the methodology of the Massachusetts model into all states and counties of the United States and incorporated the present firm in 1980. The current company provides data, software, technical support, and issue-oriented consulting expertise across the United States. The typical REMI "user" in a state produces work for state government agencies, a federal department, a public university, a private consulting firm, or policy research groups. Current REMI clients in the state of Ohio include Team Northeast Ohio (Team NEO)[9] and a report on the proposed tax reform measures of Governor Kasich.[10]

The REMI Model

REMI used a 1-region, 70-sector model of Ohio to perform this analysis. Such a model adds up the state's 99-counties into a complete whole for the whole state. The 70-sectors approximate the 3-digit NAICS codes, which include the basic sectors of the economy (services, healthcare, manufacturing, and the like) at a medium level of detail. The REMI model itself relies on four primary quantitative methodologies. This allows the model to highlight each methodology's strengths while compensating for their weaknesses:

1. **Input-output tabulation (IO)**[11] – At the core of REMI is an input-output table (also known as a Social Accounting Matrix, or SAM).[12] An IO table captures the structure of the regional or national economy in terms of business-to-business transactions, wages, consumption, and can provide the "multiplier" from an additional dollar of spending or purchase. To provide a classic example, an automobile assembly plant in Michigan will have a lengthy supply chain across the rest of the Midwest and the United States. Vehicle assembly in Michigan requires parts from suppliers in Ohio and Wisconsin. Those suppliers need fabricated and primary metal products from steel mills in Indiana and Pennsylvania, drifting into the MA region. Railroads based in Omaha and Kansas City move final and intermediate products around the Midwest, and Great Lakes boats based in Cleveland or Chicago bring in foreign supplies or iron ore from the Mesabi Range of northern Minnesota via Duluth. An IO model captures the effect of adding a dollar to car demand in Michigan and its echoing through the economy and into other industries. However, IO models have several weaknesses. They are very "rigid" in the computational sense, have no time horizon (only "before" and "after"), no concepts for the scarcity of

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[9] <http://www.clevelandplusbusiness.com/>
[10] Alex Brill and Christy Robinson, "Jobs and Growth Effects of Tax Rate Reductions in Ohio," *Matrix Global Advisors*, May 2015
[11] Also called Leontief modeling after its developer, Wassily Leontief, who won a Nobel Prize for it in 1973, please see, <http://www.econlib.org/library/Enc/bios/Leontief.html>
[12] The raw data for the IO table comes from BLS, please see, "Inter-industry relationships (Input/output matrix)," <http://www.bls.gov/emp/ep_data_input_output_matrix.htm>

labor and capital, and no internal concept for the competitiveness of different industries in dissimilar regions. They also sometimes lack trade flows between regions, they have no variables for energy prices or costs, and no adjustments to how the structure of supply chains and the overall economy responds to supply-side shocks. REMI includes other modeling techniques to deepen the representation of the structure of the economy over time and include these various concepts.

2. **Computable general equilibrium (CGE)** – CGE models are a broad classification of models that rely on the principles of equilibrium economics. In essence, the addition of CGE principles to REMI introduces market-based concepts and illustrations of the supply and demand for labor, housing, consumption, commuting, production, intermediate inputs, imports, exports, government spending, and other concepts. The CGE portion of the model demonstrates what happens after all markets have had a chance to "clear" in relation to each other back to a stable equilibrium. For example, the opening of a large manufacturer of wind turbines near a small city will cause more than just a multiplier at the local and regional level. The new plant will bring jobs with it, and, depending on the size and characteristics of the local labor pool, this will bid the price of labor up in the general economy of the area as more workers find a job at the plant. Certain technical skills may be unavailable locally, so some households will move from other parts of the country in order to work there. This increases the city's population and puts upward pressure on local housing prices, which has the benefit of increasing local property tax revenues for the school board but also discourages others from buying homes. Some households may locate in another city far away. Others will make a calculation based on time, distance, price, and square footage and then locate themselves in a neighboring town with lower housing prices and commute the distance back to the city in order to work there or in the turbine manufacturer. Higher housing prices might also induce a developer to build a new housing subdivision in the area, as well. All of these effects, as well as any consequential loss of competitiveness and output from higher energy costs for commercial and industrial enterprises, are not present in pure IO models but an endogenous part of the CGE structure.

3. **New Economic Geography** – Economic geography is the study of the idea that cities and interconnected industries are the engines of economic growth. REMI utilizes this theory to illustrate how specialized labor pools and industry clusters given a region a competitive advantage relative to its competitors. For instance, for labor inputs, the "selection" of trained surgeons in cities known for university-attached medical schools or healthcare clusters (such as Baltimore, Boston, and Minneapolis/Rochester, Minnesota) is much higher than cities known more for agricultural services or leisure (such as Helena, Montana). Under *ceteris paribus*, a hospital in a city like Cleveland or Houston is going to have an easier time finding a qualified, productive worker than a similar facility in Las Cruces, New Mexico or Chattanooga, Tennessee. This forms part of the competitiveness measures, particularly for labor-intensive industries like healthcare, finance, insurance, entertainment, and professional and technical services. The same process is in effect for capital-intensive or intermediate input-reliant firms in terms of their relative access to a concentrated supply chain. These industries tend to cluster on

top of each other in a certain niches across the country, such as with the textiles and furniture industries in the Southeast, agribusiness in the Midwest, and shipbuilding on the Gulf Coast from Texas to Louisiana, Alabama, Mississippi, and western Florida. The size and overall health of these clusters is important to the economic wellbeing of any region or city. Different parts of the United States tend to specialized in a handful of key industries—maintaining them is essential to maintaining local growth and the quality of the regional economy and its growth in the long-term.

4. **Econometrics** – REMI uses historical data to determine the parameters necessary to populate the mathematics of the model. This includes estimating elasticity (the implicit slope of supply and demand curves), terms, and "time lags" on how long it takes an individual market to adjust back to equilibrium. Some markets, such as that for labor, tend to work relatively quickly as people and firms look for jobs and employees while other, such as housing, tend to take more time as buyers, sellers, developers, banks, and regulators are always trying to catch-up to a new set of incentives in regional and national housing markets. Some equations in the model are entirely econometric in nature, and this allows the IO and CGE portions of the model to work with each other in a truly dynamic, multiyear structure with multiple regions.

The methodology and equations set in REMI are peer-reviewed and available to the public.[13] The initial publications by REMI's founder, Dr. George I. Treyz, and his team have appeared in such publications as the *Journal of Regional Science*,[14] the *Review of Economics and Statistics*,[15] and the *American Economic Review*.[16] The data inside REMI comes from public data agencies such as the BEA, BLS, EIA, U.S. Census, the U.S. Department of Defense, the U.S. Department of Education, and several other sources.[17] Trends in the macroeconomic portion of the model are from the BLS industry forecast and the Research Seminar in Quantitative Economics (RSQE) at the University of Michigan-Ann Arbor.[18] This all provides the data and methodologies for running exogenous policy simulations in the REMI model.

The fiscal information in these simulations came from the online data of the Ohio Department of Taxation by revenue source, type, and any major changes over time.[19] This becomes part of an "effective rate" basis over the information in the REMI model. For instance, if the historical correlation between personal income growth in Ohio and revenues to the state personal income taxes every $100 produces $1 in tax revenues, this becomes an "effective rate" of around 1% (though the historical one is closer to 4% or 5%). The same is true of states sales taxes and some

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[13] For the full PDF of model equations, please see, <http://tinyurl.com/lgnbgus>
[14] Dan S. Rickman, Gang Shao, and George I. Treyz, "Multiregional Stock Adjustment Equations of Residential and Nonresidential Investment in Structure," *Journal of Regional Science*, Vol. 33 (2), 1993, pp. 207-2019
[15] George I. Treyz, Dan S. Rickman, and Michael J. Greenwood, "The Dynamics of U.S. Internal Migration," *Review of Economics and Statistics*, Vol. LXXV, No. 2, May 1993, pp. 209-214
[16] Please see, <http://cas.umkc.edu/econ/economics/faculty/eaton/Eaton_main/Article%2018.pdf>
[17] For a full accounting of the data sources and estimation procedures in the REMI model, please see, <http://www.remi.com/download/documentation/pi+/pi+_version_1.6/Data_Sources_and_Estimation_Procedures.pdf>
[18] Their homepage on the Michigan and American economies is here, <http://rsqe.econ.lsa.umich.edu/>
[19] <http://www.tax.ohio.gov/Researcher/other_tax_statistics.aspx>

other business taxes and fees. The detailed underlying structure of the REMI model allows for this assessment of the tax revenues and their changes, which is part of the flowchart diagram in *Figure 3.1* on the REMI model structure.

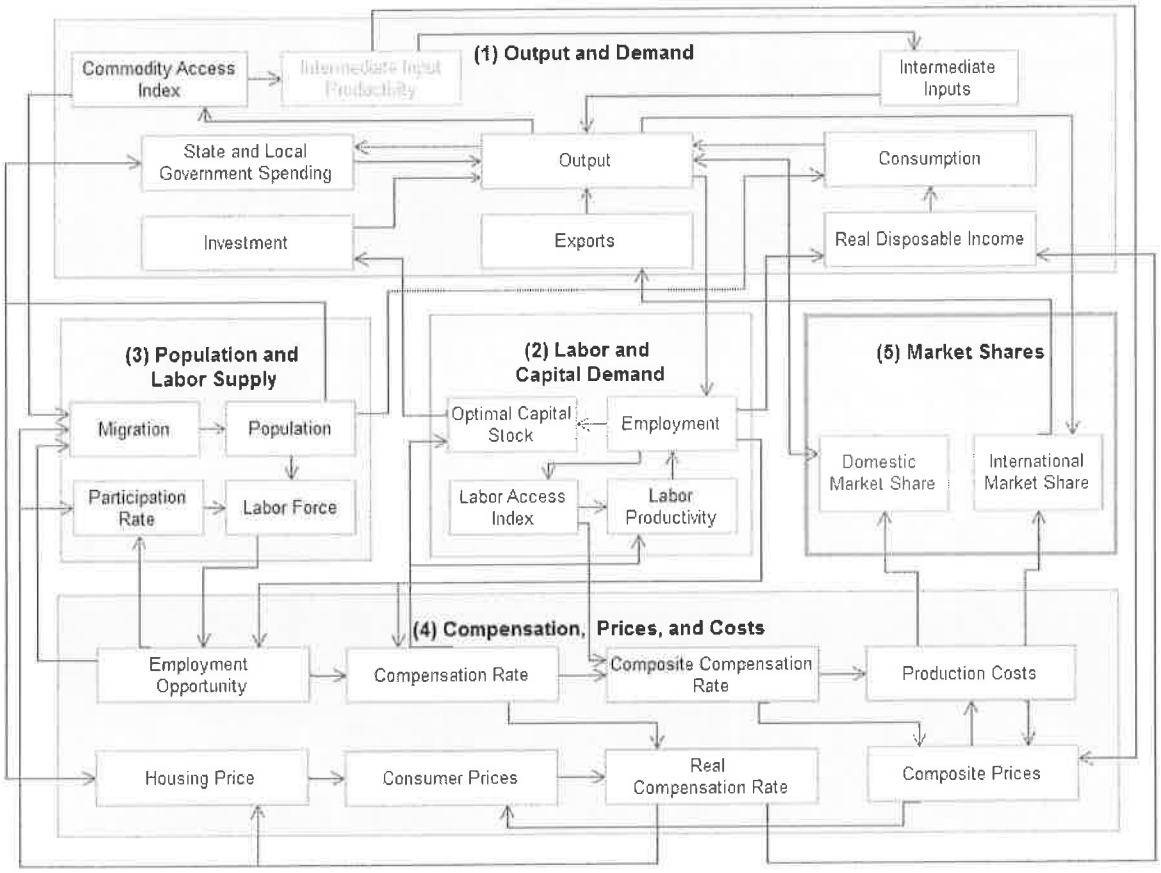

Figure 4.1 – This shows the explicit structure of PI+ with cause-and-effect linkages between different concepts and sectors of the economy and demographics.

Each block in the above structure of *Figure 5.7* describes a different portion of the economy. Block 1 is the macroeconomics of the model with final demand and GDP by component. The calculations in Block 2 make up the "business" perspective on the economy where firms will maximize profits by minimizing costs in hiring decisions (employment) and capital (their investments). Block 3 is a full demographic model with natural changes, labor mobility within the United States, and international migration and emigration. Block 3 also includes the interactions of households with the general economy through labor force participation, wages, and consumer spending. Block 4 introduces equilibrium concepts to the labor market concepts, the cost of living (including energy prices), and production costs (for labor, capital, fuel inputs, and intermediate goods). Block 5 illustrates the competitiveness of a region with explicit regional purchase coefficients (RPCs), which quantify how likely an area is to keep imports away while moving its own exports out to other regions and countries.

Development of Model Inputs

The primary data set for the inputs to these simulations covered alike NMTC policies in other states and how other firms in those states developed in terms of credit allocation, industrial mixture, and jobs created or created/retained.

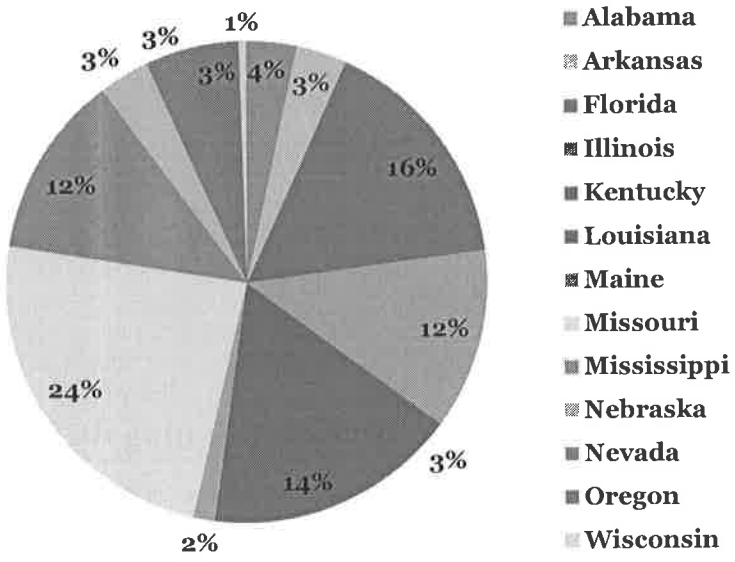

Figure 5.1 – The above pie graph shows the home states of the example projects. In total, there were over 200+ projects in the portfolio sample from several investment firms. These are all states with some version of an NMTC or RBIC programs, though some are more extensive than the others are. Semi-urban, non-coastal, and Midwestern states feature heavily in this mixture, including large samples from Illinois, Missouri, and Gulf Coast states such as Florida, Louisiana, and Mississippi. These states have a large number of rural projects and have economies with structures similar to Ohio, particularly with the Midwestern states.

The data provided included the NAICS, jobs created, jobs retained, rural status (yes/no), and the state allocation for each project. First, we removed the examples for urban areas to leave only the examples from rural areas. The ORJA only allows for qualifying credits in rural areas, hence this keeps the statistical sample closer to the anticipated reality in the Cyclone State. Dividing the size of the credit by the number of jobs by industry produced a factor of "the average number of jobs per dollar of credit" or "the average amount in credits needed to produce a job." This implicit elasticity helped drive the inputs. For instance, if the rural machinery firms in the data sample received a total of $5 million in credits but generated 50 jobs, then the average cost per job in the same was $100,000 each. To determine how much of the allocation went between the various industries, the simulations used a simple proportion (for instance, if the total was $10 and Industry Q received $2, then 20% of all allocations flow to Industry Q and its jobs) save for a small adjustment made for Ohio's industry mixture. We multiplied the projected allocation by Ohio's location quotient (LQ), relative to the nation, to bias the allocation intentionally towards industries with larger concentrations in Ohio and away from smaller ones.

Figure 5.2 – The above is the allocation of the $60 million in total credits accounting for Ohio's industry mixture. Industries with a heavy presence in Ohio beforehand—such as food manufacturing and machinery manufacturing—feature heavily. This is to Ohio's benefit; given these are common industries to find in a NMTC portfolio throughout the United States.

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Scott Nystrom[20] received his B.A. in history, his B.S. in economics, and his M.A. in economic history from Iowa State University[21] in Ames, IA. He has worked for REMI since 2011, and he is the main point of contact in its Washington, DC office for training, technical support, and for economic consulting. Mr. Nystrom works on a daily basis with clients across the United States and the rest of the world in state government, federal organs, provincial authorities, regional councils, consulting firms, universities, foundations, and non-profit research groups. His major projects have included economic analyses of the federal "fiscal cliff,"[22] Keystone XL pipeline,[23] the $500 billion long-range regional plan for Southern California Association of Governments (SCAG),[24] and Medicaid expansion (with county-level details) in North Carolina.[25] His work on carbon taxes includes similar analyses for Massachusetts, Washington, California, and at the national-level for Citizens' Climate Lobby (CCL) in concert with Synapse Energy Economics[26] out of Cambridge, Massachusetts. His other responsibilities include integrating energy models with REMI PI+, modeling transportation, commuting patterns, and business development and client service travel throughout Canada and the United States.

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[20] Please see, <https://www.linkedin.com/pub/scott-nystrom/5b/274/337>
[21] <http://www.iastate.edu/>
[22] Scott Nystrom, Chris Brown, and David Brown, "Cheating the Future: The Price for Not Fixing Entitlements," *Third Way*, February 2013, <http://content.thirdway.org/publications/656/Third_Way_Report_-_Cheating_the_Future_The_Price_of_Not_Fixing_Entitlements.pdf>
[23] Scott Nystrom and William W. Wade, "The Keystone XL Pipeline: REMI Estimates of Economic Impacts from Construction and Operations based on the Keystone Record," *Energy and Water Economics*, February 29, 2012, <http://tinyurl.com/nff6bnt>
[24] Scott Nystrom and Zilin Cui, <http://rtpses.scag.ca.gov/Pages/default.aspx>
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[26] <http://www.synapse-energy.com/>

Notes