

Ohio Third Frontier

Analysis of Performance

Battelle Technology Partnership Practice
September 2013

Background

Prior Analysis of Performance:

- The Ohio Third Frontier Commission and Advisory Board engaged SRI International, in partnership with Georgia Tech, to complete an economic impact study of the Ohio Third Frontier (OTF). The findings from this analysis were released in September 2009.
- As a result of the data presented in the SRI report, members of both the Commission and Advisory Board felt that there were opportunities to further explore quantitatively the impact of the Ohio Third Frontier on the State's economy. This work was undertaken in partnership with the Ohio Business Roundtable (OBRT) and presented in December 2009.

Purpose of Current Analysis of Performance:

- To conduct a quantitative analysis of the performance of OTF for the time period January 2009 to December 2012 to better understand how the program has performed since the prior studies.
- To review prior methodological techniques and make improvements to the analysis where possible.

Methodological Differences: Bottom-Up vs. Top-Down

- Battelle approach made modifications to the earlier SRI and subsequent OBRT modeling in order to provide a conservative and reasonable estimate of the economic impacts of OTF. Key modifications include:
 - The previous analyses were based on a “top-down” analysis of the overall spending associated with the OTF program. That analysis treated OTF primarily as a source of spending, which was highly concentrated in research spending, and was significantly impacted by reported matching funds. The Battelle approach is “bottom-up” and treats OTF as an investment in job creation. Our approach was based on the reported job creation figures tracked by OTF, not its associated spending. OTF-supported construction and capital expenditures were added to the jobs based analysis. This is a more conservative approach.
 - The direct jobs created or retained were analyzed to remove duplicate records which occurs when a company participates in multiple OTF programs.
 - The impacts of each of the jobs reported were analyzed using data on the industry (NAICs) code of each company. This allows for greater specificity in terms of the indirect and induced modeling algorithms.
 - The fiscal (state and local government revenues) impacts of the OTF are estimated based on overall estimates of State and local government revenues from the IMPLAN model, decomposed into the respective State and local share based on U.S. Bureau of the Census data on state and local government finances in Ohio. This varies from the original analysis conducted by OBRT which relied on broad assumptions, not specific IMPLAN modeling.

Two Primary Inputs used to Analyze OTF ROI for 2009 through 2012

- **OTF Spending**
 - In addition to the spending that occurred during the four year period, the cumulative figures also include 2007 and 2008 spending on programs generating impacts in 2009 and beyond
- **Direct Jobs** being reported by grantees as having been created/retained between 2009 and 2012 as a result of OTF investments
 - Duplicate jobs that were reported as a result of funding or assistance from multiple grants were removed

	2009	2010	2011	2012
Annual OTF Spending	\$144,949,333	\$136,610,312	\$162,582,596	\$118,429,122
Cumulative OTF Spending*	\$235,520,772	\$372,131,084	\$534,713,680	\$653,142,802
Cumulative Direct Jobs	1,463	3,561	5,002	7,780

* Includes 2007 and 2008 spending on programs generating impacts in 2009 and beyond.

Source: Ohio Third Frontier Semi-Annual Reports

OTF Investment Portfolio Characteristics

- Since 2009, OTF has invested in 1,080 companies either directly or through its technology intermediaries.*
 - 65% of the portfolio is within one of the targeted opportunity areas.**
 - 121 companies in the portfolio have created/retained 11 or more jobs as a result of the investment to date.

Growth in Employment	# of Companies
0 to 10	959
11 to 25	76
26 to 50	23
51+	22
Total*	1080

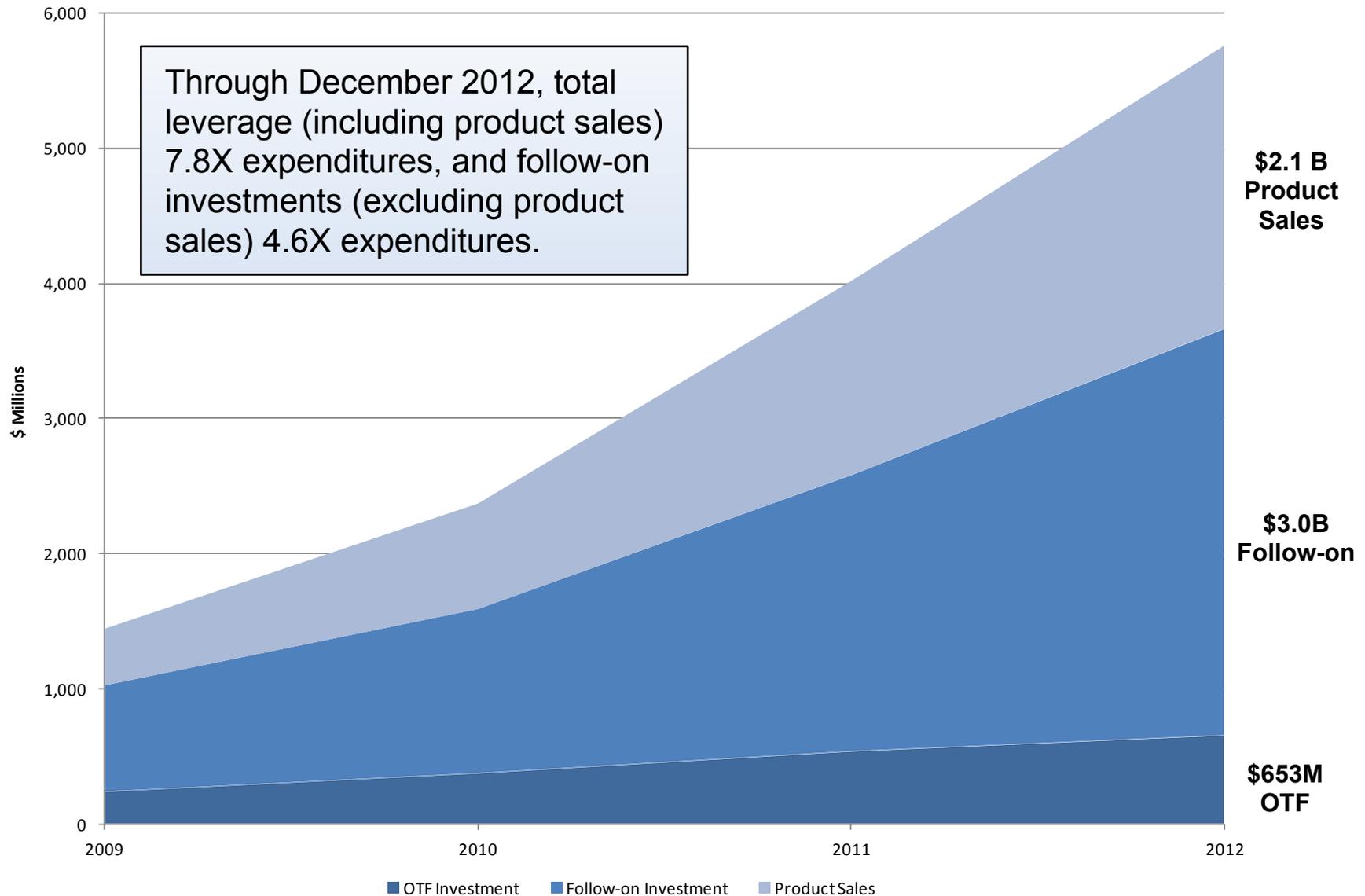
Notes:

* Technology Intermediaries include ESPs and Pre-Seed Funds. While many of the research grants to universities, including Wright Centers, RCPs and WPs, have worked with companies and created jobs, the data at the company level is not currently available for analysis.

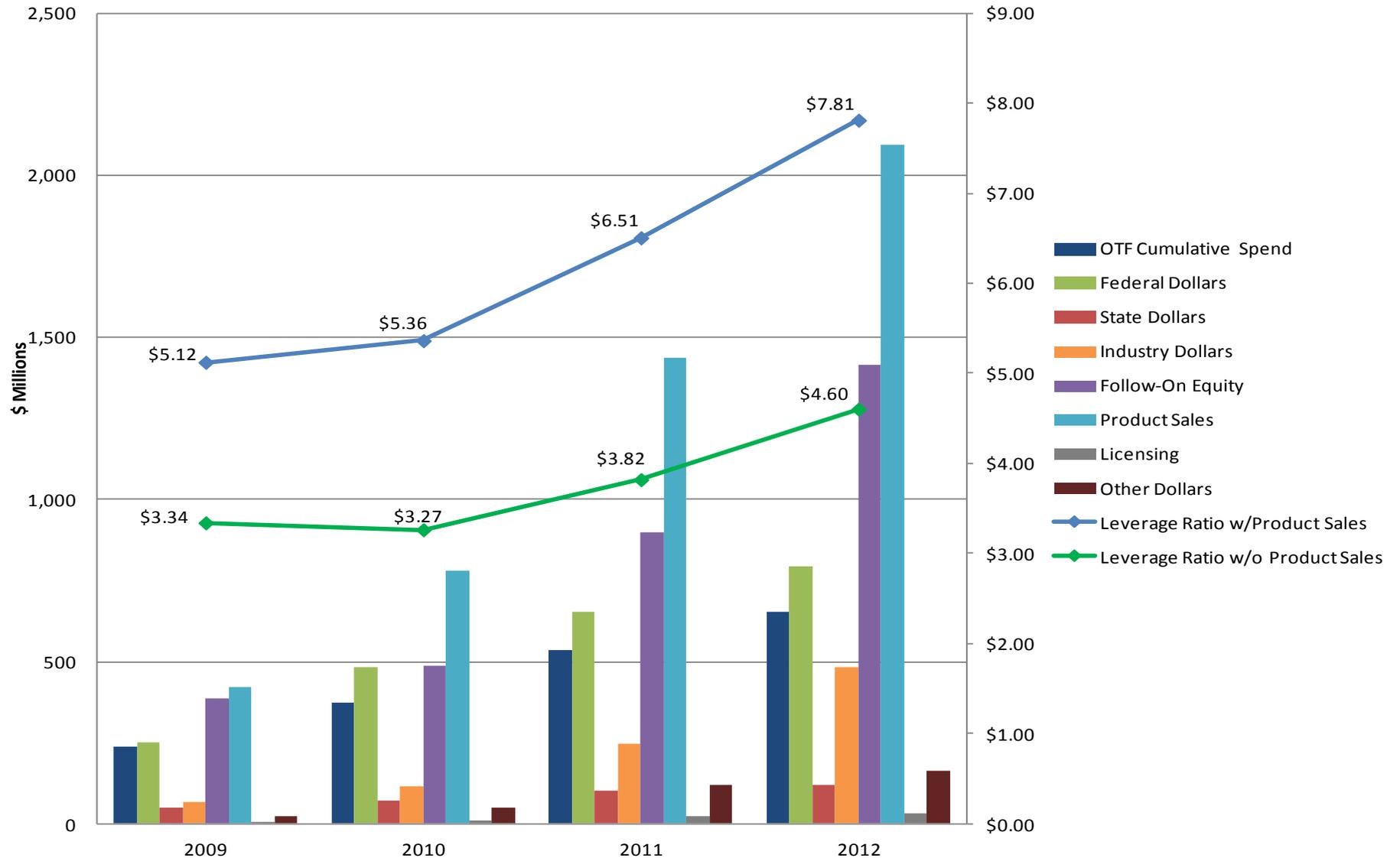
** For purposes of the categorization, the analysis considered both Agbiosciences as well as Unconventional Oil and Gas as focus areas. If these two sectors were not included, 60% of the portfolio would be within one of the targeted opportunity areas.

Focus Area	# of Companies
Advanced Materials	74
0 to 10	64
11 to 25	6
26 to 50	3
51+	1
Aerospace & Aeropropulsion-Power Mgmt	6
0 to 10	6
Agbiosciences	52
0 to 10	46
11 to 25	4
26 to 50	1
51+	1
Fuel Cells & Energy Storage/Management	28
0 to 10	25
11 to 25	3
Medical Technology	153
0 to 10	133
11 to 25	12
26 to 50	3
51+	5
Sensing and Automation Systems	42
0 to 10	37
11 to 25	5
Situational Awareness & Surveillance Systems	20
0 to 10	17
11 to 25	3
Software Applications	300
0 to 10	269
11 to 25	14
26 to 50	10
51+	7
Solar Photovoltaics	23
0 to 10	19
11 to 25	3
26 to 50	1
Other	382
Total Companies* in Portfolio	1080

OTF Portfolio Attracts Sizeable Follow-On Investments and Encompasses Growing Product Sales

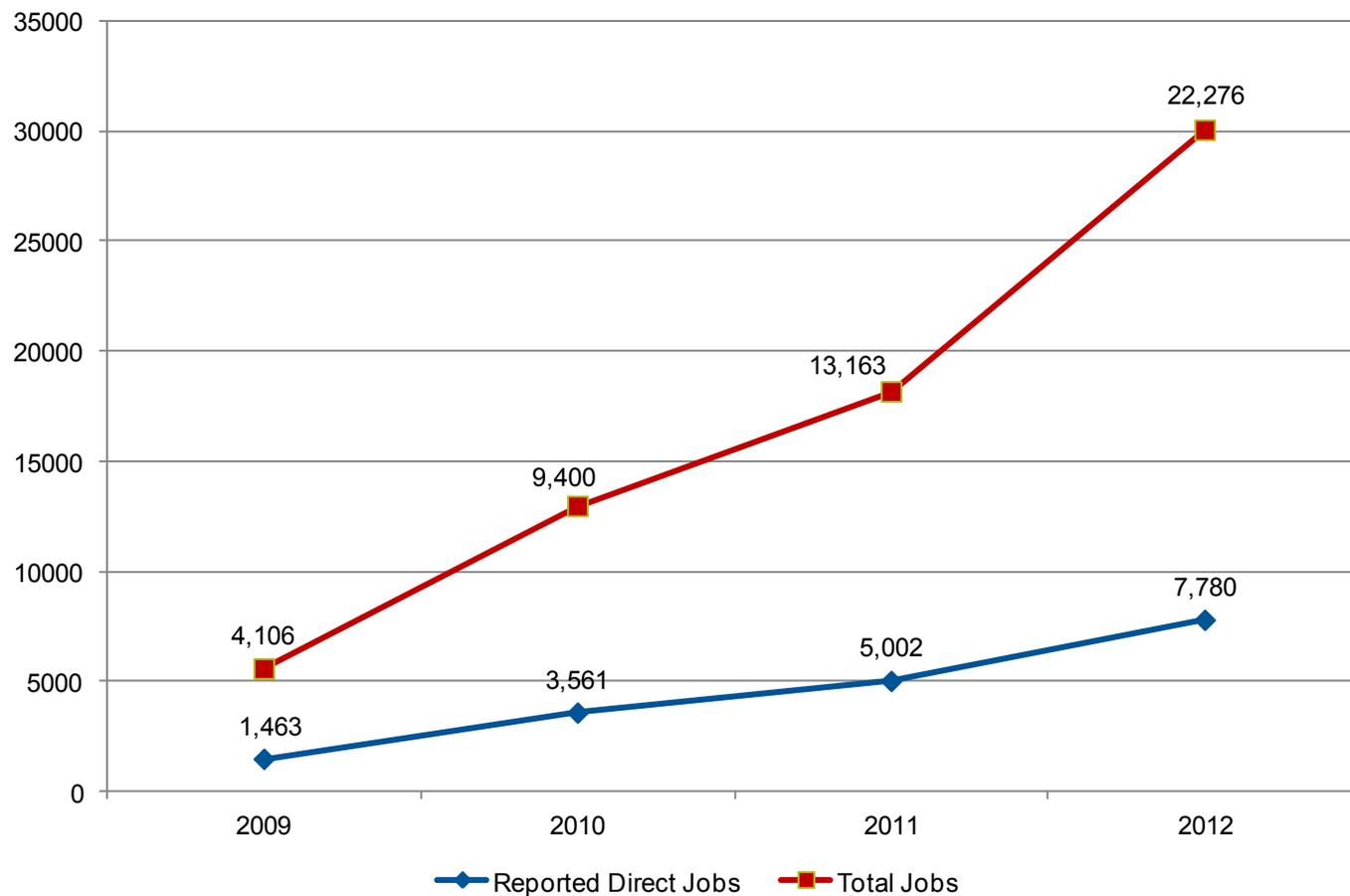


Leverage Continues to Exceed Actual OTF Investments



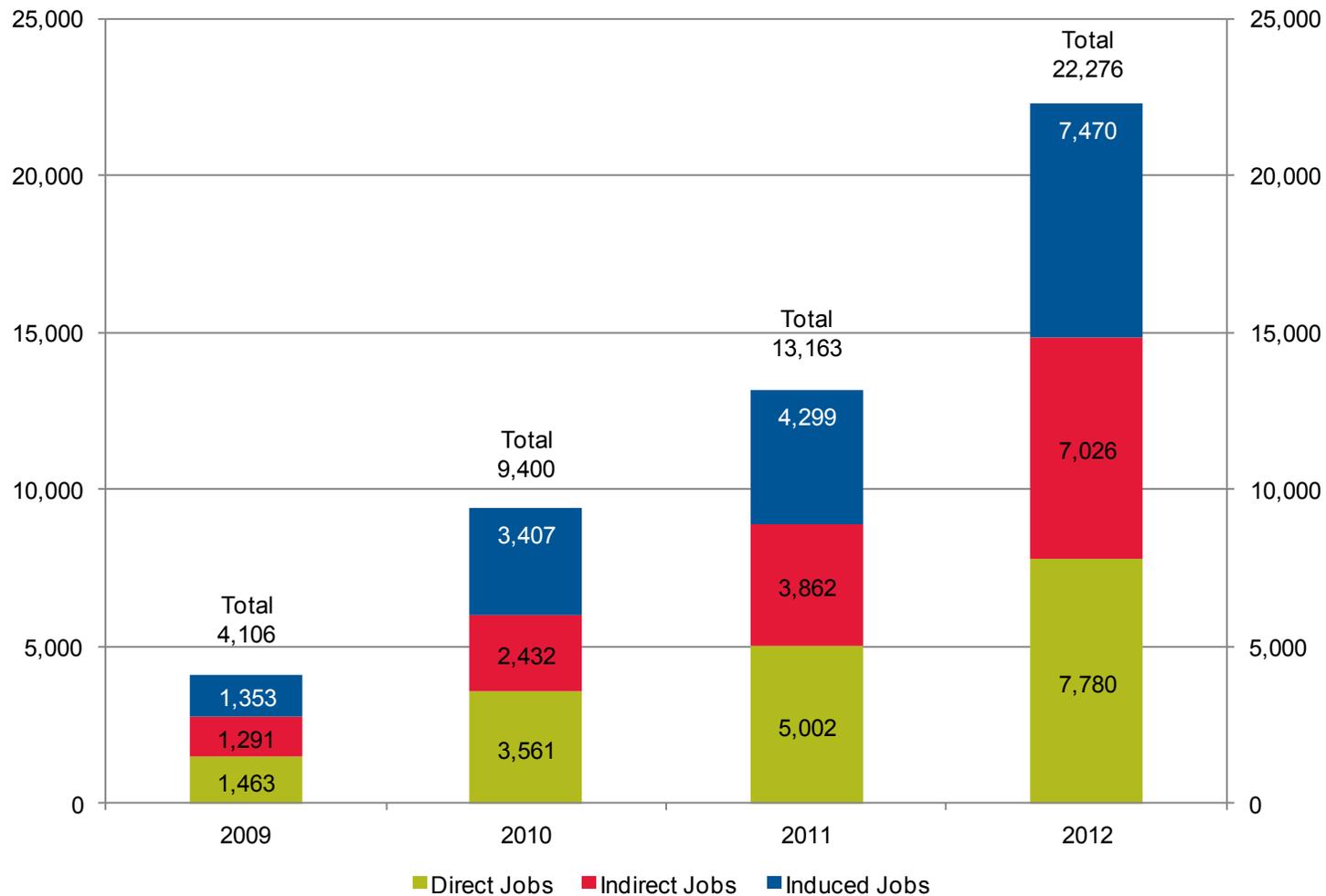
OTF Continues to Generate Significant Employment, even through recession

- Rapid rise in 2012 attributable to two major economic shifts:
 - Increase in the number of manufacturing jobs
 - Improvement in the economy leads to greater level of productivity per worker



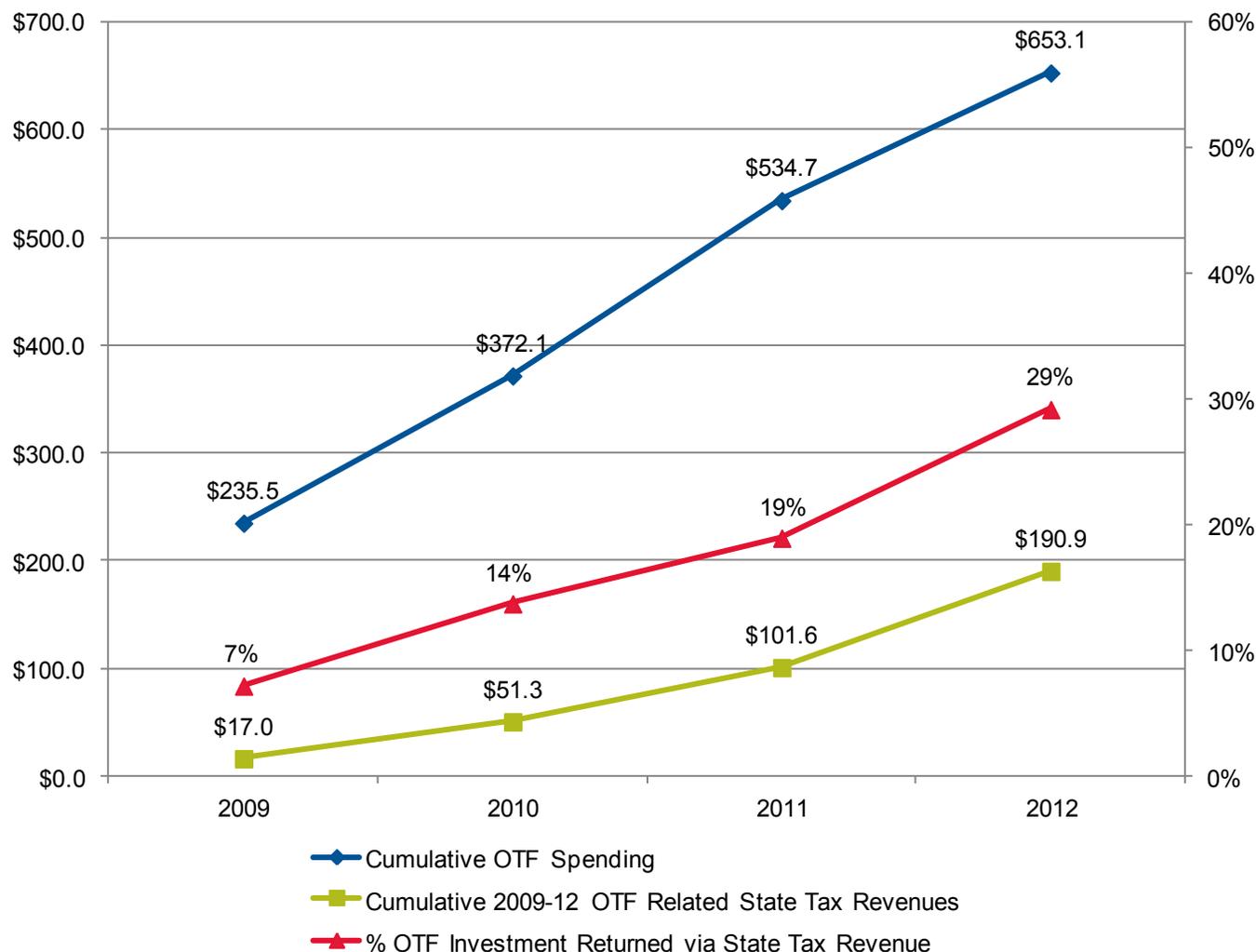
Total Employment Composition

- Direct jobs represents approximately 35% of total jobs across the time period.



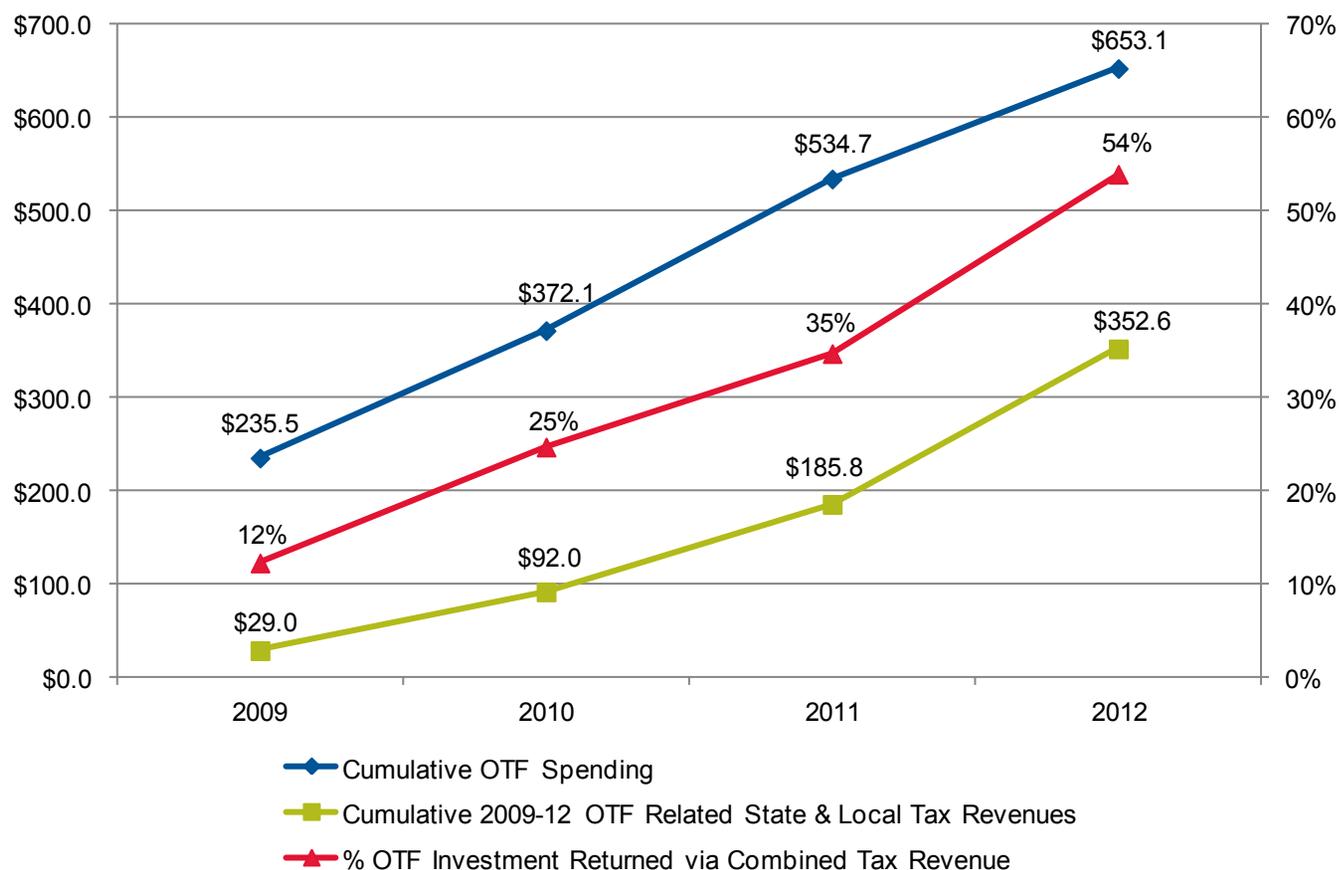
State Tax Revenue Return

- Through December 2012, nearly 1/3 of the cumulative OTF investments had been returned via State tax revenues.



State & Local Tax Revenue Return

- Through December 2012, over ½ of the cumulative OTF investments had been returned via State & Local tax revenues.



Economic Impact of OTF Investments – Positive Outcomes for the State of Ohio

- As of 2012, OTF investments were generating \$4.9 billion in annual output, also often referred to as business volume.
 - For every \$1 in cumulative OTF spending, the State of Ohio was realizing \$7.50 of annual output.
 - This ratio is anticipated to continue to increase as the cumulative economic benefits continue to accrue to the State.

	2009	2010	2011	2012
Reported Direct Jobs	1,463	3,561	5,002	7,780
Total Annual Economic Impacts				
Output	\$738,394,002	\$1,613,021,097	\$2,469,930,682	\$4,899,988,976
Labor Income	\$223,548,880	\$510,537,566	\$748,829,646	\$1,308,965,847
Employment	4,106	9,400	13,163	22,276
State and Local Government Revenue	\$28,961,725	\$63,065,625	\$93,808,256	\$166,731,752
State Government Revenue	\$17,047,937	\$34,228,457	\$50,299,108	\$89,278,834
Local Government Revenue	\$11,913,788	\$28,837,168	\$43,509,148	\$77,452,918
Annual Output per Cumulative OTF \$ Spent	\$3.14	\$4.33	\$4.62	\$7.50

Source: OTF, Battelle, IMPLAN

Appendix A:

INPUT-OUTPUT ANALYSIS

Input-Output Methodology as a Tool to Calculate Economic Impact

- Estimation of job creation makes use of an input-output model to represent the interrelationships among economic sectors through the use of multipliers.
 - Input-output multipliers are based on the flow of commodities between industries, consumers and institutions in a regional economy.
 - Premise is that every dollar spent in the economy (the direct impact) is re-spent on the purchase of additional goods or services generating additional economic activity and impact (the multiplier – indirect and induced effect).
 - These trade flows built into the model permit estimating the impacts of one sector on other sectors. These impacts consist of three types:
 - » **Direct** - the specific impact of the sector(s) in question
 - » **Indirect** - the impact on suppliers to the focus industry
 - » **Induced** - the additional economic impact of the spending of these suppliers and employees in the overall economy
 - » **Total** - the aggregated direct, indirect, and induced impacts
- This analysis was performed using Ohio-specific input-output models from the Minnesota IMPLAN Group (IMPLAN).
 - The IMPLAN model is the most widely used model in the nation and is based on the U.S. Bureau of Economic Analysis (BEA) data.
 - The model also includes information for each sector on employee compensation; proprietary and property income; personal consumption expenditure; federal, state, and local expenditure; inventory and capital formation; and imports and exports.