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Business



The **Economic & Fiscal Impacts**
of Rock Ventures and the Family of Companies on the
City of Detroit
and the State of Michigan

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Table of Contents

I. INTRODUCTION	4
II. EXECUTIVE SUMMARY	5
III. OVERVIEW	7
IV. METHODOLOGY	10
V. CITIES & REGIONAL ECONOMIES	15
Agglomeration Theory	17
Evidence of Agglomeration in Detroit	18
VI. HISTORIC INVESTMENTS, 2011-2016: ECONOMIC & FISCAL IMPACTS	24
Overview	25
Economic Impacts	27
Fiscal Impacts	30
Summary	32
VII. FUTURE INVESTMENTS, 2017-2022 & BEYOND: ECONOMIC & FISCAL IMPACTS	32
Overview	34
Economic Impacts	36
Fiscal Impacts	39
Summary	40
VIII. CONCLUSIONS	41
IX. APPENDICES	43
Endnotes	44
Acknowledgments	47

The revitalization of Downtown Detroit is an urban comeback story now known around the world. Left for dead 20 years ago, continual, incremental efforts starting in the mid-1990s have resulted in steady progress toward the city's remarkable turnaround.

Detroit, the noun, means many things: a metropolitan area, a city on the Great Lakes, the home of the Big Three car manufacturers, Motown and cutting edge music, and sports teams. It is also synonymous with the major city that suffered the worst urban decline in the country during the late 20th century. The once-tarnished Detroit brand affected the ability of individuals, companies, and municipalities to raise capital for new investment.

Since 2010, there is tangible catalytic change taking place in Downtown Detroit that is transforming the city and its brand. These changes include the revival of the Big Three, the city's emergence from bankruptcy, and even the superior performance of its sports teams.

Downtown Detroit's rebirth is more than just reputation and brand building for the region. It has also laid the groundwork for new economic opportunities. The economy is now being driven by the "knowledge" economy, a layering on top of the industrial economy. Our research in Michigan¹ and in large metropolitan areas throughout the country² demonstrates that the knowledge economy locates in walkable urban places, both in center cities and in urbanizing suburbs. In the past, metropolitan Detroit lagged in developing walkable urban

places, which reduced the growth and expansion of its knowledge economy businesses.

During the current economic recovery, which began in 2010, metropolitan Detroit has added walkable urban development faster than any of the country's 30 largest metropolitan areas, according to a recent George Washington University School of Business (GWSB) research report.³ Much of this walkable urban growth has been catalyzed by remarkable development in Downtown Detroit. This development is the result of Rock Ventures Family of Companies' (RVFOC) move to, and investment in, the city starting in late 2010, layered on top of already pioneering investments made by Olympia Development, General Motors, the Ford family, civic leaders galvanized into the Downtown Detroit Partnership, and major foundations, among others.

This report demonstrates the economic and fiscal impacts of RVFOC's activities on Downtown Detroit, the City of Detroit, and the State of Michigan. It will also demonstrate that Rock Ventures' decision to locate in Downtown Detroit—a walkable urban place versus its former drivable sub-urban location—was essential to the success of its corporate investments, the city's turnaround, and its greater impact on the region.

About

ROCK VENTURES AND THE FAMILY OF COMPANIES

Detroit-based Rock Ventures serves and connects Quicken Loans Founder and Cleveland Cavaliers Majority Owner Dan Gilbert's portfolio of more than 100 companies. The Family of Companies includes Quicken Loans, the nation's second largest retail home mortgage lender; real estate firm Bedrock; gaming company JACK Entertainment; 2016 NBA Champion Cleveland Cavaliers; and private equity firm Rockbridge Growth Equity. The Rock Ventures Family of Companies' mission is to increase growth, innovation, and prosperity in the cities in which its more than 30,000 team members live, work, and play. Key Family of Companies initiatives include community investments, philanthropy, and economic development.

Dan Gilbert moved Quicken Loans and its 2,400 team members from the suburbs to Downtown Detroit in late 2010. This was the first step of many taken to help lead the transformation of a great American city and invest in an urban environment in order to attract top talent. The Family of Companies has now grown in six years to more than 100 companies and over 17,000 team members in Detroit.

Executive Summary

Most of the largest metropolitan areas in the country are experiencing a shift toward higher density, walkable urban development patterns, layering on top of the late-20th century lower density, drivable sub-urban approach.

This analysis focuses on the economic and fiscal impacts of walkable urbanism in redeveloping Downtown Detroit on the State of Michigan and the City of Detroit. These economic and fiscal impacts include "agglomeration effects," which is the growth due to (1) business and market efficiencies and (2) the opportunities experienced by companies when they co-locate in higher density, walkable urban places.

Downtown Detroit is in the midst of one of the best-known, yet unexpected, American urban turnarounds of the early 21st century. The changes the city is experiencing are directly related to a major knowledge-based company co-locating in a dense, walkable urban environment with other companies. In doing so, these knowledge-sector companies have been better able to share ideas, compete for employees, attract more educated employees, and grow in ways they could not have without being located in this walkable urban environment. In other words, the changes to the economy would not have been possible in drivable sub-urban business parks that work for many businesses but are less than optimal for knowledge economy companies.

The George Washington University, in conjunction with peer-review professors at Wayne State, Michigan State University, and The University of Michigan, conducted an economic and fiscal impact study of Rock Ventures and the Family of Companies (RVFOC) on the State of Michigan and the City of Detroit.

The study team's ongoing case-study research supports the assertion that locating knowledge-based businesses in walkable urban environments is a crucial factor in the continued growth of these companies. This study seeks to answer three main questions:

CITIES & REGIONAL ECONOMIES:

This study found evidence to suggest that RVFOC's move to Downtown Detroit had a substantial impact on the local and state economy. The importance of this structural shift in the regional economy continues in the future.

Between 2011 to 2016, Rock Ventures and the Family of Companies invested \$8 billion into the Detroit and Michigan economies, yielding \$17.8 billion in annual economic output, \$1.6 billion in annual state and local taxes, and sustaining over 23,000 jobs yearly.

- 1. To what extent has RVFOC catalyzed new growth—both within RVFOC, the City of Detroit, and the rest of the state—due to the co-location of employment in a dense, urban environment?**
- 2. What are the economic and fiscal impacts of the RVFOC \$8.0 billion investments that have already occurred in Michigan and the City of Detroit?**
- 3. What are the projected economic and fiscal impacts of RVFOC's planned \$3.9 billion investments (2017-2022) on the State of Michigan and the City of Detroit?**

HISTORIC INVESTMENTS:

Between 2011 and 2016, RVFOC invested \$8.0 billion into the Michigan economy: \$922 million in major capital and real estate improvements (beyond acquisition price, which was not counted since it replaced existing investment), and \$7.0 billion in employee wages, infrastructure, local spending, and other investments. During this period, this investment generated more than \$17.8 billion in statewide economic output and \$1.6 billion in state and local taxes, and also sustained over 23,000 annual jobs. The annualized output effect is equivalent to 1.5 percent of Wayne County's annual output, or 0.3 percent of statewide Michigan annual output.

The study team found evidence of agglomeration effects in an annual wage increase of more than \$1,900 for the average Detroit private sector employee. The total agglomeration effect from 2011 to 2016 of this wage increase was \$5.1 billion in additional economic output, a figure above and beyond what would have been experienced by these investments alone. This amount is 29 percent of the total economic impact from 2011 to 2016, and it is the direct result of locating in a walkable, urban environment such as Downtown Detroit.

The \$17.8 billion in economic output includes the investments and the subsequent economic activity generated in the economy by (1) indirect economic purchases to vendors and suppliers, (2) spending by households, and (3) agglomeration effects. Generally, about 45 percent of this impact is the direct investment, 27 percent is secondary (indirect and induced) impacts in the economy, and 29 percent is related to agglomeration effects. In other words, every dollar invested by the RVFOC had an approximately 2.2-dollar total return on investment in terms of impact to the economy.

Of the \$17.8 billion in total economic impacts, \$1.9 billion (10.5 percent) results from the capital and investments in real estate, \$10.8 billion from other non-capital investments (60.9 percent), and \$5.1 billion from wider economic effects (28.5 percent). On a per-year basis from 2011 to 2016, RVFOC invested \$1.3 billion annually on average, generating \$3.0 billion in economic output and \$328 million in annual taxes.

FUTURE INVESTMENTS:

Over the next six years from 2017 to 2022, RVFOC plans to add an additional 9.2 million square feet to its real estate portfolio, which will further increase its contribution to the statewide

economy. This will total \$3.9 billion over the six years from 2017 to 2022: \$3.6 billion in major capital and real estate improvements, and \$330 million in additional investments beyond existing levels. This will yield \$7.1 billion in additional statewide economic output, sustain 7,960 more jobs, and generate \$408.6 million in additional state and local taxes on top of the current investment from 2011 to 2016. This output effect is equivalent to another 0.6 percent to Wayne County's annual output and 0.1 percent to annual statewide Michigan output.

These forecasted effects are on top of the existing levels of investment. By 2022 this study forecasts significant economic impacts to the state when combining the magnitude of existing levels of investments together with future investments. On an annual basis, RVFOC would be investing \$1.2 billion per year by 2022, growing every year thereafter. This would yield \$3.1 billion in annual output, sustain over 22,500 jobs, and generate \$273 million in annual taxes. These are impacts from non-capital investments and represent the long-run investment of ongoing operations, employment, and other community investment.

THE KEY TO REVITALIZING DOWNTOWN DETROIT:

These economic impacts are generally net new contributions unlikely to have occurred absent a move to Downtown Detroit or some other walkable urban place. Interviews with RVFOC executive leadership indicate that the firm would not have been competitive in its prior drivable sub-urban office park location. RVFOC has a requirement to attract knowledge employees, easily share information and opportunities with other companies and the various divisions of RVFOC, and access the kind of state-of-the-art physical and telecommunications infrastructure that can only happen in a walkable urban place.

The desire of the RVFOC employees to work in—and many times live in—a walkable urban place is the major motivating reason for locating in Downtown Detroit. The growth achieved by RVFOC could not have occurred in a low density, drivable sub-urban location.

Similar research by GWU (*Core Values* 2016) examined 500 companies that moved to downtowns from 2010 to 2015. The top reasons for relocation to downtowns cited by the companies were to attract and retain talented workers, build brand identity, support creative collaboration, be closer to customers and business partners, centralize operations, and support triple-bottom-line business outcomes. This research suggests that downtown moves were for competitive business reasons that were not possible in office parks or remote locations.

Finally, GWU national market analysis (*Foot Traffic Ahead* 2016) suggests that the rent premiums in walkable urban places for commercial space in the Detroit metropolitan region are 12 percent above non-walkable areas. For Downtown Detroit in particular, this premium is 23 percent. Both indicate market demand for walkable urban locations. Furthermore, net lease activity in walkable urban places in the Detroit metro area are outperforming their existing share of regional square footage by over five times growth in market share—the highest among the largest 30 metro areas in the U.S. Thus, market signals suggest that firms are demanding, and paying a premium, for walkable urban office space in order to be competitive.

While a counterfactual cannot be proven, the research suggests the impacts and investments resulting from a move to downtown are mostly net new to the economy. The economic forces unique to dense, walkable urban environments enable them.

OVERVIEW



Overview

Detroit is in the midst of one of the best-known, yet unexpected, American urban turnarounds of the early 21st century. Its reputation as a distressed, decaying city is being transformed. Major investments have shifted Detroit's trajectory from a city in decline to one experiencing a major comeback.

Beginning in the early 1990s, the city's public and foundation sectors joined with the private sector in a coordinated strategy known today as Invest Detroit, a community development financial institution (CDFI) that laid the groundwork for the revitalization reaching maturity today. The role of the Detroit Economic Growth Corporation (DEGC) has been crucial in these pioneering efforts and up until the present day.

Charitable foundations have also invested in Detroit's future, providing leadership and financial resources when the city needed them the most. Significant direct private sector investments from key leaders were made, including the Ilitch family, General Motors, Compuware, Blue Cross Blue Shield of Michigan, CTE Energy, JP Morgan Chase, and many others that have helped turn Downtown Detroit into a vital walkable urban place.

Little Caesars, owned by the Ilitch family, relocated from the suburbs to downtown in 1986, and now the company is rebuilding and doubling the size of its corporate headquarters there. The Ilitch family also owns the Fox Theater, the Detroit Tigers baseball team and Comerica Park, and the Red Wings hockey team. A new arena for the Red Wings opened on October 2017 immediately adjacent to downtown. Encompassing more than 300 acres, the development will be the most significant infill, mixed-use district in Detroit's history.

Beginning in 1996, General Motors has invested more than \$2 billion in the redevelopment of the Renaissance Center, bringing 7,000 employees to downtown. In 2014, JP Morgan Chase committed to a \$100 million, five-year investment in the city, which is home to 2,500 of the firm's employees and more than one million customers in the region.

New local leadership, combined with the State of Michigan urban agenda, also plays an important role in the city's revitalization. In 2016, the U.S. Chamber of Commerce awarded \$4.1 million to the City of Detroit for manufacturing job creation and re-industrialization, and Mayor Mike Duggan and the City Parks and Recreation Department announced an \$11.4 million investment to improve 40 neighborhood parks.

It is fair to say the city's resurgence and momentum stands on a foundation built by many large and small contributions over the past 20 years.

Rock Ventures and the Family of Companies (RVFOC), owned by Dan Gilbert, began investing in Downtown Detroit in 2010, employing a jobs-first strategy built around activities in the following three areas:

- **Employee relocation**
- **Business growth and expansion**
- **Office, apartment, and retail building redevelopment**

The company has substantially increased its presence downtown, growing the initial number of employees based there from approximately 2,400 at the by the end of 2010 to more than 17,700 by the end of 2016.⁴ During this time period, RVFOC also redeveloped more than 60 downtown buildings and 90 properties (including parking lots and structures). Between 2011 and 2016, these real estate capital investments, plus investments in the QLINE light-rail system and Rocket Fiber internet infrastructure, totaled \$922.4 million.⁵ When the company's other civic and major operating investments—local employment spending (RVFOC employees), local purchases, and other investments—are added, RVFOC's investments in Detroit over the six-year period from 2011 through 2016 total \$7.96 billion.

Though concentrated in a small area, this extraordinary investment has had measurable impacts on the entire regional economy. This analysis seeks to quantify the economic and fiscal impacts of this \$7.96 billion investment, as well as forecast and estimate the economic and fiscal impacts of RVFOC investments over the six-year period from 2016 to 2022 and beyond.

STUDY SCOPE

The George Washington University (GWU), in conjunction with peer reviewers from Wayne State University, Michigan State University, and The University of Michigan, conducted an economic impact analysis of RVFOC investments on the State of Michigan and the City of Detroit.

RVFOC invested a total of \$7.96 billion in Detroit from 2011 to 2016, and is forecast to invest an additional \$3.89 billion from 2017 to 2022. This study addresses three main questions:

- 1. To what extent has RVFOC catalyzed new growth—within RVFOC, the City of Detroit, and the rest of the state—due to the co-location of employment in a dense, urban environment?**
- 2. What are the economic and fiscal impacts of the RVFOC \$7.96 billion investments that have already occurred in Michigan and the City of Detroit?**
- 3. What are the projected economic and fiscal impacts of RVFOC's planned \$3.89 billion investments (2017-2022) on the State of Michigan and the City of Detroit?**

This report consists of four main sections. The first section discusses our methodology, which is based on economic impact analysis. It also discusses our techniques to estimate fiscal impacts.

The second section discusses "agglomeration economies"—the economic theory that greater

productivity occurs when businesses cluster in close proximity, such as in a walkable urban environment. This section identifies the economic impacts to the City of Detroit and the State of Michigan that are the product of these agglomeration effects.

The third section quantifies and considers the impacts of RVFOC's \$7.96 billion investments in Detroit from 2011 to 2016. This section will discuss real estate investments, the influx of employees, and other major investments in Detroit.

The fourth section examines the potential future economic impacts of \$3.89 billion in RVFOC investments. These include the additional \$3.56 billion in real estate and other major capital investments RVFOC has planned from 2017 to 2022, which will bring 9.2 million square feet of new office, retail, and multifamily, hotel, and civic development to Detroit. This section also discusses the impacts of other operating investments (employment and non-real estate) that will continue to expand over time.



METHODOLOGY

Methodology

A full understanding of RVFOC’s investments, and their economic impact, will provide empirical evidence for what local leaders, residents, and stakeholders already know: New investments in Detroit during this decade have been essential to the revitalization of the city.

This report seeks to quantify the impacts of these revitalizing investments and their contributions to the State of Michigan and City of Detroit, in terms of jobs, economic activity, gross regional product (GRP), and wages.

With that understanding, this study is an economic impact analysis that estimates the economic impacts of the RVFOC investments to the State of Michigan and City of Detroit. In general, an economic impact analysis is a specific kind of economic study that estimates the impacts of a given project or spending pattern to the regional economy. It results from an understanding that expenditures in one area have reverberating effects throughout the rest of the economy. It is otherwise known as “input-output analysis.” IMPLAN Pro software was used to execute the economic impact analysis, in addition to further modeling analysis conducted by the research team.

ECONOMIC IMPACT ANALYSIS

Critical to understanding economic impact analysis is the fact that economic effects are a flow of expenditures that beginning with spending in one industry, impacts in subsequent industries, and wages provided to individuals. Those earnings are then spent in the economy, creating a continuous flow of impacts throughout the region.

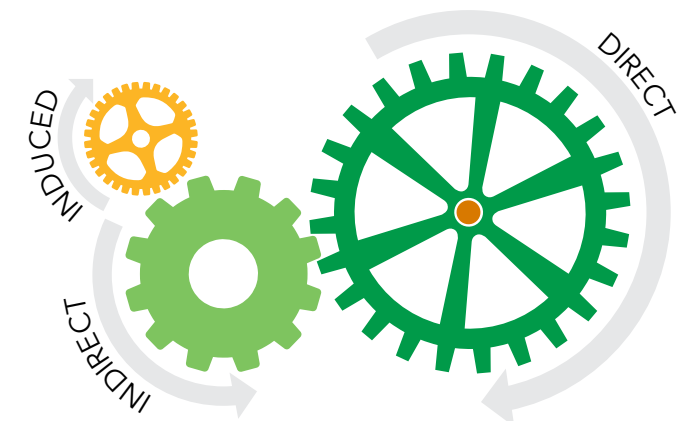
Economic impacts come in three forms: direct effects, indirect effects, and induced effects. They

can be visualized as the gears of a local economy: the direct effect is tied to the engine of additional expenditures, which powers indirect effects, both of which power induced effects.

- **Direct Effects:** Economic activity generated by an injection of spending (known as “change final demand”) into any given industry, or set of industries, in an economy. This is the initial spending—and the first step—in a spending pattern. For example, direct effects are the effects generated from dollars spent on construction of a facility, or dollars spent by tourists in local retail and dining.
- **Indirect Effects:** Second-order economic impacts that result from the inter-industry purchases necessary to produce the goods and services purchased in the direct effects. For

example, a construction company will spend money on several non-construction-related items, such as legal fees, insurance costs, office supplies, and safety equipment. Local businesses will spend on janitorial services, coffee, pantry items, and supplies. These can be thought of as downstream supply chain effects, as other industries begin to benefit from spending in the initial industry.

- **Induced Effects:** Economic impacts generated by the spending patterns of households that, after receiving additional wages from the direct and indirect effects, will use those wages to purchase goods and services. These expenditures subsequently benefit local businesses and produce the induced effect, which impacts the general economy across many sectors.

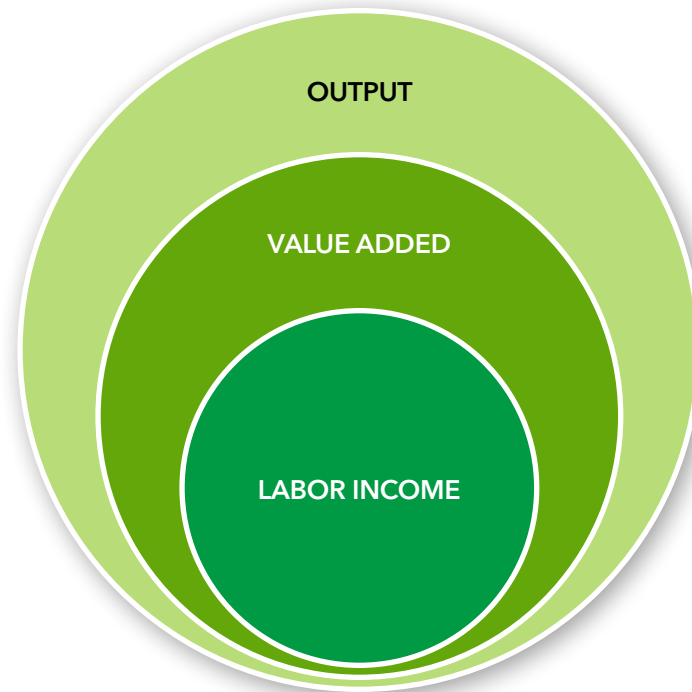


An economic impact analysis uses a regional purchase coefficient (RPC) that accounts for the likelihood that certain industry purchases will be made within a study region. For example, if a project in a rural area requires significant legal services, those legal services are more likely to be imported from another area. When an RPC is equal to 1.0, it indicates that all purchases will be made within the study region. RPCs of less than 1.0 suggest that some inter-industry purchases will leak to other regions, thereby lessening the local economic effect of those purchases. This analysis utilizes a mixture of IMPLAN Pro estimates of RPCs, and RPCs based on specific spending patterns unique to the RVFOC investments.

An economic impact assessment identifies the direct, indirect, and induced effects through four different metrics:

- **Output:** The value of industry production in producer prices, generally thought of as “total receipts” in the economy. For manufacturers, this would be sales plus/minus change in inventory. For service sectors, production is equal to sales. For retail and wholesale trade, output is equal to gross margin and not gross sales.
- **Value Added:** Also called Gross Regional Product (GRP), this is the difference between an industry’s total output and the cost of its intermediate inputs. It equals gross output (sales or receipts and other operating income, plus inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). In other words, value added is an industry’s contribution to the economy as a result of converting inputs into something more valuable.
- **Labor Income:** All forms of employment income, including employee compensation (wages and benefits) and proprietor income.
- **Employment:** The annual average of jobs in an industry needed to support economic activity. Sometimes this is referred to as job-years, because one person in one job lasting five years results in five job-years. A job can be either full-time or part-time. Throughout this study, jobs are reported as annual averages, instead of cumulative job-years.

Output, value added, and labor income are interrelated, nested components of one another. Labor income is a part of regional value added, and value added is a part of output. Thus, they are not independent measures, but parts of one another.



GEOGRAPHY DEFINITIONS

This economic impact analysis consists of two geographies: 1) Wayne County, representing the investments in Detroit, and 2) the rest of Michigan, representing all counties outside of Wayne County in the State of Michigan.

The county level is the lowest level of analysis available in the IMPLAN Pro data for this study. Because all counties in Michigan are in this study’s IMPLAN Pro model, it was possible to conduct a “multi-regional, input-output” (MRIO) analysis, whereby impacts in Wayne County “spill over” into the rest of Michigan, and vice-versa. Thus, the resulting economic impacts are examined on the basis of Wayne County and the rest of Michigan. Total results reported are the sum of the two geographies.⁶



FISCAL ANALYSIS

This report provides results of fiscal impacts of various types. The fiscal impacts are the result of three pieces of information:

1. Direct Taxes:

Taxes paid by, or estimated to be paid by, RVFOC to state and local governments in the form of:

- Property taxes
- Utility taxes
- Casino taxes

2. State & Local Taxes:⁷

IMPLAN Pro estimates of state and local taxes for the various economic impact items:

- Social insurance taxes
- Sales taxes
- Property taxes
- Motor vehicle licensing
- Severance taxes
- Savings and loan taxes
- Corporate profit taxes
- Fines
- Other miscellaneous taxes

Importantly, IMPLAN Pro does not estimate taxes on employment wages (i.e. taxes on income).

3. Income Taxes:

This analysis estimated the taxes on incomes by ascribing the appropriate income tax rates for City of Detroit (2.4 percent for Detroit residents, 1.2 percent for non-residents) and for the State of Michigan (4.25 percent). These tax rates were applied to the “labor income” economic impacts. Based on U.S. Census data, approximately 25.3 percent of Detroit employees are also residents.⁸ This share was used to ascribe

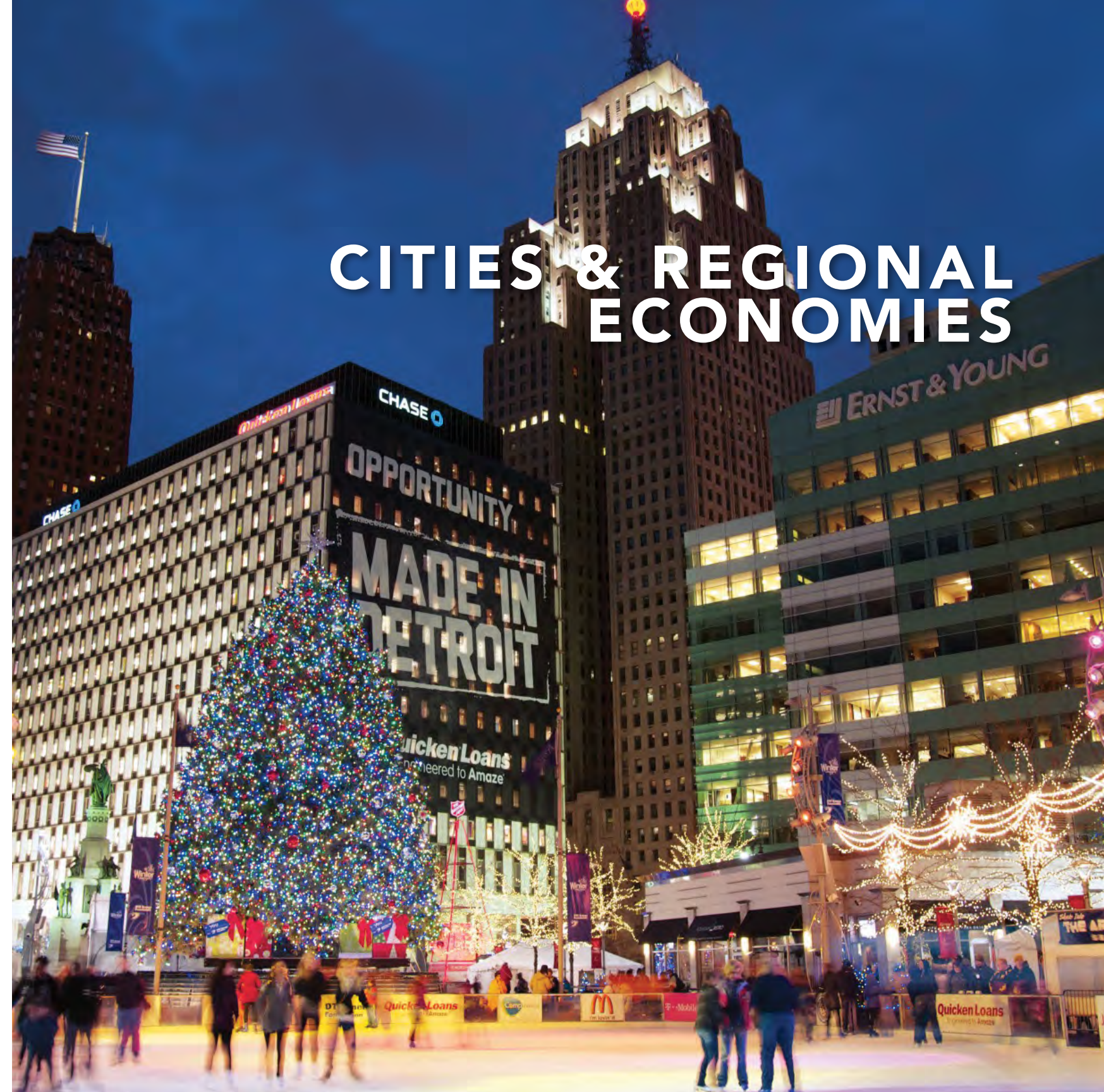
the resident and non-resident Detroit tax rate. Finally, this analysis assumes that not all labor income is taxable income, and a factor of 80 percent is used to account for gross versus taxable incomes.

Fiscal impacts reported in this study are “gross fiscal impacts,” not “net fiscal impacts.” This is an important distinction: Net fiscal impacts factor in the additional cost of government services to accommodate the additional business activity, employment, and residential impacts generated by the RVFOC investments. For example, renovating 7.0 million square feet of office, retail, and multifamily space to active use, and bringing more than 17,000 employees into Downtown Detroit, would have some cost to the local government to provide services.

While this point is acknowledged, this analysis reports gross fiscal impacts for two main reasons. First, the marginal cost of government services for this level of activity is likely to be negligible in the entirety of the City of Detroit, Wayne County, and the State of Michigan. This study holds that the many government service expenditures for the City of Detroit and Downtown Detroit would have been “fixed costs”; therefore, by increasing the employment and residential base, RVFOC investments would have resulted in more efficient use of services such as roads, police, parks, and other municipal services. Bringing in more residents and employees allows those fixed costs to be distributed across a greater number of people.

Second, this study contends that marginal costs of additional government services are mitigated strongly by RVFOC’s investment in providing public goods. As will be discussed further, RVFOC investments from 2011 to 2017 include \$51.8 million in “public good” activity, including privately supplementing local police activity in Downtown Detroit and providing for place-making investments in public spaces. Additionally, RVFOC provided another \$38.2 million in QLINE and Rocket Fiber fiber optic network investments. Thus, these direct investments would more than likely offset any marginal cost to government services, and a gross fiscal impact analysis provides an appropriate understanding of RVFOC’s fiscal impacts to the region.

CITIES & REGIONAL ECONOMIES



Cities & Regional Economies

Regional economies grow with concentrations of key industries that are vital to the local economy.

While the economic impact of the RVFOC investments is of key importance to this study, the first task of this analysis was to establish if there were wider economic impacts beyond what we might find from input-output analysis. Because these wider economic impacts—known as “agglomeration effects”—become a component of the eventual input-output analysis, they merit discussion for methodological reasons and because they are uniquely telling of the importance of major investments in a downtown.

In particular, this section seeks to answer the our first research question: To what extent has RVFOC catalyzed new growth—both within RVFOC and in the City of Detroit—through its co-location of employment in a dense, urban environment?

This section begins with a discussion of the reasons companies are increasingly moving into downtowns. After introducing the concept of agglomeration effects, which are the economies of scale firms experience by locating in close proximity to each other in an urban area, this section discusses empirical evidence of agglomeration effects resulting from RVFOC’s presence and investments in Downtown Detroit:

- **Employment & Productivity**
- **Real Estate & Economic Performance**
- **Average Employee Earnings**

THE TREND TOWARD DOWNTOWNS

Nationwide, companies are increasingly locating in downtowns. Notable examples in the past few years include Boeing’s move from suburban Seattle to downtown Chicago in the early 2000s⁹; General Electric’s move from Fairfield, Connecticut to Boston’s South Seaport¹⁰; and Marriott International’s commitment to move from an interstate-ringed office park to downtown Bethesda, MD, near a metro station.¹¹ In January 2016, Under Armour unveiled a proposal for a massive redevelopment along Baltimore’s waterfront that would house a 50-acre campus and headquarters for the firm.¹²

Core Values, a joint report published this year by GWU and Smart Growth America,¹³ examined over 500 companies that chose to move to downtowns between 2010 and 2015. These businesses represented a broad array of industries, including 52 Fortune 500 companies. Of the 500 companies studied, 245 relocated from suburban locations (either within the same metro area or from a different region) to downtowns. This is a remarkable trend that marks the reversal of the mid-to-late 20th century preference for office parks.

The *Core Values* study found that businesses move to downtowns for six primary reasons:

1. **To attract and retain talented workers**
2. **To build brand identity and company culture**
3. **To support creative collaboration**
4. **To be closer to customers and business partners**
5. **To centralize operations**
6. **To support triple-bottom-line business outcomes**

The findings from *Core Values* are consistent with the economic theory of agglomeration economies. Businesses are choosing to move to downtowns for several reasons, and ultimately they do so for sustained competitiveness. As an example, the request for proposal for Amazon’s second headquarters outlines an economic development strategy for many, if not most, corporate relocations, demanding transit and bike-served, walkable urban places. These companies identify that they become more productive when located in a downtown environment, and in doing so, they enhance the regional economy.

Agglomeration Theory

The concentration of key industries in a region leads to economic synergies known as agglomeration effects.

AGGLOMERATION THEORY

To better understand what economists and this report refer to as “agglomeration effects,” a summary of the academic literature is necessary to place this in context, and to establish the effects that one would expect if strong downtown revitalization efforts do, in fact, produce wider economic effects. Thus, this section is a summary of this report’s full literature review produced by researchers at Michigan State University, available as a separate appendix.¹⁴

The concept of agglomeration, and urban economics, is to explain the existence of cities, or more broadly, metropolitan areas, and why firms co-locate as opposed to dispersing across space. It may seem counterintuitive that businesses would choose to pay higher wages to encourage workers to locate in the city, and to pay higher property and other costs of doing business. Nonetheless, most economic growth in the U.S., historically, arose from urban centers—a trend that not only continues, but is increasing. Paul Krugman, who won a Nobel prize in 2008 for his work in this area, once remarked that the evidence for his “new growth theory” that industries concentrate in urban areas is, simply, “cities.”

What are known to economists as agglomeration effects encapsulate the reasons why dense areas of metropolitan regions are attractive to firms and residents. They are a form of economic synergy that occurs when firms exchange ideas, can compete for highly skilled workers,

and are more productive. These effects happen through three mechanisms:

1. **Labor Market Pooling:** Businesses can share and compete for a set of skilled and specialized workers that have located in a geographic region. An example of this would be the high density of technology workers in Silicon Valley and the technology businesses that compete for their labor. Similarly, employees benefit from having access to jobs in that industry. These effects are most evident at the city and sub-city (neighborhood) level.
2. **Input Sharing:** Businesses benefit from customer-supplier relationships, especially in the form of raw materials or component inputs. An example of this is the concentration of the automobile industry in Michigan, where automobile manufacturers are able to rely on regional parts manufacturers. These effects are most evident at the regional and city level.
3. **Knowledge Spillover:** Businesses benefit from the formal and informal exchange of information between employees and across firms and institutions co-located in a region. This exchange creates “knowledge centers,” and these effects are most keenly felt in service sector industries like finance, management, marketing, and technology. An example of this is the role that universities in Boston play in fostering innovation and incubating new

businesses. These effects are most evident at the neighborhood or city level, such as proximity to Downtown Manhattan (finance) or Hollywood (film and television).

With the rise of knowledge-based service industries, the knowledge spillover effect has become critical to thriving metropolitan regions. Knowledge is a cornerstone of economic growth theory, based on the notion that today’s innovators stand on the shoulders of yesterday’s innovators. A city’s stock of knowledge is a key indicator of how productive its economy is likely to be. The literature suggests that the close proximity inherent in urban centers facilitates the exchange of information and knowledge. However, this efficient exchange of information declines substantially as distance from a knowledge center grows—a concept known as “knowledge decay.” Central business districts generate clusters of knowledge that self-perpetuate innovation in the urban core; this has been demonstrated by increases in patent filings and job creation, and supported by research that shows knowledge exchange predominantly takes place in transactions between firms in close proximity.

The literature’s emphasis on knowledge transfer, and the highly related concept of labor pooling (access to highly skilled talent), is entirely consistent with the activities of businesses in the past decade. The *Core Values* report showed that access to talent, and the transfer of knowledge, were specifically cited by businesses as motivations for moving to downtowns.¹⁵

Evidence of Agglomeration in Detroit

To find empirical evidence of agglomeration effects coinciding with RVFOC's move to Downtown Detroit, we looked to four categories of indicators.

1. Industry Growth:

Industry growth catalyzed by RVFOC investments could be demonstrated through firm-level data of new job creation, business licensing activities in industries likely to benefit from agglomeration, and by a concentration of knowledge workers. For this report, we explored the latter.

2. Firm Productivity:

Greater productivity at the firm level and/or the macroeconomic level. Enhanced productivity is one of the key reasons that firms move to urban areas, and downtowns in particular.

3. Real Estate:

Agglomeration should boost local rents and other real estate indicators as firms compete to locate in the geography that gives them the most competitive advantage. Thus, Downtown Detroit rents would rise as firms move closer to downtown and away from suburban and exurban office park locations.

4. Wage Effects:

Agglomeration effects enhance worker wages. This is because firms making hiring decisions seek to pay up to the value contribution of the next employee. And, if workers are more productive, the cost to lose an employee to another firm is higher. Thus, we expect to see higher wages if agglomeration effects are present.

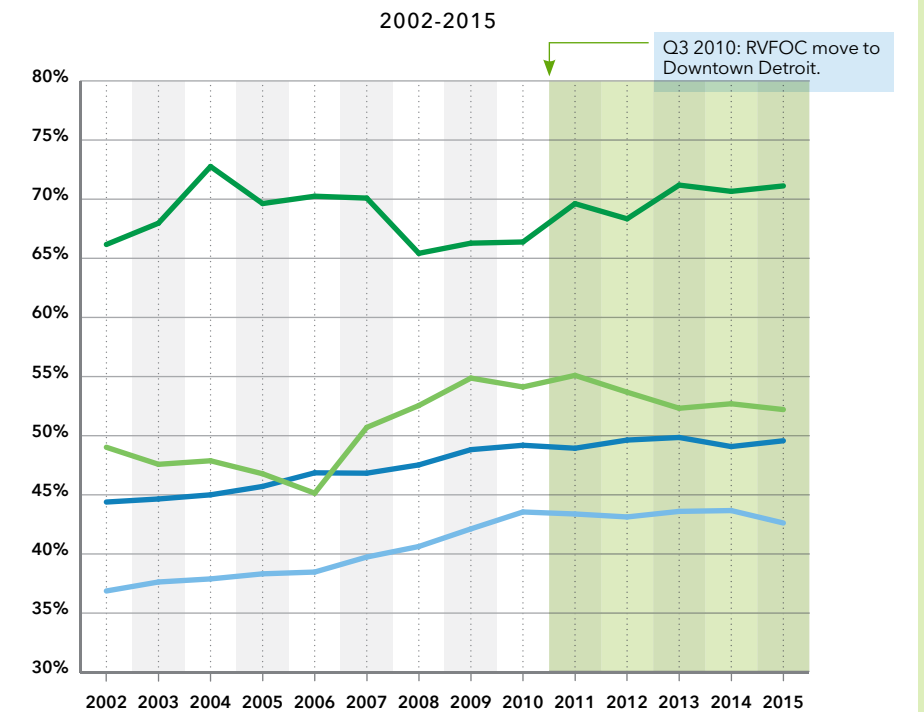


INDUSTRY GROWTH INDICATORS

In the City of Detroit, and in downtown particularly, there is already evidence of a concentration of knowledge employment. According to the most recently available data, in 2015 "knowledge employment"¹⁶ constituted 71.1 percent of all employment in Downtown Detroit. By contrast, this figure was 52.2 percent for the rest of the city, 49.6 percent for the rest of the Detroit metropolitan area, and 42.6 percent in the rest of Michigan outside of the Detroit metro area. The chart on this page illustrates Downtown Detroit's significant growth in share of knowledge employment since a low point in 2008—growth that accelerated after 2010, the year Quicken Loans moved into downtown. Meanwhile, outside of Downtown Detroit, the knowledge employment share has either fallen (in the rest of Detroit and rest of Detroit Metro) or remained relatively static (rest of Michigan).

Downtown Detroit's 71.1 percent knowledge economy also outperforms other comparable cities. It has a greater share of knowledge employment than Downtown Minneapolis (68.8 percent), Downtown Cleveland (58.9 percent), and Downtown Milwaukee (57.4 percent).

Share of Employment in Knowledge Economy

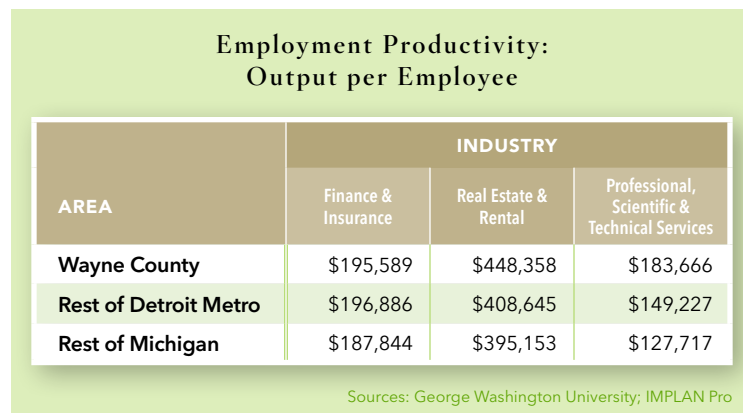


Sources: George Washington University; U.S. Bureau of Labor Statistics

— DOWNTOWN DETROIT
 — REST OF DETROIT CITY
 — REST OF DETROIT METRO
 — REST OF MICHIGAN

PRODUCTIVITY INDICATORS

Our findings illustrate that the productivity effect is evident in the Detroit region—per-employee output productivity is 4.1 percent higher there than in the rest of Michigan for the finance and insurance industry; 13.5 percent higher in the real estate and rental industry; and 43.8 percent higher in the professional, scientific, and technical services industry.¹⁷ This additional productivity is one of the key reasons that firms move to urban areas, and to downtowns in particular.



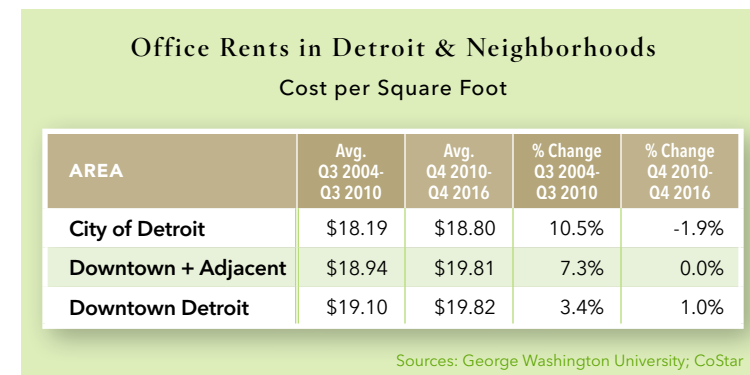
REAL ESTATE INDICATORS

Rents and “net absorption”¹⁸ (or net leasing activity) for commercial space show strong evidence of agglomeration in Detroit. In theoretical terms, businesses will move into downtown at increasing rates for higher productivity and other competitive advantages. This increased demand for space will be reflected in higher rents and net absorption. This study examined the changes in rents and net absorption before and after RVFOC’s move to Downtown Detroit in Q4 2010.

Market surveys from CoStar show a premium for office rents in Downtown Detroit: In the last real estate cycle, office rents downtown averaged \$19.82 per square foot, as compared to \$18.80 per square foot for the City of Detroit as a whole—a of 5.4 percent premium.

This data is entirely consistent with research findings in GWU’s *Foot Traffic Ahead* (2016), which found that Downtown Detroit had a office rent premiums of 23 percent over non-walkable urban areas in the rest of the metropolitan region.¹⁹

The contrast between Downtown Detroit and the rest of the City of Detroit is also apparent when examining growth in office rents. Office rents per square foot in Downtown Detroit grew 1.0 percent from Q4 2010 to Q4 2016. While a modest growth, this exceeded the negative growth in the City of Detroit as a whole (-1.9 percent) and the flat growth in the “Downtown + Adjacent” area.

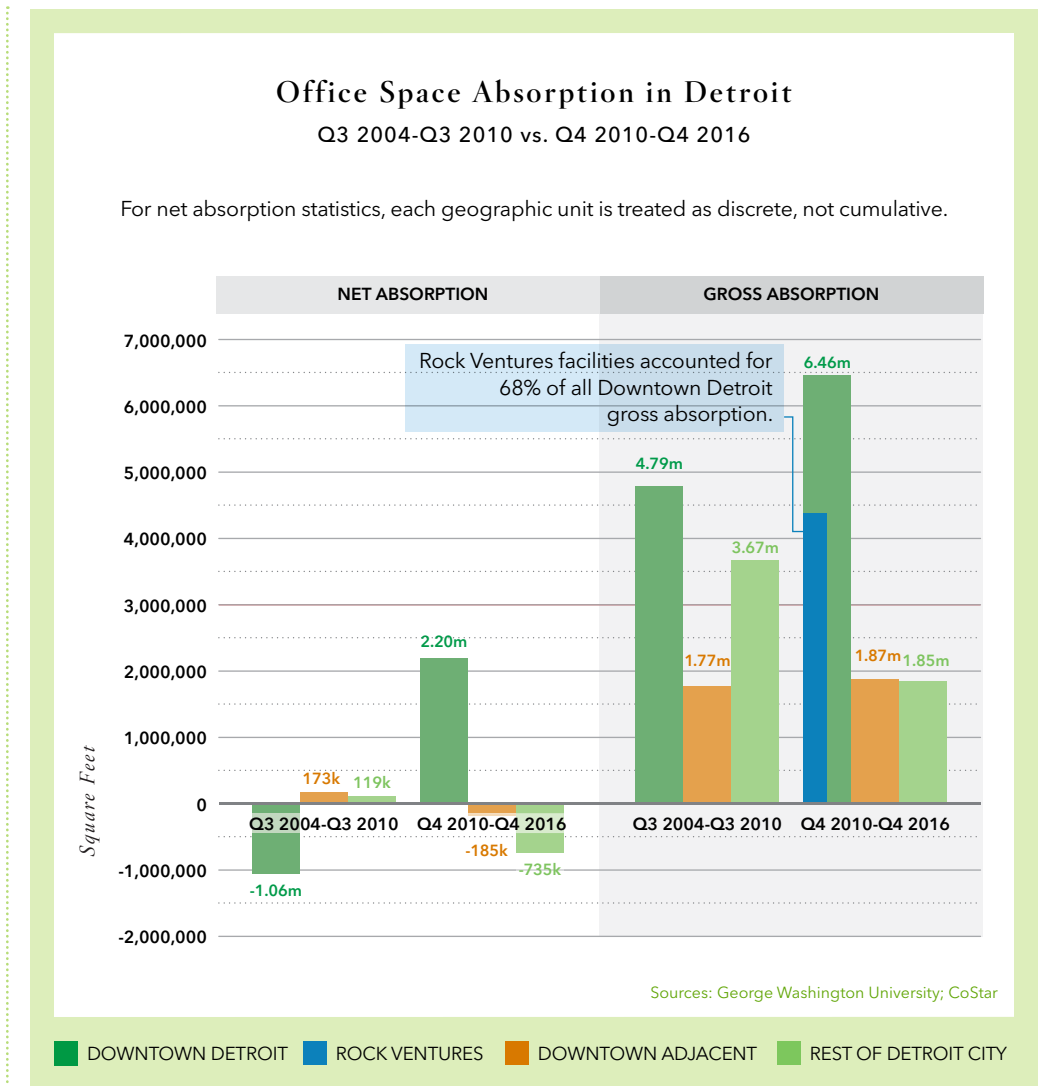


Net absorption figures paint an even more dramatic picture. In the real estate cycle preceding the RVFOC Q4 2010 move, net absorption in Downtown Detroit was, in fact, negative, at -1.1 million square feet. Meanwhile, net absorption was positive in the rest of the city and the downtown adjacent neighborhoods. But from Q4 2010 to Q4 2016, this trend reversed on all counts. During that period, Downtown Detroit gained leasing activity, posting +2.2 million square feet of net absorption. Meanwhile, the rest of the city and Downtown + Adjacent areas lost leases. This indicates a dramatic shift in businesses favoring downtown, which is consistent with the academic literature that agglomeration impacts are felt most strongly at the local neighborhood level, especially around central business districts.

Even when considering “gross absorption,” which measures only positive leasing activity, it is clear that Downtown Detroit outpaces other parts of the city. From Q4 2010 to Q4 2016, Downtown Detroit had 6.5 million square feet of new office leases, compared to 1.9 million square feet for the Downtown + Adjacent areas and another 1.9 million for the rest of the city. This 6.5 million square feet of office space accounts for 68 percent of all Downtown Detroit gross absorption as seen in the figure to the right.

When retail space is added, the evidence of agglomeration in Downtown Detroit mounts further. Gross absorption for all office and retail space in all of the City of Detroit totaled 16.7 million square feet from Q4 2010 to Q4 2016. Of this, downtown accounted for 6.7 million square feet, or 40 percent of all gross absorption in Detroit. Gross absorption in RVFOC facilities alone accounted for 4.4 million square feet—a 65 percent share of all Downtown Detroit gross absorption and a 26 percent share for the City of Detroit.

By real estate measures, Downtown Detroit clearly began outperforming the rest of the city in Q4 2010, coinciding with the move of RVFOC businesses. Leases in RVFOC facilities also accounted for a large share of the real estate activity during this period. For the economic reasons of competitive advantage and attract-ing talent, theory would suggest that Down-town Detroit would experience these real estate bumps if agglomeration effects were present. Though the evidence on the real estate side is consistent with agglomeration theory, taken alone it is not yet sufficient. For more concrete evidence of agglomeration effects, one must also look at earnings data.



WAGE EFFECT INDICATORS

The most compelling evidence we found for agglomeration effects were in studying local earnings. If agglomeration effects are evident in Detroit, then increases in employee earnings should also coincide with the point in time agglomeration impacts are expected to have begun. To test this hypothesis, we examined average monthly earnings data from the U.S. Census Bureau Quarterly Workforce Indicators.²⁰ The statistical regression techniques used to conduct this analysis are outlined in Technical Appendix of this report.²¹

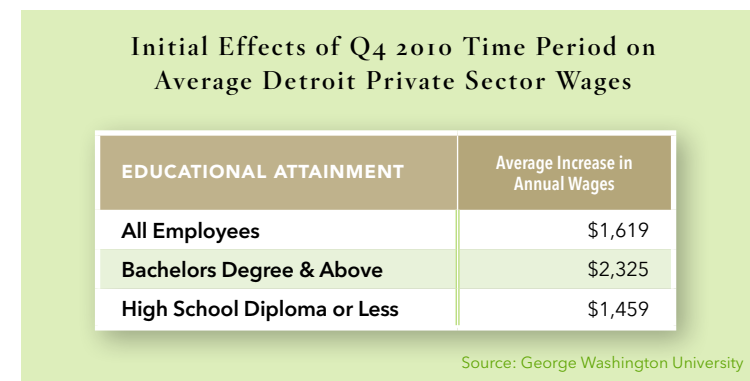
The earnings data in the chart on the following page shows a general upward trend in real monthly earnings from Q4 2000 to Q4 2015, the most recently available data. The task of the statistical analysis was to identify to what extent Q4 2010 (the point of RVFOC’s move to Downtown Detroit) is a statistically significant point in time, while controlling for other factors. If this point in time proves statistically significant, this would suggest that changes in the local economy starting in that period—and coinciding with the RVFOC move to Downtown Detroit—are at least partly the cause of subsequent changes in average monthly earnings.

By using a time-series regression technique, this analysis found statistical evidence that seasonally adjusted average private-sector Detroit earnings increased starting in Q4 2010. The model controlled for time-series effects²² and economic conditions occurring in the rest of Michigan.²³ The statistical model was consistent with the idea that the impact would be “up front” and then slow down over time.²⁴

We estimate the effect of the changes in the Detroit economy starting in Q4 2010 as a \$1,619 initial impact in additional earnings per year for all employees. The model provides for an initial impact, as well as an increasing earnings effect towards a “plateau.”

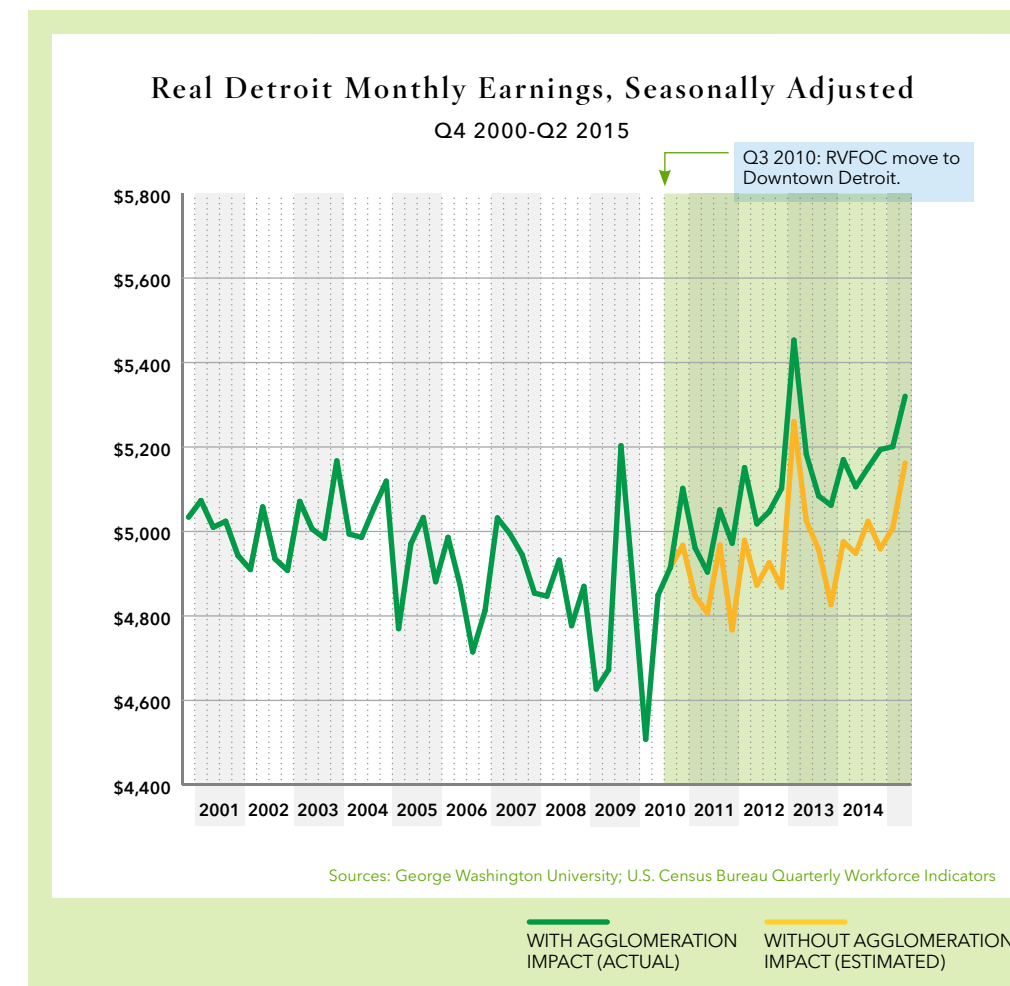
This statistical evidence is, furthermore, consistent with the theory that agglomeration impacts should benefit higher-skilled employees more so than less educated employees. This technique measured the effect of Q4

2010 to be an initial impact in annual earnings of \$2,325 for those with at least a bachelor’s degree and \$1,459 for those with a high school diploma or less.



The chart on the following page illustrates the effect of Q4 2010 on wages, as estimated by this statistical model. The upper line represents actual observed data, which incorporates what this evidence suggests are agglomeration effects on earnings. The lower line represents the estimated earnings without the agglomeration effect. This model estimates that the average Detroit private sector employee saw an initial boost of \$1,619 a year in Q4 2010, and by Q4 2015 this total effect had grown to \$1,901 in annual earnings.

Thus, there is statistical evidence to suggest that agglomeration impacts are evident, and that they began in Q4 2010, coinciding with RVFOC’s move to Downtown Detroit. Combined with the real estate data previously discussed, these data points are consistent with agglomeration theory and point to evidence of agglomeration effects occurring after the RVFOC investments.



Carried out across all Detroit private-sector employees, this agglomeration effect in increased earnings totaled \$451.5 million by 2016. For the period 2011 to 2016, it totaled a cumulative \$2.48 billion. These earnings impacts result from the economic synergies that occur when businesses co-locate in a competitive, dense, urban environment—and, in particular, stem from RVFOC’s choice to move to Downtown Detroit.

Our research also found statistical evidence of an agglomeration effect evident above and beyond investments made by RVFOC. These agglomeration impacts are incorporated into the economic and fiscal impacts throughout the rest of this analysis.



HISTORIC INVESTMENTS 2011-2016: ECONOMIC & FISCAL IMPACTS

ROCK VENTURES AND
THE FAMILY OF COMPANIES:

Historic Investments • 2011-2016

Overview

From 2011 to 2016, RVFOC invested \$7.96 billion in the Detroit and State of Michigan economy. This section discusses the economic and fiscal impacts over this historical period. Later, these impacts are used to inform projections of economic and fiscal impacts for 2017 to 2022, and beyond.

RVFOC INVESTMENTS • 2011-2016

RVFOC's \$7.96 billion in investments from 2011 to 2016 break down into eight unique categories. These investments were quantified through a combination of direct firm data from RVFOC for some categories and our own economic estimates for others.

The eight investment categories are:

1. Major Capital - Real Estate Investments:

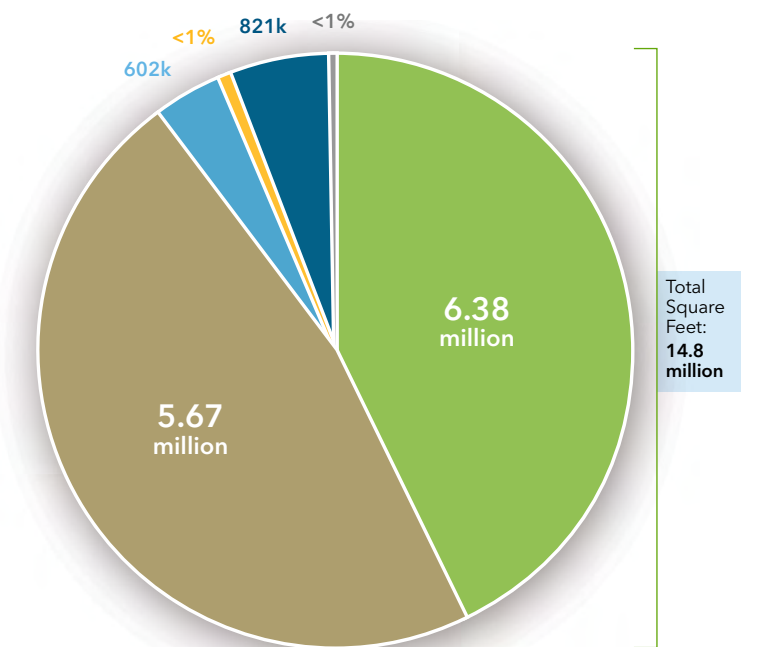
\$884.3 million²⁵

These investments include building improvements and tenant improvements, and exclude initial acquisition prices, which are considered an economic transfer. Of this amount, approximately \$362.5 million (41 percent) are estimated to have accrued to Detroit-based construction businesses, and the remaining \$521.7 million (59 percent) to construction businesses in the rest of Michigan.²⁶

From 2011 to 2016, RVFOC purchased 75 buildings and parking lot properties in Detroit. By 2016, this real estate portfolio included 6.4 million square feet of office space, 602,000 square feet of retail space, 71,000 square feet of multifamily space, and 844,000 square feet of hospitality, gaming, and civic space totaling 7.9 million square feet of space—equivalent to 11 percent of all office and retail space in the City of Detroit. Additionally, this portfolio includes 7.0 million square feet of parking space, for a grand total of 14.8 million square feet.

RVFOC Detroit Real Estate Portfolio

Square Feet, 2016



Source: Rock Ventures and the Family of Companies



2. Major Capital - QLINE and Rocket Fiber Investments: \$38.2 million

The RVFOC portion of QLINE light rail and Rocket Fiber internet infrastructure investments.

3. Employee Wage Spending: \$4.04 billion

Directly reported RVFOC wages to full-time employees and interns in Detroit offices. In 2011, the RVFOC had 2,461 Detroit-based employees, a figure that grew to 17,726 by 2016.²⁷

4. Retail Spending: \$170.6 million

Estimated spending by RVFOC employees on local restaurants and retail, as well as all spending at retail establishments in the RVFOC portfolio.²⁸

5. Local Spending: \$2.68 billion

Spending by RVFOC on local vendors²⁹ in Detroit and elsewhere in Michigan. Of this, approximately \$1.40 billion was to Detroit-based businesses, and \$1.28 billion was to businesses elsewhere in Michigan.³⁰ This also incorporates \$11.0 million in the Bizdom U Accelerator and Fund to promote and incubate local entrepreneurial businesses.

6. Utility Spending: \$59.0 million³¹

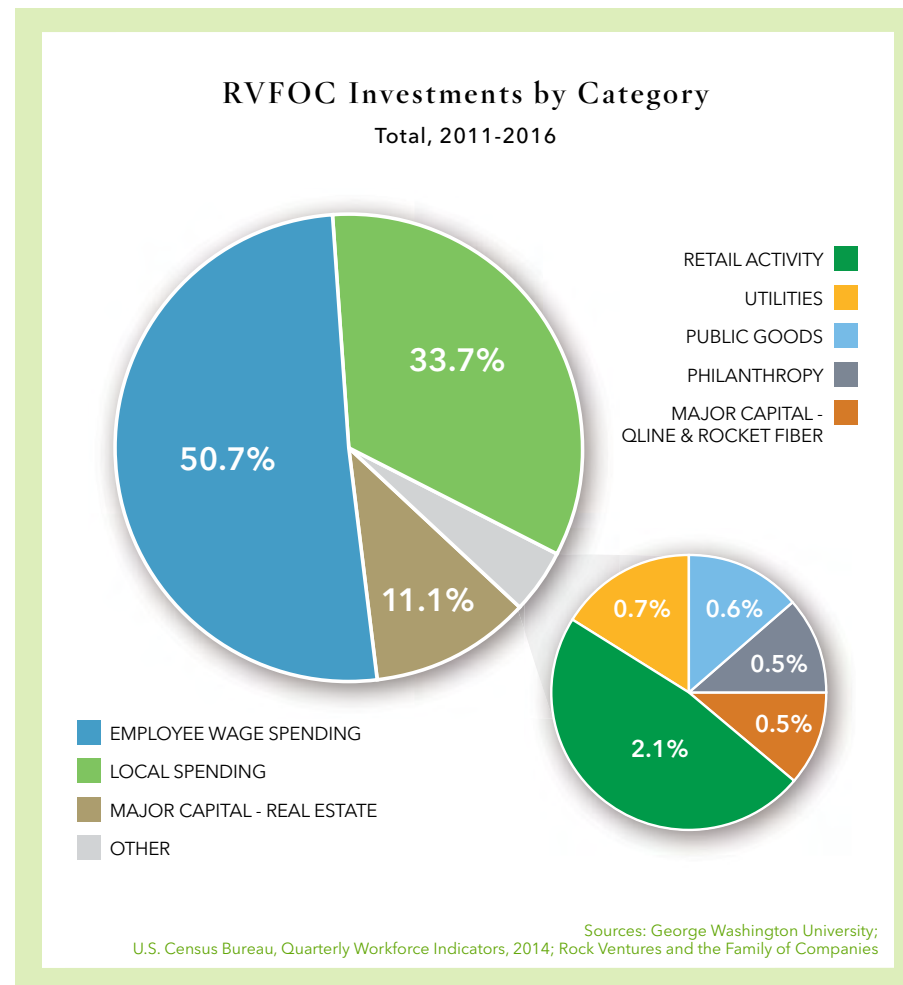
Directly reported utility payments for electricity and power, gas, water, and telecommunications. Utility spending is taxed at the local utility tax rate of 5.0 percent.

7. Public Goods Investments: \$50.0 million³²

RVFOC investments in security (\$35.2 million), placemaking (\$10.3 million), and the Live Downtown program (\$4.2 million).

8. Philanthropic Investments: \$42.7 million³³

RVFOC philanthropic investments in Detroit and Michigan.



ROCK VENTURES AND THE FAMILY OF COMPANIES:

Historic Investments • 2011-2016

Economic Impacts

From 2011 to 2016, RVFOC invested \$7.96 billion into the Detroit (and Michigan) economy. This breaks down as \$922.4 in major capital investments (real estate improvements, QLINE, and Rocket Fiber), and \$7.04 billion in employee wages, infrastructure, local spending, and other investments as described.

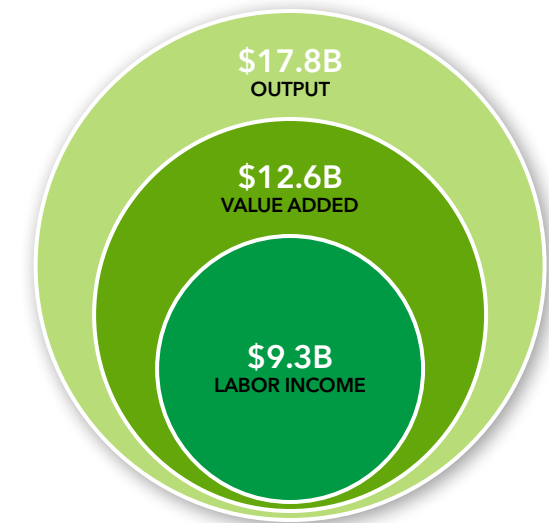
During this period, this investment generated:

- \$17.8 billion in economic output
- \$12.6 billion in value added, or GRP (gross regional product)
- \$9.3 billion in labor income
- 23,043 annual jobs

The \$17.8 billion output effect is over six years, which translates to an annual average of approximately \$2.96 billion per year. For perspective, the estimated output of the State of Michigan is \$949.0 billion per year, and the total output for Wayne County is \$191.0 billion per year.³⁴ Thus, the annualized output effect represents 0.3 percent of Michigan's total statewide annual output, or 1.6 percent of Wayne County's annual output.

Economic Impacts by Type

Total, 2011-2016



Economic Impacts by Category

Total, 2011-2016

Sources: George Washington University; IMPLAN Pro, State of Michigan, 2014; Wayne County, Michigan

IMPACT	Investment	Agglomeration	Total Output	Total Value Added	Labor Income	Jobs
Major Capital	\$922,428,230	n/a	\$1,871,090,317	\$886,205,300	\$602,197,749	2,009
All Other	\$7,040,304,203	n/a	\$10,813,495,971	\$7,751,468,350	\$5,368,813,956	17,840
Agglomeration	n/a	\$2,478,417,582	\$5,067,212,739	\$3,971,752,445	\$3,344,538,525	3,193
TOTAL	\$7,962,732,432	\$2,478,417,582	\$17,751,799,027	\$12,609,426,095	\$9,315,550,230	23,043

In terms of impact to the Michigan economy, RVFOC's \$7.96 billion initial investment, and its \$17.8 billion in economic output, represents a 2.2-dollar-for-dollar total return on investment.

It should be noted that this economic impact analysis incorporates agglomeration impacts. Agglomeration effects, which are the increases in average Detroit wages discussed in the Cities and Regional Economies section, totaled \$2.48 billion over the 2011 to 2016 period. These effects, as wages, were then applied as a change in household income to Detroit households. Thus, we generated a set of induced effects in the model, resulting in a total output for agglomeration effects of \$5.07 billion.

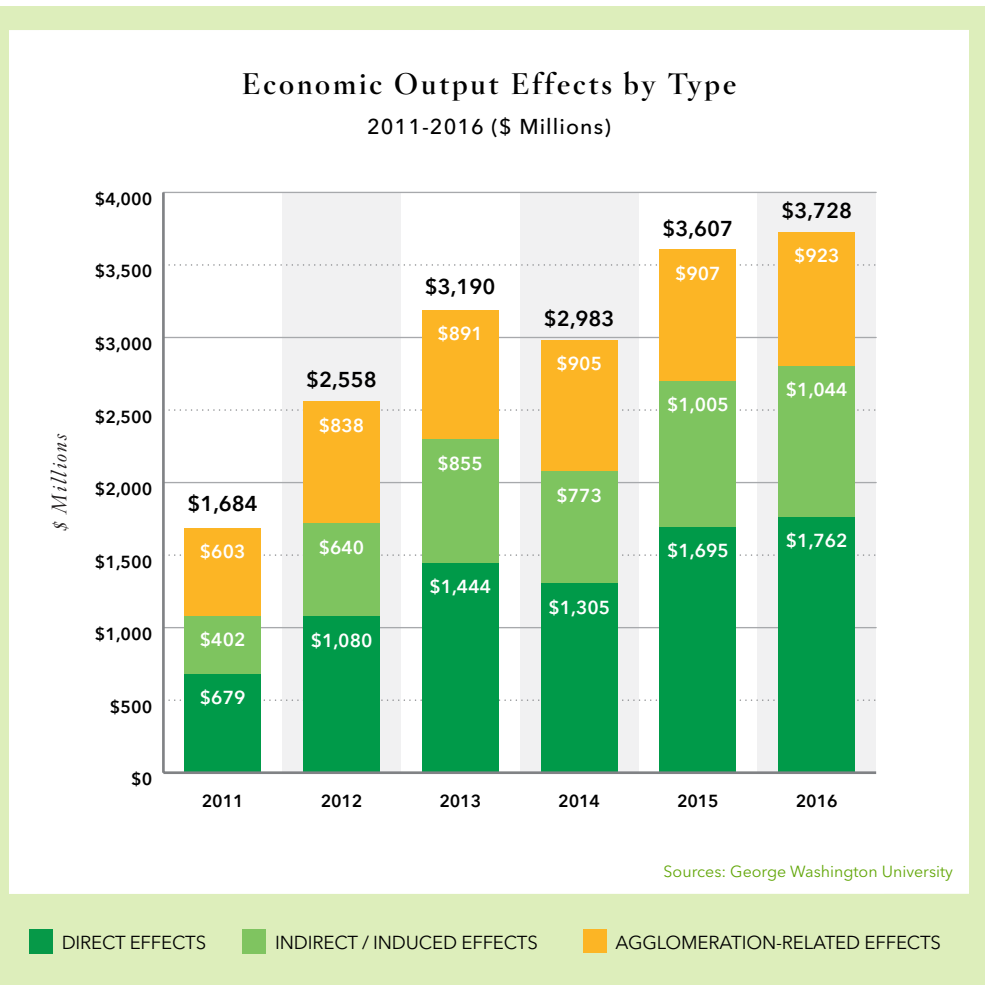
EFFECTS BY TYPE

One way to look at the total \$17.8 billion in economic output is to break it down by investment type, as outlined in the table on the previous page. As shown, \$1.9 billion (10.5 percent) results from major capital investments (real estate, QLINE, and Rocket Fiber), \$10.8 billion from other non-capital investments (60.9 percent), and \$5.1 billion from agglomeration effects (28.5 percent).

A second way of considering the \$17.8 billion impact is to think of it as direct, indirect, and induced effects. Thus, the \$17.8 billion has three main components:

- The initial investments (direct effects)
- Economic purchases to vendors and suppliers, and spending by households (indirect and induced effects)
- Agglomeration effects (direct and induced)

The chart to the right illustrates this second breakdown on a year-by-year basis. Generally, 44.9 percent of this impact is the direct investment, 26.6 percent is the secondary (indirect and induced) impacts in the economy, and 28.5 percent is agglomeration related.



AVERAGE ANNUAL EFFECTS

When considering effects on an annualized basis over the period of 2011 to 2016, RVFOC invested \$1.3 billion per year. This resulted in \$2.96 billion in total output; \$2.10 billion in value added, or GRP; \$1.55 billion in labor income; and 23,043 annual jobs. As stated previously, these effects are equal to about 0.3 percent of total Michigan statewide annual output, or 1.6 percent of total Wayne County annual output.

IMPACT	Investment	Agglomeration	Total Output	Total Value Added	Labor Income	Jobs
Major Capital	\$153,738,038	n/a	\$311,848,386	\$147,700,883	\$100,366,292	2,009
All Other	\$1,173,684,034	n/a	\$1,802,249,328	\$1,291,911,392	\$894,802,326	17,840
Agglomeration	n/a	\$413,069,597	\$844,535,457	\$661,958,741	\$557,423,088	3,193
TOTAL	\$1,327,422,072	\$413,069,597	\$2,958,633,171	\$2,101,571,016	\$1,552,591,705	23,043

Source: George Washington University

WAYNE COUNTY & THE REST OF MICHIGAN

Because the multi-regional input-output analysis was conducted in IMPLAN Pro, it is possible to separate the impacts attributed to Wayne County versus the rest of Michigan. The county level is used here because it is the lowest level of analysis available in IMPLAN Pro. Thus, Wayne County impacts serve as a proxy, also, for the City of Detroit.

Major capital investments had the greatest impact outside of Wayne County, with 60 percent of the \$1.87 billion in output effects for this category attributed to the rest of the state. This is because a larger portion of construction contracting and employment is expected to be from regions outside of Wayne County.

Of the total \$17.8 billion output effect, \$13.8 billion (78 percent) is estimated to have occurred in Wayne County, and \$3.9 billion (22 percent) occurred in the rest of Michigan.

IMPACT	Wayne County	%	Rest of Michigan	%	TOTAL
Major Capital	\$754,391,320	40%	\$1,116,698,997	60%	\$1,871,090,317
Non-Major Capital	\$8,263,027,106	76%	\$2,550,468,865	24%	\$10,813,495,971
Agglomeration	\$4,823,429,035	95%	\$243,783,704	5%	\$5,067,212,739
TOTAL	\$13,840,847,461	78%	\$3,910,951,566	22%	\$17,751,799,027

Source: George Washington University

Historic Investments • 2011-2016

Fiscal Impacts

Fiscal impacts were calculated through a combination of direct reporting by RVFOC, IMPLAN Pro estimated modeling, and estimates of income taxes resulting from additional labor income effects. From 2011 to 2016, the \$7.96 billion in RVFOC investments yields a total state and local tax impact of \$1.64 billion.

Approximately \$713.3 million of that amount can be attributed directly to RVFOC real estate, gaming, and employment. The remaining \$927.3 million in taxes are the result of induced and indirect effects in the economy, and estimated taxes from that economic activity.

Of the \$1.64 billion total fiscal impact, approximately \$403 million (24.6 percent) was state and city casino taxes, \$337.6 million (20.6 percent) is in real estate and other property taxes, \$274.6 million (16.7 percent) is in estimated sales taxes, \$445.9 million (27.2 percent) is in income taxes, and the remaining \$179.4 million (10.9 percent) is in other taxes.

Some of these tax estimates are paid directly to the City of Detroit. Of the \$1.64 billion in state and local taxes paid from 2011 to 2016, \$555.6 million (33.9 percent) is estimated to accrue to the City of Detroit, while the remaining \$1.08 billion (66.1 percent) accrues to the State of Michigan and other jurisdictions. On an annual basis, this averages to \$92.6 million in City of Detroit taxes per year, equivalent to 4.8 percent of the city's \$1.9 billion annual estimated revenue base for fiscal year 2016-2017.³⁵

City of Detroit Fiscal Impacts

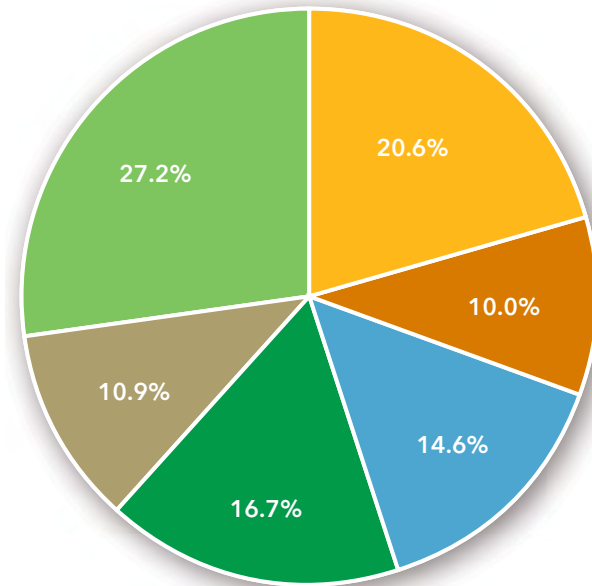
Total, 2011-2016

TAX IMPACT	TOTAL
Property	\$125,956,728
Casino	\$239,826,297
Sales	\$47,392,134
Utility & Other	\$73,646,325
Employee Income	\$68,827,504
TOTAL	\$555,648,987

Sources:
George Washington University;
IMPLAN Pro;
Rock Ventures and the
Family of Companies

State & Local Fiscal Impacts: Proportions by Category

Total, 2011-2016



*Fiscal impacts include direct RVFOC taxes and taxes from secondary economic impacts.

Sources:
George Washington University; IMPLAN Pro; Rock Ventures and the Family of Companies



Historic Investments • 2011-2016

Summary

From 2011 to 2016, RVFOC invested approximately \$7.96 billion into Detroit and the State of Michigan, with most of that investment occurring in Downtown Detroit. These investments include improvements to real estate (office and commercial buildings downtown), wages paid to more than 17,700 employees, spending to Detroit and other Michigan businesses, investments in QLINE and Rocket Fiber, and other investments in the region.

Overall, these investments yielded an estimated \$17.8 billion in total statewide economic output, or 2.2 dollars for every dollar invested. This economic output includes \$12.6 billion in value added (or GRP), \$9.32 billion in labor income, and 23,043 jobs. When annualized, this output effect represents about 0.3 percent relative to total Michigan statewide annual output, or 1.6 percent relative to Wayne County annual output.

Finally, a component of the \$17.8 billion in economic output includes \$5.1 billion in output effects from agglomeration. These are economic impacts that result, specifically, from economic synergies that occur when businesses cluster in an urban environment. These agglomeration effects are above and beyond impacts that happen from investment alone; they are a unique byproduct of locating employment in a more productive, urban environment.

The fiscal impacts over this six-year period amount to \$1.64 billion in state and local taxes. Of this total, approximately \$555.6 million accrued to the City of Detroit, representing an amount equal to 4.8 percent of the city's total tax revenues.

FUTURE INVESTMENTS 2017-2022 & BEYOND: ECONOMIC & FISCAL IMPACTS



ROCK VENTURES AND THE FAMILY OF COMPANIES:

Future Investments • 2017-2022 & Beyond

Overview

This section discusses the potential impacts of the RVFOC pipeline of investments, as well as the continued growth of RVFOC business activity in Detroit. The measured historical impacts discussed in the previous section provide a baseline. To this, several investment categories are expected to grow either per RVFOC estimates or in proportion with further expansions to the firm's real estate presence in Detroit.

RVFOC REAL ESTATE PIPELINE

From 2017 through 2022, RVFOC is projected to invest \$3.89 billion in expanding its real estate portfolio. This capital investment would add an additional 4.5 million square feet of office, retail, hospitality, and multifamily space to Downtown Detroit (much of which is planned to be multifamily), as well as 4.7 million square feet of parking, civic, and institutional space. This grand total of 9.2 million additional square feet will grow RVFOC's current real estate in Downtown Detroit by 62 percent (compared to the existing 14.8 million square feet portfolio, which includes parking). Additionally, a larger share of RVFOC's planned investments for 2017 through 2022 will be real estate-related, as compared with its investments from 2011 through 2016.³⁶

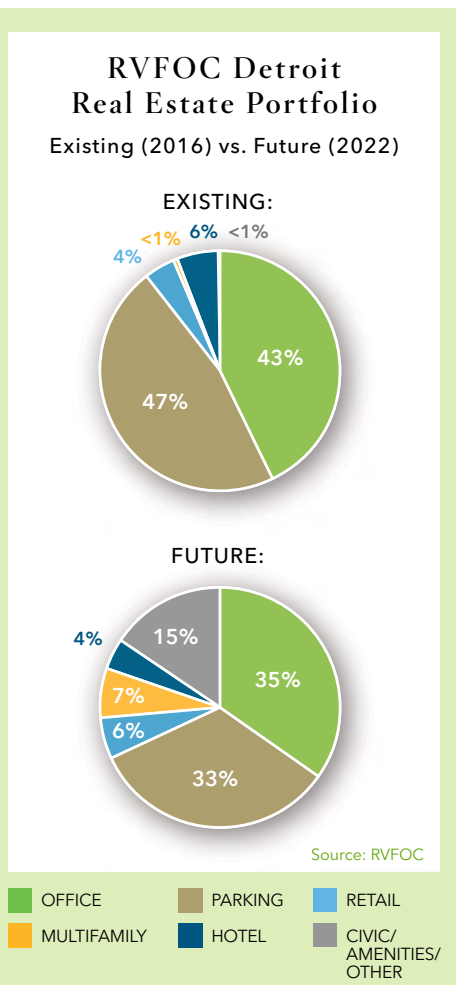
Real Estate Portfolio Pipeline, 2017-2022:

- **Office:** 1,992,589 sq. ft.
- **Retail:** 739,128 sq. ft.
- **Multifamily:** 1,563,663 sq. ft.
- **Hotel:** 199,437 sq. ft.
- **Other:** 4,706,616 sq. ft.
- TOTAL:** **9,201,433 sq. ft.**

A key component of this new investment is multifamily space, which RVFOC's developments through 2016 had just begun to include. From 2017 to 2022, RVFOC is projected to add 1.56 million square feet, or 3,509 units, of residential space to its portfolio, most of which will be new construction. This will both dramatically change the composition of the RVFOC real estate portfolio and add critical living space to meet the demands of the growing economy downtown.

Based on a market study of the RVFOC residential investments, 18 percent of households moving into the new multifamily units will be from outside of Michigan.³⁷ Thus, if all 3,509 units are leased or sold, this translates to 632 net new households for the State of Michigan.

While the economic impacts of these net new residents are not captured in this analysis, their net spending in the region could inject \$37 million per year in general expenditures into the regional economy.³⁸ These potential expenditures are excluded from this analysis, however, because their impact is small relative to the magnitude of other investments. Furthermore, the extent to which these units will serve net new households (residents moving into Michigan from other states) is uncertain. Finally, it is unknown, and speculative, as to what proportion of their consumer spending would occur in the local region. Excluding this impact provides a slightly more conservative estimate of the forecasted impacts.



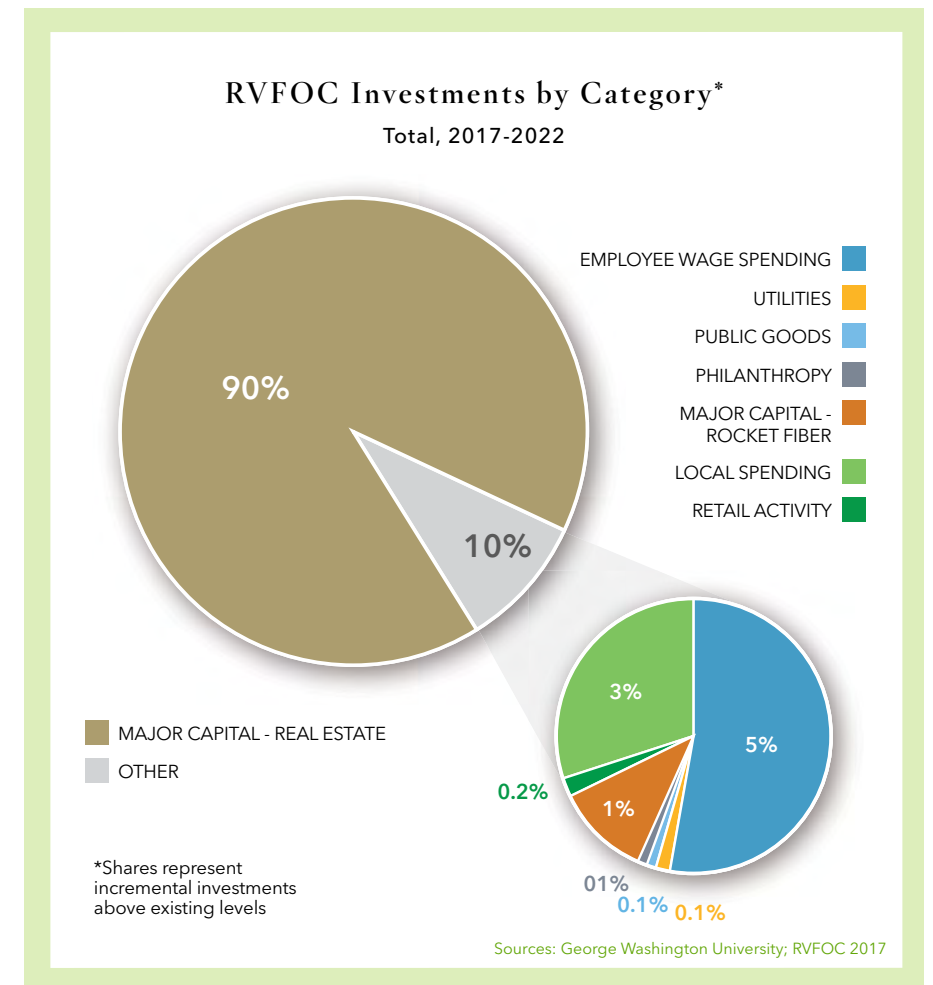
It is more important to recognize that multifamily space enhances what we have established as agglomeration effects. Instead of focusing on the absolute dollar impacts of items like potential spending of new residents, it is more meaningful to consider new residents, and new residential units, as a foundational condition for other impacts to continue to occur. As employers attract higher-skilled and higher-value employees, those employees will demand housing close to their job locations. In other words, residential development in this study is seen as an enabler of the broader agglomeration effects discussed, furthering the synergies that occur when employees are able to live close to their places of employment.

RVFOC INVESTMENTS

From 2017 to 2022, RVFOC is forecast to invest an additional \$3.89 billion in the Detroit economy. This spending includes investing an additional \$3.56 billion in major capital, \$3.52 billion of which are the real estate investments discussed above. Additionally, other investments—employment, local spending, public goods, philanthropy, utilities, and retail spending—are expected to increase in proportion to estimated business growth and growth in the real estate portfolio. We project these other non-capital investments to total an additional \$330.1 million, beyond current 2016 levels, from 2017 to 2022.

By category, RVFOC incremental investments are forecast to be:

1. **Major Capital - Real Estate Investments: \$3.5 billion**
2. **Major Capital - Rocket Fiber Investments: \$41.9 million**
3. **Employee Wage Spending: \$197.6 million**
4. **Retail Spending: \$7.7 million**
5. **Local Spending: \$112.0 million**
6. **Utility Spending: \$5.4 million**
7. **Public Goods Investments: \$3.9 million**
8. **Philanthropic Investments: \$3.6 million**



ROCK VENTURES AND THE FAMILY OF COMPANIES:

Future Investments • 2017-2022 & Beyond

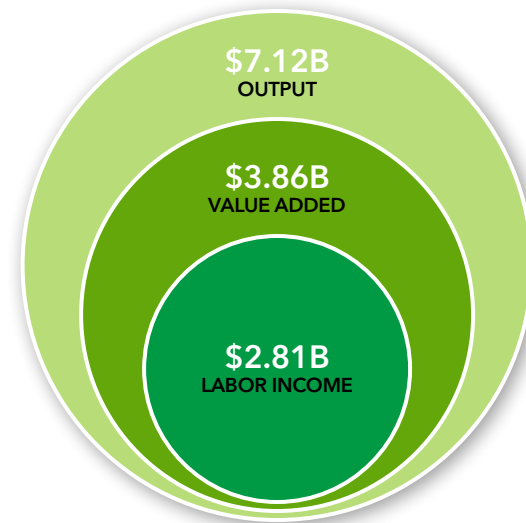
Economic Impacts

RVFOC's \$3.89 billion projected 2017-2022 investments in the Detroit and Michigan economy break down as \$3.56 billion in major capital investments (real estate improvements and Rocket Fiber) and \$330.1 million in incremental employee wages, infrastructure, local spending, and other investments.

We forecast these investments to generate \$7.12 billion in economic output: \$3.86 billion in value added (or GRP), \$2.81 billion in labor income, and 7,960 annual jobs. For comparison, the annualized output effects are 0.1 percent of Michigan's statewide annual output and 0.6 percent of Wayne County's annual output.

These forecasted economic impacts also incorporate agglomeration impacts. As RVFOC's business presence in Detroit expands along with its real estate portfolio, and as overall economic synergies continue, this impact is also expected to marginally grow. The total output effect for agglomeration is forecast to total \$790.7 million from 2017 to 2022. It is worth noting that these impacts are above and beyond existing investment levels. They reflect the additional investments and growth of RVFOC.

Future Economic Impacts by Type
Forecast Total, 2017-2022



Source: George Washington University

Future Economic Impacts by Category Total, 2017-2022

Source: George Washington University

IMPACT	Input (Investment)	Agglomeration	Total Output	Total Value Added	Labor Income	Jobs
Major Capital	\$3,558,101,621	n/a	\$5,737,027,555	\$2,807,031,284	\$1,972,183,871	6,439
All Other	\$330,181,628	n/a	\$590,837,137	\$433,679,931	\$319,085,025	1,020
Agglomeration	n/a	\$386,758,509	\$790,741,504	\$619,794,286	\$521,917,188	498
TOTAL	\$3,888,283,249	\$386,758,509	\$7,118,606,196	\$3,860,505,500	\$2,813,186,083	7,958

EFFECTS BY TYPE

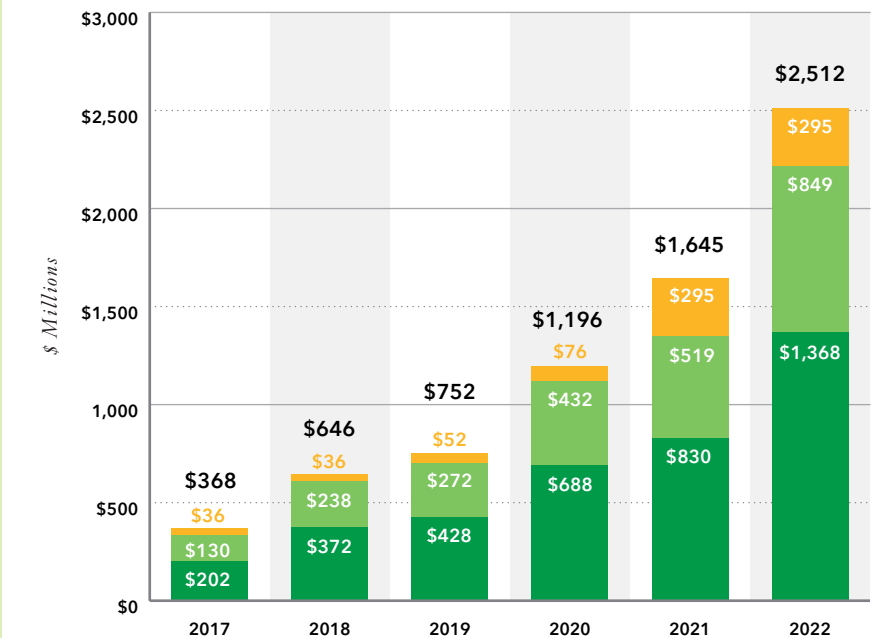
The table on page 36 itemizes the \$7.12 billion in economic output effects by major investment type. Since new major capital investments are a larger portion during this 2017 to 2022 period, they also contribute more to output effects. Approximately \$5.74 billion (80.6 percent) of this effect is from major capital investments, mostly in new buildings and other real estate improvements in Detroit. The remaining output effects are \$590.8 million (8.3 percent) from other investments and \$790.7 million (11.1 percent) from agglomeration effects.

The \$7.12 billion in output effects can also be looked at through the lens of direct, indirect, and induced effects. The table on the previous page shows this breakdown on a year-by-year basis during the forecast period. Generally, 54.6 percent of this impact is the direct investment (mostly in real estate), 34.3 percent is the secondary (indirect and induced) impacts in the economy, and 11.1 percent is agglomeration related.

AVERAGE ANNUAL EFFECTS

On an annualized basis, RVFOC is forecast to invest an average of \$648.0 million per year from 2017 to 2022. This would result in \$1.19 billion in total output; \$643.4 million in value added, or GRP; \$468.9 in labor income; and 7,958 annual jobs. Proportional to the broader economy, this is equivalent to 0.1 percent of statewide Michigan annual output, or 0.6 percent of Wayne County annual output. It should be noted that output forecasts are additive—that is, they are above and beyond the dollar amounts of RVFOC's investments. The cumulative effect will be discussed later in this section.

Economic Output Effects by Type
2017-2022 (\$ Millions)



Source: George Washington University

■ DIRECT EFFECTS ■ INDIRECT / INDUCED EFFECTS ■ AGGLOMERATION-RELATED EFFECTS

WAYNE COUNTY & THE REST OF MICHIGAN

The largest portions of our forecasted economic impacts stem from major capital investments (mostly real estate); these investments also generate the largest proportional impact outside of Wayne County, because construction employment tends to be more dispersed throughout the state.

Of the total \$7.12 billion output effect, \$3.42 billion (48 percent) is estimated to occur in Wayne County, while \$3.70 billion (52 percent) is estimated to occur in the rest of Michigan. However, once the construction is complete, the economic impacts would resemble a share seen for Non-Major Capital (other investments) and agglomeration, which is 85 to 95 percent in Wayne County.

CUMULATIVE ANNUAL EFFECTS

As mentioned above, a large portion of the projected 2017 to 2022 impacts stem from real estate-related fixed capital investments. Also, the impacts outlined above are marginal: they are above and beyond levels from the 2016 baseline. Thus, a different perspective is

**Future Output Effects:
Economic Impacts by Type and Geography**
Total, 2017-2022

IMPACT	Wayne County	%	Rest of Michigan	%	TOTAL
Major Capital	\$2,214,064,634	39%	\$3,522,962,921	61%	\$5,737,027,555
Non-Major Capital	\$451,482,415	76%	\$139,354,722	24%	\$593,837,173
Agglomeration	\$752,698,915	95%	\$38,042,589	5%	\$790,741,504
TOTAL	\$3,418,245,964	48%	\$3,700,360,232	52%	\$7,118,606,196

Source: George Washington University

worthwhile to consider the economic impacts that would continue in 2022 and beyond. These impacts from 2022 and onward are cumulative: they are the annual impacts that RVFOC investments generated at 2016 levels, plus the annual impacts that begin in 2022. The sum of these two provides a cumulative economic impact going forward.

This analysis forecasts that RVFOC would be investing at levels of approximately \$1.23 billion in 2022 and each year onward. This would produce a total output of \$3.1 billion per year, value added of \$2.31 billion per year, and labor income of \$1.77 billion per year, and would also sustain 22,572 annual jobs.

Annual Cumulative Economic Impacts by Category 2022 and Beyond

IMPACT	Input (Investment)	Agglomeration	Total Output	Total Value Added	Labor Income	Jobs
Major Capital	\$0	\$0	\$0	\$0	\$0	0
All Other	\$1,232,928,942	n/a	\$1,909,471,797	\$1,370,252,198	\$973,143,133	18,024
Agglomeration	n/a	\$588,333,456	\$1,202,868,638	\$942,825,316	\$793,935,583	4,548
TOTAL	\$1,232,928,942	\$588,333,456	\$3,112,340,434	\$2,313,077,515	\$1,767,078,716	22,572

Source: George Washington University

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Future Investments • 2017-2022 & Beyond

Fiscal Impacts

Forecasted incremental fiscal impacts were calculated through the same proportioning method used to estimate other economic impacts. From 2017 to 2022, the \$3.89 billion investments would yield a total of \$480.6 million in new state and local taxes.

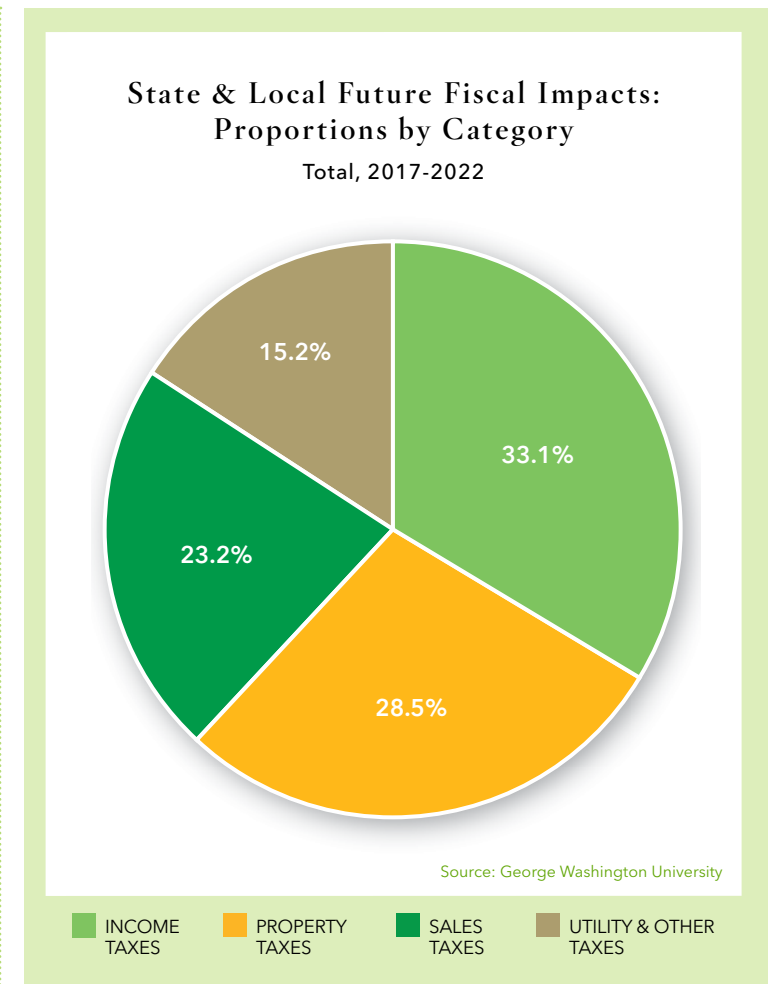
That amount breaks down as \$135.2 million (33.1 percent) in state and local income taxes, \$116.6 million (28.5 percent) in property taxes, \$94.8 million (23.2 percent) in sales taxes, and \$62.0 million (15.2 percent) in utility and other taxes.

Of the forecasted \$408.6 million in state and local taxes, approximately \$70.7 million is estimated to accrue to the City of Detroit. On an annualized basis, this is equivalent to 0.6 percent of total City of Detroit revenues, based on FY 2016-2017 levels.

**Future Incremental Fiscal Impacts by Category:
City & State vs. City of Detroit***
Total, 2017-2022

TAX CATEGORY	STATE & LOCAL: TOTAL	CITY OF DETROIT: TOTAL
Property	\$116,575,215	\$22,780,608
Sales	\$94,810,238	\$16,364,262
Utility & Other	\$61,956,116	\$10,693,635
Income	\$135,235,261	\$20,873,158
TOTAL	\$408,576,830	\$70,711,663

*Figure includes direct, indirect, and induced tax impacts.
Source: George Washington University



ROCK VENTURES AND
THE FAMILY OF COMPANIES:

Future Investments • 2017-2022 & Beyond

Summary

From 2017 to 2022, RVFOC estimates it will invest \$3.89 billion into Detroit and the State of Michigan, the majority of which will be directed to Downtown Detroit. These investments include new downtown office, retail, and multifamily developments. Investments also include wages paid to more than 17,700 employees, spending to Detroit and other Michigan businesses, continued investment in Rocket Fiber, and other investments in the region.

Overall, the \$3.89 billion in investments are projected to yield \$7.12 billion in total statewide economic output. This economic output includes \$3.86 billion in value added (or GRP), \$2.81 billion in labor income, and 7,960 jobs. For a sense of magnitude, these annualized output effects are equal to 0.1 percent of Michigan's annual statewide output, or 0.6 percent of Wayne County annual output. Finally, a component of the \$3.89 billion in economic output includes \$790.7 million due to agglomeration effects.

Fiscal impacts from 2017 to 2022 are forecast to total \$408.6 million in state and local taxes over the six-year period, of which approximately \$70.7 million would accrue to the City of Detroit, representing about 0.6 percent of the city's tax revenues on an annualized basis.

CONCLUSIONS



Conclusions

Walkable urban places like Downtown Detroit economically matter. Research over the past generation has made the link between walkable urban places, knowledge employees, and the broader knowledge economy.

This study has quantified the actual economic and fiscal benefits of moving a knowledge-based company, RVFOC, to a reviving Downtown Detroit, which results in much faster economic and fiscal growth and increased revitalization.

The \$7.96 billion of investment by RVFOC between 2011 and 2016 has achieved \$17.8 billion of economic growth. This has yielded \$1.64 billion of state and local taxes during this time period. It is expected that the additional \$3.89 billion of projected investment between 2017 and 2022 will result in an additional \$7.12 billion of economic growth. It is expected that this will also result in an additional \$408.8 million of state and local taxes in the future.

This study also shows the impact of agglomeration on economic and fiscal growth. Agglomeration is the effect of companies and knowledge workers coming together in a higher density, walkable urban place. This study has shown that 29 percent of the \$17.8 billion economic impact of RVFOC investments between 2011 and 2016 is the result of agglomeration. In other words, this impact would not have been as substantial in a lower-density, drivable sub-urban location where the impact may not have materialized at all. Only by moving to a place like reviving Downtown Detroit could these agglomeration impacts have been achieved at such levels.

RVFOC had 2,400 employees in 2010, before its move to Downtown Detroit. In 2016, it has more than 17,700 employees in Downtown Detroit, as well as an additional 12,300 in other locations throughout the country (many in reviving Downtown Cleveland). While there is no way to conduct a controlled experiment of economic and fiscal performance of RVFOC in a lower-density, drivable sub-urban location during the 2011 to 2016 time period, agglomeration impacts and the company's six-fold increase in employment demonstrate the economic efficacy of locating in walkable urban places.

As of the end of 2016, RVFOC has had a larger economic impact on Wayne County than major industry segments such as motor vehicle transmission/power train manufacturing, truck transportation, and engineering/architectural services. This adds an additional leg to the economic foundation of Wayne County and the State of Michigan.

The history of the City of Detroit and the State of Michigan is one of layering new economic drivers on top of older sectors. Agriculture propelled economic growth in the 19th century, and then manufacturing layered additional jobs and economic growth on top during the 20th century. This industrial growth did not supplant agriculture, but rather added to the economy of the city and state. The same can be said for the layering of knowledge employment and companies on top of the industrial base. The

knowledge economy will not only grow the wealth and tax base of the City of Detroit and the state overall, but will provide a broader economic portfolio to insure against the shocks Michigan has experienced in the past from an over-reliance on one industry.

The knowledge economy and its creative class employees demand workplaces and housing in walkable urban places. These places could be in revitalizing center cities like Detroit, Grand Rapids, and Flint, or urbanizing suburbs like Ann Arbor, Birmingham, or Royal Oak. If the State of Michigan does not have walkable urban places for these companies and employees to locate, they will look to other states and metropolitan areas that do provide them. Having great walkable urban places is vital to the economy and the tax base of Michigan.

APPENDICES



Endnotes

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2. Leinberger, Christopher B. and Rodriguez, Michael, *Foot Traffic Ahead: Ranking Walkable Urbanism in America's 30 Largest Metros*, 2016. https://creua.business.gwu.edu/files/2016/12/CREUA_Foot-Traffic-Ahead_2016.06.14-2jibzmr.pdf.
3. Ibid.
4. Rock Ventures and the Family of Companies, firm data, 2016.
5. Ibid.
6. Econometric analysis and other summary analyses in this report include geographies other than Wayne County and Rest of Michigan. For example, real estate impacts are reported on the basis of Downtown Detroit and other sub-county geographies. However, results from economic impact analysis from IMPLAN Pro, and derivative modeling, are reported as Wayne County and Rest of Michigan.
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15. *Core Values: Why American Companies Are Moving Downtown*, June 2016. In Smart Growth America. Retrieved from <https://creua.business.gwu.edu/files/2016/12/Why-American-Companies-Are-Moving-Downtown-1eu2kmg.pdf>.
16. This study defines "knowledge economy" as the following 2-digit NAICS industries: 51 - Information; 52 - Finance and Insurance; 53 - Real Estate and Rental and Leasing; 54 - Professional, Scientific, and Technical Services; 55 - Management of Companies and Enterprises; 61 - Educational Services; 62 - Health Care and Social Assistance; 81 - Other Services (except Public Administration); 92 - Public Administration.
17. IMPLAN Pro, county level data for Michigan counties, 2014.
18. Net absorption is a real estate indicator that is, effectively, net leasing activity as measured in square feet. If some businesses lease 10,000 square feet in a given period of time, and other businesses move out of 2,500 square feet over that same period, this would be a net absorption of +7,500 square feet.
19. Leinberger, Christopher B. and Rodriguez, Michael, *Foot Traffic Ahead: Ranking Walkable Urbanism in America's 30 Largest Metros*, 2016. https://creua.business.gwu.edu/files/2016/12/CREUA_Foot-Traffic-Ahead_2016.06.14-2jibzmr.pdf.
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22. Regression utilized an ARIMA model with a moving average term of MA(4).
23. U.S. Census Bureau. 2014. Quarterly Workforce Indicators Data. Longitudinal-Employer Household Dynamics Program <http://lehd.ces.census.gov/data/#qwi>. Monthly earnings for State of Michigan Private Sector Employees. Analysis used "Rest of Michigan" earnings as the difference between State of Michigan and the Detroit Workforce Investment Area. Wages from US Census Bureau were deflated to real 2016 dollars using CPI-U. Quarterly seasonality was adjusted using X-12 seasonal adjustment.
24. The statistical modeling used a decay factor related to the square of the counter of the number of quarters after Q4 2010.
25. Rock Ventures and the Family of Companies, firm data, 2016.
26. Detroit / Rest of Michigan proportion estimates based on Bureau of Labor Statistics county business patterns. Analysis utilized Wayne County construction industry employment relative to the SEMCOG region and the rest of the State of Michigan.
27. This figure excludes wages to part-time employees, and wages at Greektown Casino, which were not available from RVFOC. This figure, and subsequent economic and fiscal impacts, would be higher if these items were included. Of the 16,175 employees in 2015, 10,295 are considered full-time by RVFOC.
28. Using RVFOC employment figures for Full-time and part-time employees. Assumes General Service Administration 2016 per-diem rates for Detroit on meals (\$13.00) and incidentals (\$5.00): 50 percent GSA per-diem for meals, and 25 percent GSA per-diem for incidentals. This amounts to \$6.5 for meals and \$1.25 for incidentals, per employee, per day.
29. Rock Ventures and the Family of Companies, firm data on expenditure patterns from 2011 to 2015, dated 2016. Figure also includes spending on RVFOC entertainment expenses for internship programs.
30. The Rest of Michigan local spending figure includes spending from RVFOC companies of Title Source, Bedrock, Fathead, and Greektown Casino. However, those businesses only reported Detroit-based spending, and not spending in the Rest of Michigan. Thus, the spending for the Rest of Michigan is an underestimate of the true figure.
31. Rock Ventures and the Family of Companies, firm data, 2016.
32. Ibid.
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34. IMPLAN Pro 2014, State of Michigan; Wayne County, Michigan.
35. City of Detroit (2016). *City of Detroit 2016-2017 Budget in Brief*. Retrieved from http://www.detroitmi.gov/Portals/0/docs/budgetdept/Budget%20in%20Brief%20Final%20-%2010%2025%2016_1.pdf?ver=2016-11-18-113645-100.
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