

# Fiscal Impacts: A Literature Review

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July 13, 2020



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## Key Takeaways

- A Fiscal Impact Analysis (FIA) is a process to better understand the costs and benefits of investment through development projects in public goods, most notably in infrastructure investment.
- FIAs are generally oriented to more local places such as cities and towns, while economic impacts are more regionwide (although for regional entities such as sewer and water, the FIA may be regional).
- There is agreement in the literature that local governments are the best entity to provide infrastructure as they are closest to the users (residential and business) and better understand their needs.
- FIAs can be based on either average cost data or marginal cost data. While average costs are easier to get, they often do not accurately describe local conditions, particularly how existing capacities may be affected.
- Using either source of data, the FIA may be off-the-shelf or custom built. The strength of the former is cost and ease, while the latter is more costly but will provide a more relevant study to jurisdiction.
- There are tradeoffs between density and harshness of place. Density and agglomeration, both localized and urbanized, may save costs. However, that may also lead to harshness of the environment, such as congestion and crime, which may raise costs.
- With agglomeration economies, spillovers or externalities (both positive and negative) may accrue to nearby jurisdictions. Depending on funding sources and levels of regionalization, externalities may be included in an FIA.
- While there are costs and benefits to agglomeration, the recent COVID-19 pandemic has led to questions about people and businesses seeking lower density places.

## Introduction

The location decisions of firms have many repercussions for local communities. Where firms locate changes the character of regions and may introduce sprawl or affect density. Location decisions have ramifications for housing developments, transportation systems, public infrastructure, educational and workforce training systems, and utilities. The construction of the built environment and locations of businesses are some of the building blocks of economic development, making it important to understand the fiscal impacts of development on communities and regions.

The purpose of this literature review is to examine exactly how to calculate the fiscal impact of development on a community. Fiscal Impact Analysis (FIA) is a commonly used tool in planning. The use of FIAs is to assist planners in making decisions about land use in a region or community (Edwards & Huddleston, 2009). They are also used to create estimates of costs and returns from development (Paulsen, 2009). “When well done, FIA can help communities better understand the fiscal benefits and burdens brought about by a change in the built environment...” (Read et al., 2019, p. 53).

This literature review finds that there are multiple ways to calculate these impacts. Unlike the economic modeling literature, where REMI, IMPLAN, and RIMS are, at least currently, the dominate models, the fiscal impact literature does not embrace a generally accepted model or models. In modelling fiscal impacts, impacts can be focused on a variety and combination of uses including but not limited to, residential, industrial, commercial/retail, office, amenity, and mixed use. Each of these types of uses and mixes of uses creates different costs and benefits as part of their modeling. Each of these uses has implications for their development aside from direct costs and benefits, including externalities and political implications and consequences. All combined, this makes fiscal impact modeling a challenging endeavor to estimate correctly.

## Fiscal versus Economic Impacts

For purposes of discussion it is necessary to distinguish between fiscal and economic impacts. Although not discussed within the literature, but for purposes of this review, Fiscal Impact Analysis (FIA) is assumed to look at the impacts on a very limited space or jurisdiction such as a town, city, or county. The goal is to better understand the effects (mostly costs and benefits) to a place from new development. It helps to answer the question as to whether “real estate development in its various forms ‘pays for itself’...” (Read et al., 2019, p. 55). Economic impact analysis also uses, at least in most cases, the county as a building block for developing data and as the smallest level unit of analysis. Much of the economic impact work is done at the regional or state level and is based on a wider set of impacts. These impacts usually encompass not only changes to employment, but also output/sales, gross product, and personal income as a summary, and can also offer detailed levels of impacts at a more granular level including migration and demographic data. The economic impacts for the region include not only direct impacts, but also those that are indirect (suppliers) and induced (households). Some economic impact models are able to create estimates at the sub-county level including cities, zip codes, and congressional districts.

## Why Conduct a Fiscal Impact Analysis?

Part of the reason for conducting a Fiscal Impact Analysis (FIA) is to better understand how a city may use their resources to fund projects. As Edwards and Huddleston (2009) noted, places are using special assessments such as tax increment financing (TIF), developer's agreements, and impact fees to pay for growth. By looking at the costs and benefits over time, the net outcomes can help address short-run losses with long-run gains (Read, et al. 2019). There are several ways in which infrastructure might be paid for, either as an expenditure or using alternative methods that keep new infrastructure "off the books." "If the local government expended \$1 million, that would show up on its balance sheet. However, if the local government gave tax credits of \$1 million this would not necessarily show up as a line item in the budget, even though revenue forecasts would reflect the credit" (Paulsen, 2009, p. 8). Examples of this include TIFs that channel forgone future revenues into debt amortization and tax abatements accruing to the developer or firm. Both TIFs and abatements help to recover value of improvements with different paths to offset development and operating costs.

Much of the literature tends to focus on residential development and its impacts on both equity and marginal costs. Within this review, a greater focus will be placed on nonresidential development, such as industrial and commercial. As noted elsewhere, this may be a little easier as the nature of this type of development is a bit more straightforward because many of the inputs and outcomes are more easily defined. As an example, 100 new homes may have an array of households with different demographic conditions. The varied distribution of family type (age, children, income, and others) may require a complex set of assumptions based on how that distribution will affect schools, recreation, transportation, and other public goods. Arguably, a plastics manufacturer with 100 employees is a more defined entity and the demands on public sector services are more easily known. With business-related development, there are opportunities for additional revenue sources, including but not limited to "sales tax, meal and lodging taxes, plus business, professional and license taxes" (Shuai, 2010, p. 39).

# The Structure of a Fiscal Impact Analysis

At the very heart of Fiscal Impact Analyses (FIAs), there are both off-the-shelf models as well as custom designed models. These models, or “workbooks,” have been around since the late 1970’s and made “FIA possible for practitioners in that they provided methods, multipliers, and data sources for use in jurisdictions of all sizes” (Paulsen, 2009, p. 1). The dilemma with the off-the-shelf models is they tend to be a bit cookie cutter. These models use existing data, which makes them cost effective, but they do not necessarily capture the dynamics of a place and accommodate local conditions. The custom-built FIAs tend to better capture place and any idiosyncrasies of the development, but they are costly because detailed data needs to be developed and collected. This can often be a time-consuming task, and based on local politics, access to the data may be difficult (Edwards & Huddleston, 2009).

The other structural component of FIAs, aside from custom versus off-the-shelf models, is the need to consider how costs are used in driving impact models. One option is to use average costs for projects and investments. While average costs are both easier and cheaper to use due to their availability, they may capture less of the true impacts from development. Some costs that may not be included in this case are those affected by direct investment. These may be indirect costs, such as those that have marginal impacts. An example of this is the capacities of systems affected by development, such as water and sewer systems, as well as school districts.

## County versus Sub-County

One of the dilemmas of many of Fiscal Impact Analysis (FIA) and economic impact models is that, at least in the early days, they were based on county-level data. As reported by Farrigan et al. (2001), A Fiscal Impact Model for New Hampshire Communities (FIT-4-NH) was developed that used the municipal level as the unit of analysis. It used community-level data but was more of a short-run model than the more standard cost and benefits model that uses net present values (NPV) to assess the fiscal outcomes to investments. In their analysis of returns, Farrigan et al. (2001) pointed out that various types of infrastructure respond differently to changes in per capita expenditures.

## Average versus Marginal Costs

Within the literature, this is a discussion of using average versus marginal costs. Each has an implication for understanding fiscal impacts. Average costs are often developed using costs from standardized sources. Marginal costs are developed through local data collection. In looking at total cost of development, it may be advantageous to use marginal cost not only for direct costs and benefits but also for those that are indirect and downstream. “One criticism stems from the frequent use of average costs rather than marginal costs to predict the impact of real estate development on future public expenditures” (Read et al., 2019, p. 57). While this makes the analysis easy, it also

establishes a linear relationship between investment and outcomes. An example of this is when new residential units are added to a place; with the development possibly comes new students for a school district. Using average costs per student would linearly change aggregate costs but not account for the individual conditions in the school. Using marginal costs in place of average costs would allow the increase in students to reflect the new total costs for service provision. Depending on the current capacity of the district and individual schools, the marginal impact may be lower average costs due to available capacity, no significant change to average costs due to optimal student enrollment and capacity, or higher marginal costs in places with facilities near capacity and possibly trigger the need for additional classrooms and teachers. Similarly, Paulsen (2009) discussed the impacts of differing capacity levels and whether new entrants will “congest” public services.

In looking at industrial development, depending on capacities at a package plant and the nature of the production process, the impacts of additional sewer lines could range from lowering average costs, to being neutral in affecting average costs, to requiring additional capacity or services be added to meet the new demand. Adding additional capacity may be necessary not only when systems are at or near capacity, but also when new production adds unique wastes such as metals (from fabricated metal manufacturing) or starch (from food processing) that need nontraditional handling. A marginal cost-based FIA may be best used for analysis when the data are available, and the development is likely to have complex impacts on the place. While there is some debate in the literature on returns to development, there is a general assumption that new residential development creates costs for places while nonresidential development, such as industrial, tends to create surpluses (Edwards & Huddleston, 2009).

Read et al. (2019) identified three marginal cost approaches. First is the case study approach that requires primary data collection and analysis along with interviews of key informants and experts. There is some concern that the data collected through this more intense process of case studies may be biased when respondents have preferences among projects (Edwards & Huddleston, 2009). Second is the comparable cities method that compares development in similar jurisdictions. “Similar” could be based on population trends, size, and other characteristics. The third is the employment anticipation method that uses regression techniques (including the aforementioned impact models) when employment growth and associated multipliers are a function of per capita spending on infrastructure. Read, et al. (2019) cited a number of authors in their literature review with concerns of econometric modeling including intra-jurisdictional effects, differences in local characteristics, and issues with model specifications.

Paulsen (2009) demanded a clear understanding between costs and expenditures that are made. “[D]ata simply do not exist consistently on local government input costs. Instead reported data represent only expenditures.” (Paulsen, 2009, p. 13). He notes differences between places may be based in “different per-unit costs, but may just as likely represent different levels of service” (Paulsen, 2009, p. 13). On the revenue side, local governments are funded by taxes (primarily property, sales, and income), fees, and user charges (Paulsen, 2009).

# Infrastructure Development as the Focus of the Fiscal Impact Analysis

Much the literature focuses on the impacts of residential development. The costs and impacts from residential development are quite different than those of industrial and commercial development. While the latter may affect the former, the demands for public goods by each type of development are noticeably different. While residential may focus on K-12 education, recreation, and other public goods, industrial and commercial development often sees demands for public goods more in the area of infrastructure. Most often, local governments (and in some cases regional governments) are the primary entities surrounding the provision of infrastructure. Alm (2015) noted the juxtaposition posed by infrastructure. While high quality infrastructure is essential in sustaining growth, “the delivery of urban infrastructure is plagued by persistent and significant problems...[T]he condition of facilities, the resulting services, and the financing systems are often poor, and often it is the poor who are most affected” (p. 231). He continues by defining infrastructure as “long-lived” capital facilities that support both residential and business needs. Alm (2015) also noted that infrastructure may be provided by both the public sector and the private sector, which is additionally confounded by the condition that some infrastructure is a public good (such as local roads) while some may be a private good (such as electricity or broadband).

Finally, infrastructure and decisions around the quality and quantity of infrastructure should be decided locally based on the Decentralization Theorem that states “government services should be provided by the lowest level of government that can do it efficiently” (Alm, 2015, p. 233). Again, this provides support for FIAs to be done at a local level where delivery of much infrastructure is based. Many of the articles discussed in this review rely on the assumption that people (and firms) will vote with their feet. The origin of this comes from Tiebout’s seminal piece in 1956 which stated that users will determine, at least for mobile people and capital, the best place to maximize their utility by selecting a bundle of costs (taxes and fees) and benefits. Canavire-Bacareza and Martinez-Waquez (2012) discussed Tiebout in light of “efficiency in public service provision (being) achieved through mobility and sorting of the population in a decentralized government” (p. 6). Such sorting would also likely apply to business location decisions. They continue, “sub-national governments are thought to be more responsive to local constituencies than the central government” (p. 8).

# Financing Infrastructure

A main consideration in creating a Fiscal Impact Analysis is not only the direct cost of infrastructure but also how new infrastructure will be funded. It is necessary to not only take into account the short-run nature of investment in infrastructure, but also the long-run costs of operation and maintenance. The financing of infrastructure can come from three primary sources: borrowing, revenue, and transfers from higher forms of government (Alm, 2015). Borrowing allows lifecycle finance to come into play as future generations pay for resources as they use them rather than early users bearing the costs and later users becoming free riders. Borrowing can come from issuing municipal bonds or from specialized financing institutions such as State Infrastructure Banks (SIB). Transfers from higher levels of government (national, state, or regional) for infrastructure can provide a number of different benefits to local government, including but not limited to the ability to “correct for externalities” (Alm, 2015).

Chen (2016) did an extensive review of SIBs. It may be useful to note that Ohio has what he called a “hybrid” model of SIBs with “separate federally capitalized and state-only capitalized accounts” (p. 97). The intent of the SIBs is to finance transportation infrastructure using subsidized loans in what is essentially a revolving loan fund. The benefit of having a state capitalized SIB is that it helps to reduce borrowing costs and helps address state-local (vertical) equity concerns (Chen, 2016). In his conclusion, Chen’s study “finds that one dollar of three-year lagged SIB loan disbursements to state and local highway project sponsors will increase state and local highway capital expenditures in the current year by nearly three dollars” (Chen, 2016, p. 110). He did note that his research is based on seven states with federally-capitalized SIBs and does not include outcomes from state-capitalized SIBs.

An additional method of funding infrastructure is the use of impact fees to cover investment and congestion costs (Alm, 2015). This allows for costs of development to be shifted from existing users to new users based on the new development. This may be more easily accomplished with residential development rather than commercial and industrial development. There is a discussion within the literature of a “race to the bottom” by offering an array of incentives to attract jobs and business to a place. The concern brought out by the concept is that so many incentives are given away that the benefits to the place become net negative. However, what if the benefits to the region are net neutral or net positive? Alm (2015) suggested that “(I)nter-governmental transfers should be used to finance those services that generate spillovers to nearby jurisdictions, since strictly local finance will lead to inefficient provision” (p. 244).

Within the Euro Zone, Rodriguez-Pose and Garcilazo (2015) found that “EU-financed public investment has had a positive and statistically significant link with regional growth, independent of the quality of local and regional government” (p. 1280). However, in their conclusions they noted that quality of government is important in determining the trajectory of growth. While infrastructure creates returns, coupled with good government those returns are enhanced.

## Introducing Externalities

Externalities are outcomes that are not figured into the pricing structure of a project. These may be benefits or costs. An example of a positive externality or benefit of development is that the development attracts additional investment and jobs into a jurisdiction. While possibly an anticipated side effect or spillover, the costs and benefits of the primary project were likely the only consideration. On the other hand, the same development may increase traffic congestion, increase drive times, and consequently be a negative externality creating additional costs to residents. Again, expected remedies and compensation were not necessarily part of the cost and benefits included in the FIA.

There are a number of ways that projects in one jurisdiction can cause spillovers or externalities and so “fiscal policies of one municipality may have effects reaching beyond its political boundaries” (Hettler, 2001, p. 406). These may be positive and/or negative externalities to those outside the jurisdiction where development is occurring. “A particular public good provided with taxes collected from city residents may provide significant benefits to those living outside the city” (Hettler, 2001, p. 411). Hettler (2001) goes on to note that labor markets, and therefore regionalization of wages paid in one place, affect the wages paid in other jurisdictions. It is also important to note that while some development (such as residential) may allow residents to commute outside of the jurisdiction to shop and work, industrial and commercial development may bring in workers in who reside outside the jurisdiction (Paulsen, 2009).

Alm (2015) noted that service provision is usually done by small and fragmented municipalities in what he called a “one-tier model.” However, he also noted in some places that a “two-tier model” may be in place to “be responsible for services that have wide-scale benefits, that generate externalities or that demonstrate economies of scale...” (p. 234). Another argument for local service provision is that those providing and financing the service will be more actively involved in the capital facilities and feel a sense of “ownership” (Alm, 2015).

As Paulsen (2009) noted, state government sets the “functional service provision requirements and obligations among different government levels” (p. 9). Also, he noted states set how local jurisdictions may generate revenues. Paulsen referred to this as vertical intergovernmental relations. The ability of a place to respond to service provisions and how to deal with costs and paying for services is constrained by state governments. Additionally, states may limit actual levels of expenditures by local governments by creating debt ceilings, but they may also provide financial support through “revenue sharing, grants, school aid, equalization formulas and the like” (Paulsen, 2009, p. 10). Horizontal government relations are when governments in a region “compete” for residents and employers. To do this they may use “tax exemptions, tax expenditures, infrastructure, TIFs, etc.” (Paulsen, 2009, p. 11). As noted elsewhere, this competition can lead to spillovers or externalities to other nearby jurisdictions including congestion and changes in demand. Both of these may affect the

decisions that mobile households and owners of mobile capital may make on location decisions.

Some of the externalities accrue to other places due to commuters living and working in different jurisdictions. Shuai (2010) found in a study in Virginia that 50% of new jobs in a county were taken by commuters. Given this, he also noted many of the fiscal benefits (at least based on Virginia tax structure) leaked out of the jurisdiction (Shuai, 2010). Based on leakage he recommended that “regional governments should cooperate with each other and share the costs of incentive packages in industry recruitment,” and it “should be done through cooperation by several counties in a highly integrated local economy” (Shuai, 2010, p. 47).

The dilemma with externalities is that they may be within the funding district and they may extend beyond the funding district. Externalities within the jurisdiction may be dealt with through the political, tax, and regulatory process, while those occurring outside of the jurisdiction are less easily dealt with, particularly if they are negative externalities.

## Fiscal Impacts of Sprawl

As mentioned above, both positive and negative externalities are likely to exist both in and possibly outside the jurisdiction. However, it is important that if a regional view of the economy is taken, the accounting of costs and benefits are included as part of a Fiscal Impact Analysis. In most cases, primary fiscal costs and benefits accrue to the local jurisdiction, but as mentioned earlier, externalities likely occur and so when regional economic impact are considered, the externalities need to be included.

One of the most cited pieces of research in the articles contained in this literature review was *Does “Smart Growth” Matter to Public Finance?* (Carruthers & Ulfarsson, 2007). They presented the argument against sprawl and argued that the per unit cost for provision of services is higher in low density places. The other side of the argument is the “harshness” of dense places overrides the costs. Research cited in their paper has arguments that support both positions. In their work they constructed estimates of increased density and less expansive use of land and find “the hypothetical savings... are nontrivial enough that places may wish to identify how to better connect financial planning to land use planning” (Carruthers & Ulfarsson, 2007, p. 17). However, they continued on with the assertion that quality services must deliver cost effectively for a place to have a comparative advantage. They cautioned that their findings are based on county-level analysis and so should be used carefully as it is “not clear that (their) findings would apply exactly the same way on a community-by-community basis” (Carruthers & Ulfarsson, 2007, p. 21). They also point out that jurisdictions in a region are interdependent and so it is better to cooperate than to compete.

Ihlanfeldt and Willardsen (2018) further explored the tradeoff between density of place and harshness of the environment by looking at development in counties in Florida. They also broke costs down by land use including retail, multi-family, office, and institutional properties. “[W]hile there is some evidence on the relationship between costs and urban sprawl, we found no evidence on the relationship between costs and the spatial distribution of alternative land uses” (Ihlanfeldt & Willardsen, 2018, p. 35). They concluded that, relative to the trade-off between density and harshness, “concentrating economic activity creates cost savings especially in the provision of public infrastructure and, at the same time, the congestion such concentration creates is a source of negative externalities” (Ihlanfeldt & Willardsen, 2018, p. 36).

Goodman (2019) noted two components for density: first, that costs of service provision may decline due to higher density, but also that high levels of density can create an “urban ‘harshness’” (p. 5). In the latter there is more congestion and crime among other conditions due to harshness. While the first may lead to lower per capita costs, the second may lead to higher per capita costs. In his research, Goodman (2019) found that increasing density raises per capita costs, but only slightly. “However, holding density constant, per capita costs can be reduced by limiting the spatial extent of development...As development becomes more uniform across the county, public services costs are reduced” (Goodman, 2019, p. 14). He additionally suggested that in-fill development can help to keep local government spending down.

Goodman (2019) and Rybeck (2004) are both concerned with “leapfrog” development that reduces density by adding infrastructure in jurisdictions further away from the core and bypasses existing parcels with infrastructure. Part of Rybeck’s concern is that landowners are able to benefit from infrastructure and there is an ability to profit from future sales revenues as the value of land rises. As a measure to counteract sprawl, Rybeck (2004) supports a two-tiered system of property tax that supports higher taxes on land and lower taxes on buildings (p. 253).

In his conclusion, Rybeck (2004) found that “compact development, by using existing infrastructure, conserves natural and financial resources and promotes walking, cycling, and public transit...Of course, zoning and other land-use controls must be coordinated” (p. 257).



## Externalities from Agglomeration

Externalities also accrue from increasing the density of economic activity. These may come from a diverse bundle of services and suppliers in an urban place. This is referred to as an “urbanized” agglomeration. Similarly, when firms in the same industry, including backward and forwardly linked industries, locate together they benefit from these linkages, knowledge sharing, and labor sharing. This is referred to as a localized economy. While benefits may accrue to the firm, and so figure into the pricing structure, others in the jurisdiction and the region may benefit. These are referred to as agglomeration externalities.

Gagné et al., (2013) investigated the role of municipal structures in a region and found the economic and institutional/administrative boundaries of a central city are not coterminous. They concluded that the right size of a jurisdiction for public services is different than for the economic boundaries “whereas the optimal size of central and secondary business centers depends on the interplay between commuting and agglomeration economies” (Gaigne et al., 2013, p. 4). They continued with the statement that the role of a “metropolitan area government is to provide integrated management of agglomeration economies by coordinating business tax rates across the wide range of jurisdictions” (Gaigne, et al, 2013, p. 4). They concluded, as others have suggested, that “small things” should be managed locally while “big things” should be managed at a more regional level. “Labor and transportation issues in particular should be handled at the metropolitan level” (Gaigne, et al., 2013, p. 4). Finally, they argued that by coordinating the supply of public services, the race to the bottom for businesses and residents often warned against can be avoided.

He and Romanos (2016) investigated the impact that a variety of determinants have on location decisions in the communications manufacturing industry (CEM). Their findings, at least for the CEM industry, include that the presence of supply chains, specific industries (like industrial machinery manufacturing), and tax differentials all matter in location decisions for CEM. While agglomeration economies can be an important factor in the site selection process, “agglomeration economies generated by industrial linkages cannot dilute the impact of tax differentials on firms’ location decisions” (He & Romanos, 2016, p. 2171). They concluded that while both urbanization and localization economies are important, higher corporate tax rates can offset those benefits.

Crabbé and De Bruyne (2013), in a comparative study of regions in Belgium, found that higher tax rates “repel” new firms while agglomeration economies attract firms. In the interaction of the two, they state “A higher ETR (effective tax rate) as such does not necessarily deter firms in strongly agglomerated districts” (p. 434). They also found, at least in Belgium, that firms want to locate in larger places with assistance. “Ceteris paribus, larger districts and districts with more funding will therefore attract more new firms. The infrastructure variable finally has no significant impact on the location of new firms” (Crabbe & De Bruyne, 2013, p. 436). In the end, places with higher levels of agglomeration can tax at higher rates without losing firms (Crabbe & De Bruyne, 2013).

Wrede (2014) modified this slightly by indicating that different levels of capital in a region can be overcome if agglomeration externalities are in place but there is some level of fiscal equalization across regions. It is also found that “per capita fiscal capacity equalization cannot simultaneously eliminate public good infrastructure and spatial inefficiency” (Wrede, 2013, p. 1026). Kessides and Ingram (1995) noted that “(I)nfrastucture is a necessary, though not sufficient precondition for growth—adequate complements of other resources must be present as well” (p. 18) and “high quality, reliable infrastructure services are also critical for modernization and diversification of production (p. 20).

In a study based on Portugal, Pereira and Andraz (2011) noted that road investments have a positive impact on employment in most regions of the country. Looking across all regions in the country, they estimated a 3.9:1 return over a 30-year period to the country from road investments. This ranges from a high of 5.58:1 in Lisbon to a low of -0.06 in Alentejo (Pereira & Andraz, 2011, p. 487). Similarly, the multipliers are quite high for both employment and output. They also note that investment in other regions yields returns to each study region.

Otsuka and Goto (2015) found similar results for Japan. Industry agglomeration has positive effects on manufacturing, as does market access. Therefore, investments in roads can help connect regions outside of the Tokyo region and provide access to markets by the goods producing sectors. Their study also found that population density was important in increasing manufacturing productivity. They found that “it is essential to increase population concentration in areas within a region in order to realize regional economic growth. For this purpose, it is necessary to enhance the economies of agglomeration (Otsuka & Goto, 2015, p. 530).

Using econometric modeling, Hortas-Rico (2013) found fiscal benefits exceed the cost of public services in Spain. This is at least partially true due to intergovernmental transfers to municipalities from higher levels of government. This allows local governments to plan for lower densities in areas “without necessarily considering the full fiscal, social and environmental consequences of such policies” (Hortas-Rico, 2013, p. 859).

## Implications from COVID-19

While agglomeration brings with it many benefits, the allure of cities and close contact among firms and workers is called into question in the face of the COVID-19 pandemic. Even before the COVID-19 crisis, large metropolitan areas and urban cores were facing a declining population. Between 2018 and 2019, almost half (44.1 %) of the 68 urban core counties with populations exceeding 500,000 people registered a loss in population (Frey, 2020). Individuals have left dense urban areas for a variety of reasons including expensive rents, lack of wage growth for low- and middle-wage workers, and a high cost of living (Tavernise & Mervosh, 2020). It is quite possible that COVID-19 may accelerate the depopulation trends seen since the mid-2010's.

As workers leave cities, this will have an impact on where business is done. In a recent poll by Gallup, 58% of managers indicated their employees were currently working remotely, with about half (52%) expecting workers to continue to work from home, at least some of the time, after restrictions are lifted (Harter, 2020). Boosting worker confidence in returning to the office is likely to include such measures as reducing the number of staff in the office at any one time and promoting social distancing through the end of open-plan workplaces (Muddit, 2020). Measures that are used to reduce the spread of COVID-19 may, at the same time, dull the benefits of agglomeration as they remove the close contact and clustering of people that enable the benefits of agglomeration to flow between people and firms.

Dense urban areas have been praised for providing many benefits including better accessibility to services and jobs, public transportation systems, efficient infrastructure investments, sustainability, and serving as hubs for knowledge and economic growth (OECD, 2012). However, in the wake of the global pandemic, debates have emerged as to whether densely populated areas are more vulnerable to spreading the COVID-19 virus due to the close proximity of residents and difficulty in applying social distancing measures (OECD, 2020). The Great Lockdown hit employment in cities unexpectedly hard with 84% of the jobs lost between February and March in cities with populations over 250,000 (Berube, 2020). As the United States begins to reopen, the fate of America's densest areas remains unclear.

## Conclusion

Conducting a Fiscal Impact Analysis (FIA) is essential before beginning any project. While local governments are not necessarily in the business of making a profit from development, any cost and related losses from a project should be recognized and part of the political process of decision making within a jurisdiction.

There are a number of approaches to doing FIAs; the first step is deciding between off-the-shelf models versus custom models. The former is easily applied and cost effective but does not necessarily address local issues and impacts in detail. In either case, FIAs need to either be based in average costs or marginal costs. The strength of using average costs is they are easy and relatively inexpensive to obtain, but the costs will be estimates of factors of development, not necessarily the actual cost. Conversely, marginal costs are more difficult to develop and more costly. There is also a potential that the source of the data may have a bias, either as a pro or con regarding the project, so information may also be biased. The strength of using marginal costs is if they are extended to issues like how capacities in schools and public services are affected, a broader set of costs may be better understood.

At the very base level, FIAs should reflect the costs and benefits to the local government. Included in the FIA should not only be the actual costs of development, but also the operational and other long-run costs. In addition, how the public sector side of the development will be funded is important, particularly if the costs are funded by the debt capacity of the jurisdiction. Issuing debt for projects is both a question of fiscal capacity and the ability to borrow, but also the willingness to borrow.

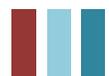
While the application of the FIA is primarily a function of a jurisdiction like a city or township, the development may have broader implications outside the jurisdiction. Since these are not part of the pricing structure of the project, these externalities (both positive and negative) may spillover into the rest of the region and should be part of the impact analysis. At some point, and when scale becomes a factor, the FIA moves more into the economic impact analysis (EIA) of regionwide impacts.

Development that capitalizes on localized and/or urbanized agglomeration economies can provide benefits (and costs) not only to the city or township, but also to the region. These are referred to as agglomeration externalities. In this case, people and firms outside the region may benefit from development but not contribute to the cost and can become free riders. Due to the costs of sprawl and harshness to the environment some of these externalities may either be mitigated or enhanced.

In the end, development by place will have fiscal impacts and benefits for the jurisdiction but may also have externalities that spread beyond the borders of the city or township. Depending on the type of investment and project, the unit of analysis chosen to conduct FIAs will vary according to whom the costs are born, and the benefits accrue.

A caveat to this research is that the literature was primarily based on pre-COVID-19 assumptions about the costs and benefits, as well as the externalities of agglomeration and

density. As discussed at the end, recent experience has shown that higher density places, at least initially, experienced higher levels of the population contracting the disease. Going forward, it is unclear how both people and businesses will respond to living and working in denser places that offer agglomerative benefits.



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