PAYING FOR PROSPERITY:
IMPACT FEES AND JOB GROWTH

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EXECUTIVE SUMMARY

Growth costs money. And increasingly many municipalities, confronted with tax-averse electorates, have turned to impact fees—one-time charges against new development—to pay the costs of growth. Traditionally, these costs have been financed by property taxes. However, those revenues have proven mostly inadequate to fund the roads, water and sewer infrastructure, and schools required by new residential and commercial development

Impact fees, though, are not universally accepted. Conventional wisdom among some private interests and public officials is that impact fees constrain local economic development, serving as a de facto "tax" on capital, stifling investment, and driving job growth to other fee-free jurisdictions. Supporters argue impact fees act as an investment in the community, spurring economic growth through the timely provision of new infrastructure and the expansion of buildable land. Given that impact fees often pay for public infrastructure projects, understanding the relationship between impact fees and local economic development, defined here as local job growth, is key.

This report addresses the controversy around impact fees by reviewing the academic literature concerning the effect of impact fees on employment and the economy generally. In addition, the report presents a new analysis of the relationship between impact fees and job creation by assessing impact fee and economic data, assembled for the period 1993 to 1999, for the 67 counties of Florida. Overall, the paper finds that:

- **Property tax revenues increasingly fail to cover the full costs of the infrastructure needed to serve new development.** More and more, political resistance to property taxes compromises the conventional way to pay for infrastructure needs brought on by new development. Consequently, new property values would have to be very high or property tax rates raised across the board to pay for the full array of infrastructure needs For example, one study of a rapidly growing city in Georgia in the 1990s found that the city faced a 50 percent shortfall in funding the new infrastructure demanded by new development and would need to raise $90 million more than it projected in total revenues from all state and federal transfers and property taxes.

- **Impact fees, like user fees, offer a more efficient way to pay for infrastructure than general taxes, and ensure benefits to those who pay them.** Academic literature suggests that the aggregate benefits of impact fees improve efficiency in the provision of infrastructure. While impact fees often do not reflect the full price of infrastructure improvements, fees do make the economic linkage between those paying for and those receiving benefits more direct, and so promote economic efficiency. The obvious direct economic benefits include the actual infrastructure investment, such as new roads, new schools, and new water and sewer extensions. Indirect benefits include improved predictability in the marketplace, knowing when and where infrastructure investment will occur, and that all developers are treated equitably.

- **Impact fees increase the supply of buildable land.** In the absence of impact fees, local governments may not have the revenue necessary to accommodate growth. With impact fees, they gain necessary infrastructure— water, sewer, drainage, and road facilities— to open new parcels of land development. One study also found that impact fees may reduce uncertainty and risk for developers by giving them a reasonably predictable supply of buildable land.

- **Impact fees have complex effects on housing prices.** One particularly thorough study of the effect of impact fees on housing prices found that fees reduced land prices by the amount of fees paid but also raised finished house prices by about half again the fee amount. One interpretation is that while impact fees lower raw land prices as predicted by conventional economic theory, the amount of the fee reflecting infrastructure value is recovered in the sales price. Additionally, the increment above the fee represents the value of the infrastructure as a whole and/or the certainty perceived by the market that facilities will be provided at a desired level and quality of service (i.e. no congestion) regardless of growth pressures.

- **Impact fees do not slow job growth.** In this study, we find, at minimum, that impact fees are not a drag on local economies. At most, impact fees are the grease that helps sustain job growth in the local economy.

While impact fees will continue to draw detractors, this paper shows that impact fees are a practical and valuable tool for financing local infrastructure needs. Without them, growing communities may not be able to sustain growth. In short, impact fees can directly fund vital infrastructure improvements, while increasing the supply of buildable land, improving predictability in the development process, and indirectly promoting local employment at the same time. Faced with the growing demand for investment and the public resistance to tax increases, localities in growing regions that institute impact fees may become more prosperous in the long run than communities in such regions that do not have them.

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I. INTRODUCTION

When it comes to paying for the costs of growth, local governments throughout the U.S. are by and large stuck with the tab.[1] In rapidly growing localities this responsibility is more acute, as demands for new infrastructure—i.e., roads, sidewalks and sewers, parks and recreation facilities, schools, and public safety—can outstrip politically feasible means. To attempt to pay for these facilities, local governments rely on some combination of property, sales, and/or income taxes.

However, boosting these taxes to pay for the costs of new development has become increasingly difficult. During the 1970s, inflation boosted property values and, in turn, property taxes, creating substantial taxpayer resentment (Altshuler and Gomez-Ibanez 1993). In such an environment, localities hesitated to raise taxes to pay for additional expenses associated with new development. Today, these conditions remain.

In response to taxpayer antipathy, many municipalities are seeking to shift the burden of paying for public improvements to developers. These charges, known as "impact fees," are one-time assessments by local governments on new development, or the owners of new development, to help pay for the existing, new, or expanded infrastructure needed to serve that development. In practice, impact fees bridge the gap between the cost of new municipal infrastructure and available funds. They also provide politicians some cover for financing the necessary costs of new development.

Consider the historical lineage of impact fees. Antecedents to impact fees were in-kind exactions, land dedications or build/install requirements for the construction of specific facilities. Impact fees, paid as monetary instead of in-kind contributions, came into wide use beginning in the 1970s, providing a more efficient and flexible means of local infrastructure financing such negotiated or ad hoc exactions.[2] The cities and counties of some states—such as California, Colorado, Florida, and Texas—have widely adopted impact fees as a means of financing not only on-site but off-site infrastructure development as well. The list of states enabling impact fees is impressive, as seen in the following table.

[1] All state governments distribute some resources to localities to help finance local public services. The extent to which this occurs varies from state to state and across services. But for the most part, local governments are "on their own."

[3] For example, the America Society of Civil Engineers (2001) notes that America's infrastructure needs exceed $1.3 trillion.

State Impact Fee Enabling Acts

State	Year
Texas	1987
Maine	1988
California	1989
Vermont	1989
Nevada	1989
New Jersey	1989
Illinois	1989
Virginia	1990
West Virginia	1990
Washington	1990
Georgia	1990
Pennsylvania	1991
Oregon	1991
Arizona	1991
New Hampshire	1991
Indiana	1991
Maryland	1992
Rhode Island	1992
Idaho	1992
New Mexico	1993
Wisconsin	1994
Colorado	2001

Note: Florida's Growth Management Act of 1985 does not specifically allow impact fees, but requires local governments to maintain adequate facilities and prohibits them from approving developments that cause a reduction in services for existing users. This "concurrency" law accomplishes essentially the same purpose as impact fees (Carrión 2001).

Source: Nelson, Duncan (1995), and Meck (2002)

The increasing popularity of impact fee owes to several factors. First, since the early 1980s the federal government has devolved certain powers and reduced subsidies to state and local governments for the construction of public infrastructure. Second, state and federal mandates on such infrastructure as erosion control, wastewater treatment, highway construction, and stormwater drainage—just to mention a few—have raised the price of public infrastructure. Third, in the 1970s and 1980s, stagnating incomes fueled popular resentment against new taxes. That sentiment was sustained through the 1990s even during times of relative prosperity, as evidenced by Virginia's rollback of its automobile tax, Georgia's expansion of homestead exemptions to the property tax, and Oregon's caps on local property tax rates.

Today, new infrastructure development has lagged under these political and financial constraints, resulting in deteriorating infrastructure quality, congestion of existing facilities, and inadequate infrastructure to accommodate new development.[3] The choices local governments have faced are bleak—continued popular resentment of higher property taxes or economic stagnation and a reduction in the quality of life. Given this realization, localities and developers have gradually warmed to the idea of impact fees as a practical means of addressing fiscal shortfalls.

Impact fees remain controversial, however. Developers often complain vociferously that impact fees detract from economic growth by driving up their costs, causing housing consumers to "vote with their feet" as a reaction to higher prices, abandoning jurisdictions with impact fees.[4] Others say that impact fees are the only feasible means of financing new infrastructure development in a tax-averse political environment. The existence of impact fees shows that the initial homeowners in a community have more political power than newcomers (Beatley 1988; Fischel 2001). Impact fees are a reflection of the unwillingness of existing property owners to pay higher taxes to create addition infrastructure that largely, though not entirely, benefits newcomers.

This report looks at the relationship between impact fees and economic development, which we define as job growth. The literature offers many ways to view the concept of "economic development." It can mean improving incomes, reducing unemployment, broadening opportunities, developing skills, creating new markets, revitalizing stagnating areas, and so forth (Blakely 2000). The conventional view of economic development, however, is simply job growth (Blair and Reese 1999) for the simple reason that nearly all forms of economic development are subsumed under this simple metric. Our purpose in this report is to observe the relationship between impact fee collections over time and new job growth, controlling for a variety of factors, as explained in Section III.

To that end, the next section provides an overview of impact fees and its general role in economic development, as drawn from the best academic literature. Given the lack of academic research on the role of impact fees on job growth as a measure of economic development, Section III reports new analysis of this relationship, based on data from all 67 Florida counties. In short, the analysis finds that there are no discernible adverse effects of impact fees on job growth and appears to facilitate it. Conclusions and policy implications are offered in Section IV. Details of the analysis are presented in an appendix.

[4] This theory was originally advanced by Tiebout, 1956.

II. A Review of the Impact Fee Literature

This report focuses on the employment consequences of impact fee expenditures. The general literature on impact fees is substantial, ranging from historic, legal and, administrative aspects, to economic factors. However, the literature is sparse on the relationship between impact fees and employment impacts—in fact, virtually nonexistent. A literature review solely focused narrowly on the employment effects of impact fees would be very brief and uninformative. This literature review, therefore, is relatively comprehensive, touching on many aspects of impact fees not directly related to employment and economic growth, but which are essential to understanding the environment for impact fees.

Five questions are examined: What is the justification for impact fees; are impact fees economically efficient; who pays the impact fee; what is the role of impact fees in infrastructure and land supply; and are impact fees a tax or investment? Each area provides important context for understanding the effects of impact fees on employment and the economy generally.

A. What is the Justification for Impact Fees?

Local jurisdictions have at their disposal many potential sources of revenue that can fund new infrastructure. They come in three basic forms: general, user, and shared. General funding involves the use of general (rather than dedicated) taxes, typically property taxes but also sales and income, to build and maintain non-utility infrastructure such as roads, parks, public safety, schools, and the like. The burden falls on the entire base of taxpayers. User funding involves the use of fees to finance infrastructure. This is common among utilities such as water, sewer, and drainage systems. The burden falls on all ratepayers. User funding includes all forms of exactions on new development, such as impact fees (Alterman 1988). Cost sharing occurs when user funds are leveraged against general funds such as when impact fees pay the local share of library facility costs with the rest coming from the state through its general fund.

Public facilities have historically been financed from property taxes, a general revenue source. However, numerous studies show that property taxes usually do not cover the full cost of the new infrastructure needed to serve new development (Burchell and others 2000). Conceivably, property tax revenues from existing households could cover the cost of maintaining and rebuilding existing infrastructure, and revenues from new and more expensive properties could pay for the new infrastructure. However, it is unlikely that a uniform tax rate coupled with varying property values would produce the desired effect of exactly covering total infrastructure costs. New property values would have to be quite high in order to cover the full cost of new infrastructure development without increasing property tax rates for all. Finally, raising property taxes to finance new facilities benefiting new development is often politically untenable (Nicholas, Nelson, and Juergensmeyer 1991).

Consider the case of Alpharetta, GA, in the 1990s based on the experience of one of the authors (Nelson). Local studies showed that to meet the infrastructure needs of new development, the city would need to raise $90 million more than projected total revenues from all sources,

including state and federal transfers, and property taxes. Options included raising property taxes on all development, deferring maintenance, diverting general funds from such activities as public safety, accepting congestion of facilities, or charging impact fees. The city chose impact fees.

Fears that impact fees would dampen development demand never materialized. At the time, Alpharetta was one of the state's fastest growing cities. A decade later it still is.

B. Are Impact Fees Economically Efficient?

When impact fees are equivalent to market prices they are considered to be efficient (Altshuler and Gomez-Ibanez 1993). Efficient development requires that the cost of infrastructure be included in the price of the development though full cost recovery is seldom achieved in practice (Snyder and Stegman 1986). A key advantage of impact fees (and user charges generally) is the possibility of improving economic efficiency in the provision of infrastructure. Resources are allocated efficiently when prices are equal to the marginal cost of a good—the price to produce one more of something (Downing and Frank 1983). Under perfect competition, marginal cost pricing follows automatically. Taxes are considered to be inefficient because they add to the market-determined price creating inefficiencies due to over- or underpricing. Thus, the question of whether impact fees act as a tax impairing economic efficiency or as an accurate and fair price paid for goods and services received by feepayers is central to the efficacy of impact fees as a source of funding new infrastructure.

What would happen if user charges such as impact fees were efficiently priced? Brueckner (1997) modeled the growth paths of cities to assess the efficiency of different schemes of financing new infrastructure including cost-sharing arrangements and impact fees. The metric he maximized was the aggregate value of land in the city. He found that aggregate land value was greatest under an impact fee scheme. He noted that this result is consistent with the general economics literature which states that user charges should be set to equal the marginal congestion cost imposed by a user to achieve maximum efficiency. In practice, impact fees are often underpriced because they are set as average prices, rather than by the marginal price of serving a new development - which is usually higher. Nonetheless, Brueckner shows the aggregate benefits of the kind of pricing efficiencies impact fees may generate.

C. Who Pays the Impact Fee?

Incidence refers to who pays the tax or fee. In the case of impact fees, this could be the seller of raw land to the developer, the developer of finished lots, the builder of homes on those lots, the buyers of the homes, or the economy as a whole. Under a general property tax the incidence usually falls on all taxpayers. Impact fees instead target the development process. In an obvious sense, it is the developer that pays the impact fee, at least in the short-run.

In the long run, however, the developer strives to shift the cost of the impact fee. This occurs as forward-shifting to higher purchase prices or rents paid by the consumers of development, or as

backward-shifting to the original owner as a lower price for undeveloped land (Watkins 1999, Yinger 1998, Delaney and Smith 1989, Fischel 1987). When the demand for buildable land is inelastic (relatively insensitive to changes in price) and the supply of raw land elastic (relatively sensitive to market change) forward-shifting is likely to occur and it will be the home buyer that pays much of the fee. When the demand for buildable land is elastic and the supply of raw land is inelastic, backward-shifting is likely to occur and it will be the seller of raw land that pays the fee in the form of lower prices. Despite general agreement in the literature on this pattern of incidence, Watkins (1999) observes that this process is not well understood. He surmises that the impact fee burden will always be split between all the players in the development process.

In a 1998 paper, Yinger rigorously formalized much of the earlier work on the incidence of impact fees. Yinger's key result was that development fees led to a drop in the cost of land even when the development's benefits outweighed the costs. The mobility of housing consumers implied they would bear no burden in excess of the infrastructure benefits they received. Developers mobility ensured they would bear no burden in competitive housing markets. Yinger's results also confirmed that impact fees not only protect existing residents from the cost of new infrastructure but also effectively gave them a property tax cut due to the expansion of the property tax base. Yinger found that, "Even with mobile households, competitive housing markets, and infrastructure investments that meet a benefit-cost test, one-quarter or more of the burden of these fees could fall on the owners on undeveloped land."

Recent empirical work by Ihlanfeldt and Shaughnessy (2002) adds to our understanding of the incidence effects. Using Dade County (Miami) Florida as their case study, where the supply of buildable land is relatively elastic but the supply of raw land is relatively inelastic (our interpretation of the market conditions they studied), they found that each dollar of impact fees assessed lowered land prices by a dollar but raised total sales prices by 60 cents. Why?

Our interpretation is threefold.[5] First, consistent with the theory of land economics, in relatively competitive markets the effect of the impact fee will be to drive raw land prices down by the cost of the fee plus the overhead factor facing developers, if any.[6] Second, the amount of the fee is added to the finished price essentially recovering the discounted raw land price associated with it. Third, the 60 percent increment to the fee amount reflects either the "leveraged" value added associated with the fee – such as when the local government may leverage locally collected impact fees for state or federal matching grants, as in the case of transportation and school facilities in Florida – or that a specified level or quality of service is maintained because of the fee, thereby preventing congestion, regardless of growth pressures (Nicholas, Nelson, and Juergensmeyer 1991), or both.[7]

[5] This is our interpretation only and not of Ihlanfeldt and Shaughnessey, who offer none.
[6] By "overhead factor" we mean the additional costs incurred by developers for handling the fee, such as the interest cost between the time the fee is paid and the development, such as a home, is sold.
[7] The law of impact fees requires that in exchange for payment facilities are provided at a level of service reflecting the basis of the fee calculation. (See Nicholas, Nelson, and Juergensmeyer 1991.)

Impact fees on commercial and industrial development add a complexity to the incidence analysis that has yet to be addressed. Impact fees imposed on commercial development can potentially be passed on to customers and employees. If the products of an enterprise are price inelastic, then customers will bear a higher portion of the fee. Similarly, if local labor demand is weak and workers are immobile, then employees will bear some of the burden of the fee (Altshuler and Gomez-Ibanez 1993). This is one argument supporting the view that impact fees may be adverse to economic development.

D. What is the Role of Impact Fees on Infrastructure and Land Supply?

Often overlooked in debates about impact fees is what they are actually intended to accomplish. The fundamental purpose of impact fees is to generate revenue to build infrastructure serving new development (Nelson 1988). In the absence of impact fees, local governments may have difficulty raising the revenue necessary to accommodate growth, in terms of paying for new and costly infrastructure. In such cases, growth either is stymied through lengthy planning processes that are preoccupied with the efficacy of development when facilities are congested (such as roads and schools), stopped through moratoria, or displaced to other communities.

There is another purpose to impact fees that has been overlooked too long in the literature: their impact on land supply. Communities may have adequate facility capacity, such as in water and sewer treatment, but the distribution network may be insufficient to accommodate new development. From an economic development perspective, the availability of key infrastructure such as water, sewer, drainage, and roads to land to make it buildable is perhaps the important ingredient to increasing the supply of land commensurate with development pressures (see, e.g. Blair and Premus 1987).

Finally, impact fees can reduce risk and uncertainty. Studies of Sarasota, Florida and Loveland, Colorado, found that impact fees appeared to reduce the uncertainty and risk of development and often are used to leverage the use of other non-impact fee funds to expand infrastructure (Nelson and others 1991, 1992). The effect is to provide developers with a reasonably predictable supply of buildable land. This relationship between impact fees and the supply of buildable land has been mostly ignored in the literature.[8]

E. Are Impact Fees a Tax or Investment?

The effect of impact fees on economic development is controversial. Impacts fees can be considered a kind of dedicated tax because revenues are required by law to be spent on the infrastructure for which they were collected. In this respect, impact fees are simultaneously both dedicated taxes and contributions to capital formation. But in the political debate some argue that the fees invariably act as a prohibitive tax on capital, stifling investment and job growth. Others

[8] With the notable exception of Kaiser and Burby, 1988.

contend that growth can depend on the timely provision of new infrastructure that impact fees make possible.

It is important to note that the legal justification for impact fees is fundamentally different from general taxes, falling under the rubric of municipal police powers, like zoning, which protect the health, safety, and welfare of the community. Though they may behave like a dedicated tax, we defer to custom using the term “impact fee” because their legal authority derives not from the power to tax but from the power to regulate.

Those who suggest that impact fees are a drag on the local economy would formally argue that they behave like an inefficient deadweight tax. In a competitive market, a deadweight tax would result in the supply of buildable land falling and its price rising by an amount sufficient to offset it. This would delay new development (Downing and McCaleb 1987). Likewise, if impact fees act as a tax on capital without creating value in the development process, markets will adjust by shifting the location of development and/or by raising prices, thus cutting consumption and eroding economic efficiency.

If, on the other hand, impact fees work on the supply side as a prospective investment to expand the supply of buildable land, the pace and quality of economic development could feasibly depend on imposition of the fees. Without impact fees the supply of buildable land could fall and the price of buildable land could rise thereby increasing the cost of development.

So an important question is whether impact fees act as a deadweight tax, often considered to be a drag on growth, or as a practical means of investment in needed infrastructure, encouraging new development and economic growth.

III. Analysis of the Role of Impact Fees on Job Growth

We come now to the central question: Do impact fees foster or discourage local economic development, which we define as job growth? In this section we present first the theory, then the setting for analysis, followed by the data, the methodological approach and general model. The next section reviews results. The methodological and statistical details are reported in the appendix.

A. The Theory

If impact fees are perceived as a deadweight tax, communities with impact fees will tend to develop more slowly than communities that do not use them. However, if impact fees contribute to capital formation in the form of infrastructure development needs, then communities assessing fees should perform better than communities without them, all things considered. Before proceeding, a further review of how impact fees can be viewed as a contribution to capital formation is in order.

First, the impact fee itself is a payment for which infrastructure is returned. Under *rational nexus* criteria, the fee cannot exceed the cost of infrastructure apportioned to the development *net* of other revenues used to finance the same infrastructure. For example, if federal or state funds are available to help finance infrastructure, the impact fee is based on the cost of infrastructure *less* those external revenue sources. In this way, as noted earlier, the impact fee can leverage more infrastructure investments than the development itself pays for through the fee.

Second, the impact fee must be spent on infrastructure in ways that benefit new development (albeit not necessarily on-site) and are roughly concurrent with its anticipated impacts, if not before. Road improvements, water and sewer expansions, for example, are typical facilities for which impact fees are spent.

Third, impact fees must be expended based on a plan (Nicholas, Nelson, and Juergensmeyer 1991). This means that developers can reasonably forecast when and where infrastructure will be built. The supply of land made available by such infrastructure investments is thus known in advance. The planning and capital improvements programming behind impact fees reduces risk and uncertainty while expanding the supply of buildable land reasonably predictably.

Finally, recall Brueckner's (1997) conclusion that impact fees can elevate the aggregate value of the community more so than general taxation. The reason in part is because efficiencies are gained in matching revenues with impacts of new development. The higher value may make a community more attractive to new development, especially development associated with new jobs.

B. The Setting for Analysis

The central question guiding the analysis is:

Between communities that are identical in every respect except for impact fees, are those with impact fees associated with the generation of more jobs at the margin than those without, all things considered?

The question is applied to an examination of the association between local economic development, defined here as change in jobs, and impact fees in the 67 counties of Florida during the period 1993 to 1999. Florida's counties vary considerably with respect to size (7,000 to 2.1 million residents), economic growth (strongly positive to stagnant or even negative), and demographic characteristics (rich, urban, rural). The time-series aspect of the panel data follows the counties from 1993 to 1999 through economic cycles and varying levels of impact fee assessment. For example, in 1997 only about half the counties (34) assessed impact fees, and, of those that did, the total revenue collected was $196.9 million, varying by county from $891 to $57.3 million. However, in 1993, total revenue collected from impact fees in those 34 counties was only $100.5 million. Reasons for growing revenue include a rebound from an economic recession affecting the state during the early 1990s, larger lists of facilities financed in part from impact fees, and higher assessments

During the study period only about half the counties had jurisdictions collecting impact fees, and, of those where fees were collected, the variation in aggregate countywide collections was substantial. There thus exists among Florida's 67 counties sufficient variation in the data to evaluate the "boost-or-drag" effects of impact fees on job growth.

Florida is also an appropriate state to examine since it has arguably the most extensive history of applying *rational nexus*-style development impact fees and therefore the most likely to reveal an observable cause-and-effect relationship between impact fees and tangible economic benefits (Nelson 1988; Nicholas, Nelson, and Juergensmeyer 1991).

C. The Data and Methodological Approach

The state of Florida collects data in a standardized format across all 67 counties, 405 municipalities and 1,178 special districts, including data on impact fees collected by one or more jurisdictions within the 34 counties where such fees are assessed. Beginning in fiscal year 1993, counties and municipalities in Florida were required by the state comptroller to include impact fee collections in their annual financial reports to the state. The great breadth (67 total counties with 34 having at least one jurisdiction collecting impact fees) and depth (7 years) of this dataset is conducive to both cross-sectional and longitudinal multivariate regression analyses, the details of which are reported in the appendix. Another unique feature of Florida's public finance accounting data is the disaggregation of accounts. Often, revenues from exactions, impact fee,s and special assessments are co-mingled in the accounting process, but Florida's impact fee dataset provides sufficient accounting and jurisdictional disaggregation to investigate the effects of local public finance policies.

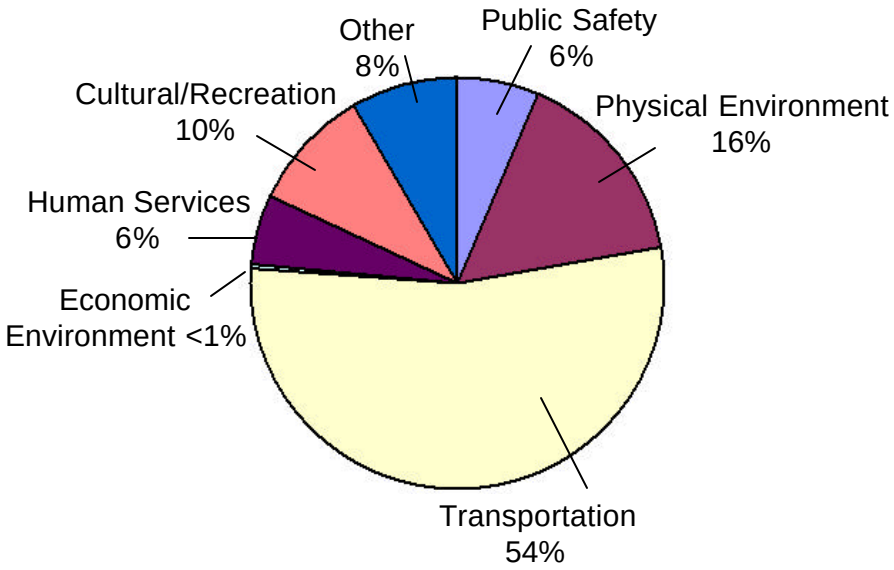
For this analysis impact fee data for the Florida counties was assembled for the period 1993 to 1999 (Table 1). Impact fee collections have been consistently rising for the state of Florida as a whole over the period 1993-99. Total impact fees collected over this period by the 34 counties are over a billion dollars ($1.22 billion). Within specific categories, transportation-related impact fees represent over half (54.0 percent) the total collected. At the other extreme, impact fee revenues for the human services, public safety, and environment (water, wastewater) categories together total only 12.2 percent of aggregate impact fee revenues. Thus, the revenues from impact fees are both substantial and diverse (Figure 1).

Table 1. Levels of Impact Fee Revenues in Florida, 1993-1999

Category of Impact Fee	1993	1994	1995	1996	1997	1998	1999	Total
Public Safety	$6,112,402	$12,072,141	$7,449,337	$6,426,496	$14,472,111	$15,427,787	$16,571,996	$78,532,270
Physical Environment	$2,494,292	$29,021,186	$30,602,259	$30,039,081	$17,271,049	$36,525,036	$47,392,999	$193,345,902
Transportation	$70,055,757	$80,729,035	$75,874,384	$79,793,997	$117,496,015	$105,197,693	$130,658,567	$659,805,448
Economic Environment	$257,129	$324,943	$290,715	$242,268	$245,818	$279,427	$290,481	$1,930,781
Human Services	$3,094,648	$5,886,280	$9,230,217	$8,673,835	$10,016,822	$11,344,714	$19,883,982	$68,130,498
Cultural/Recreation	$13,981,835	$10,734,496	$8,139,400	$9,225,410	$24,886,370	$25,002,010	$26,275,616	$118,245,137
Other	$4,499,409	$4,066,993	$24,284,121	$24,326,306	$12,505,293	$15,932,971	$16,679,695	$102,294,788
Total	$100,495,472	$142,835,074	$155,870,433	$158,727,393	$196,893,478	$209,709,638	$257,753,336	$1,222,284,824

Source: Florida

Figure 1. Percent Distribution of Impact Fee Revenues in Florida, 1993-1999, by Category



The *Florida Statistical Abstract* is published annually by the University of Florida Bureau of Economic and Business Research (BEBR) and provides a wide array of data consistent across time on human resources, physical resources and industries, services, public resources and administration, and economic and social trends. The state comptroller's impact fee and BEBR datasets provide sufficient data to conduct cross-sectional multivariate analysis evaluating the association between development impact fees and key development indicators.

There have been no published studies of the effects of impact fees on job growth. Granted that job growth is only one element of what constitutes economic development (job quality and stability, increased industrial diversity and integration, and higher wages are additional factors), but it is the most common metric and one that is both easily measured and socially and politically important.

The approach here relies on an analysis of panel data with both cross-sectional and time-series dimensions. Independently pooled cross-sectional analysis effectively increases the sample size to produce more precise estimators and test statistics with more power. Economic growth is affected by numerous factors including past growth, new investment, shifting industrial patterns, and demographics. It is practically impossible to introduce suitable data for all the diverse contributors to employment growth, so the approach used here specifies a spatial fixed-effects model with dummy variables denoting particular region-sized geographic areas. These variables aggregately control for the idiosyncratic bundle of attributes present in the corresponding space.

We offer qualifications to the approach, however. Our current research has been limited to investigating the association between impact fees and job growth, focusing on Florida. As will be seen, our findings suggest that impacts fees do not appear to be a drag on job growth, and may even help. Future research should attempt to establish causality—that is a direct link between impact fees and job growth, which is something this study does not do. A more sophisticated approach would improve on the straightforward application of the general least squares regression technique we report by using an instrumental variable two-stage least square regression method to handle the potential simultaneity in causation between job growth and the collection of impact fees. Additionally, the scope of independent variables should be increased to account for the diversity of causal agents which might explain job growth. Taken together, these two methodological extensions should more definitively answer the question of the effects of impact fees on employment growth. One of us (Moody, for his doctoral dissertation) is working on this presently.

D. The General Model

Because counties vary we need to employ regression analysis to separate the effects of numerous factors on local economic development from any impact fee relationships. The Appendix reviews the details of our model. The simple version of it is:

NEW JOBS is associated with:

IMPACT FEES PER BUILDING PERMIT
BASE YEAR EMPLOYMENT CHANGE
PROPERTY TAX PER CAPITA
PRIOR DECADE (1980-1990) JOB GROWTH
YEAR
REGION

New jobs are defined for our purposes as change in jobs from a base year, say 1993, and two years hence, 1995. This is our "dependent" variable; that is, its change is dependent on characteristics of the "independent" variables presented next. We calculate this change for every county for every two-year period from 1993 through 1997 (with the last year being 1999). In all, we have 335 observations (67 counties over five two-year periods).

The reason we track job growth from a base year is that we are interested in knowing whether impact fees collected in a base year may influence job change in later years. The choice of two, three, or more years may be arbitrary and perhaps any lagged arrangement would be reasonable. We chose the two-year lag because it is probably the least amount of time needed to transpire between impact fee collections and the influence of fees on future employment.

The dependent variable *NEW JOBS* is influenced by "experimental" and "control" variables. Our "experimental" factor is *IMPACT FEES PER BUILDING PERMIT* issued in the first year of each two-year period. The unit of analysis is all 67 counties including all cities in those counties. Although cities within counties vary in their impact fee practices, aggregation to the county level was needed to assure comparability among other control data that are available only at the county level. Moreover, like others, we consider that the smallest reasonable unit of a local economy to be the county (see Nelson, Drummond, and Sawicki 1995). Consistent with our theory, we hypothesize a positive association between impact fees collected per building permit and job change.

The remaining dependent variables are called "controls" because they account for important differences between counties. *BASE YEAR EMPLOYMENT CHANGE* is the change in jobs within each county between the prior year and the base year of analysis. Growing counties tend to create an atmosphere that attracts more growth, so by controlling for growth inherent with growing counties we are better able to tease out influences of impact fees on sustaining growth. We expect a positive association between past job growth and future job growth (Nelson, Drummond, and Sawicki 1995). *PROPERTY TAX PER CAPITA* is the property taxes collected in the previous year divided by population of the base year. It controls for any effects property taxes may have on job growth but the literature on the relationship between them is unclear (Nelson, Drummond, and Sawicki 1995). *PRIOR DECADE GROWTH* is the employment growth by county for the period 1980 to 1990. This variable serves as a baseline control for long-term economic growth in the decade preceding this analysis. *YEAR* is the base year of each two-year period. It helps to account for differences between counties that occur during any given year such as a momentary blip up, or down, in one county's economy relative to others. There is no expected direction of association expected *a priori*. *REGION* is a variable representing the eight relatively socially and economically homogeneous regions devised by the state Department of Banking and Finance, part of the comptroller's office,

within which each county is assigned. It controls for differences in social, economic, demographic, and growth dynamics among counties based on the region within which they are located. There is no expected direction of association expected *a priori*.

A word on collinearity is needed before proceeding with results. It seems obvious that if impact fees are assessed on only new development, then the more development there is the more fees will be collected. Hence, we are initially worried that any measure of association between impact fees and job growth would be circular: jobs reflect growth, which reflects fees collected. We employed a number of tests to assure that our analysis teased out effects of impact fees reasonably and they are reported in the appendix. Keep in mind, however, that our dependent variable is impact fees collected per building permit issued. This creates a standardized way to compare differences in impact fees between counties. If high fees in one county burden economic development more than in another, then we should see job change lag behind those counties, all things considered.

E. Results

Our statistical analysis (presented in detail in the Appendix) finds a significant positive association between impact fees collected per building permit in one year and job growth over the next two years. This finding holds even when controlling for base year employment growth, prior decade employment growth, property taxes per capita, the value of local building permit activity, regional, temporal, and other factors. This finding is consistent with our hypothesis that impact fees spent on infrastructure development are not a drag on local economies with respect to job growth but, instead, can be beneficial to them. A conservative interpretation would at least claim that no discernable adverse economic impacts from impact fees could be found. A liberal interpretation of these model results would argue that the imposition of impact fees typically results in positive effects on local employment, at least in Florida during the 1990s.

IV. CONCLUSIONS AND POLICY IMPLICATIONS

These analytical results provide a convincing argument that the imposition of impact fees represents an investment in the local economy, without boosting general taxation.

The controversy over impact fees, already over two decades old, will likely continue.[9] But for very practical, not theoretical, reasons, impact fees will remain an important mechanism for growing communities to finance local infrastructure needs. Impact fees are really nothing more than an invention by local officials to solve the problem of providing infrastructure to sustain development in rapidly growing areas. In essence, theoretical debate has followed pragmatism.

To be sure, the positive association between impact fee revenues and job growth found in this study should not be misconstrued to mean that increasing impact fees will always result in job growth. That relationship may exist for many of the counties studied, but it might not hold for counties experiencing low or declining growth, or an oversupply of existing infrastructure. But for growing local economies, impact fees can directly fund infrastructure needs and indirectly boost job growth by expanding infrastructure and buildable land supply commensurate with demand. Indeed, impact fees may be needed to sustain growth, particularly if the alternative is an inability to expand infrastructure to meet the needs of new development.

Impact fees may certainly be unpopular to influential interests, but our findings suggest that without them economic growth may be compromised. Given tax limitations and growing demand for infrastructure investment, communities in growing regions that have impact fees may become more prosperous in the long run than communities in such regions without them.

[9] The first leading case on rational nexus style impact fees was City of Dunelin v. Contractors and Builders Association of Pinellas County, 358 So. 2nd 846, litigated in 1976 and decided in 1978.

APPENDIX

Here we present our detailed model and statistical analysis.

Model: The model tests the association between impact fees and job formation:

(1) $NEW\ JOBS_{t(b)-t(a)} = \hat{A}_O + \hat{A}_1\ IMPACT\ FEES/BUILDING\ PERMITS_{t(a)} + \hat{A}_2\ BASE\ YEAR\ EMPLOYMENT\ CHANGE_{t(a)} + \Sigma\ \hat{A}_3\ PRIOR\ DECADE\ CHANGE_{t(a),i} + \hat{A}_4\ PROPERTY\ TAX\ PER\ CAPITA_{t(a)} + \Sigma\ \hat{A}_i YEAR\ DUMMIES_{t(a),i} + \Sigma\ \hat{A}_i REGIONAL\ DUMMIES_{t(a),j} + u;$

where,

NEW JOBS$_{t(b)-t(a)}$ is a vector of the change in employment in all counties between a given year, *t(b)*, and a base year, *t(a)*;

IMPACT FEES/BUILDING PERMITS is a vector of impact fees collected by each county between a base year and the previous year divided by the value of building permits issued for the same period;

BASE YEAR EMPLOYMENT CHANGE is a vector of the change in jobs in each county between a base year and the previous year.

PRIOR DECADE EMPLOYMENT CHANGE is a vector of the change in jobs in each county during the period 1980-1990.

PROPERTY TAX PER CAPITA is a vector of county property taxes collected between a base year and the previous year divided by the population for the base year;

$\Sigma\hat{A}_i YEAR\ DUMMIES_i$ is a vector of year dummy variables (i=1-4);

$\Sigma\hat{A}_j REGIONAL\ DUMMIES_j$ is a vector of regional dummy variables (j=1-7); and

u is the stochastic disturbance term.

(2) A second formulation of the model substitutes the dummy variable *IMPACT FEE,* set to unity if impact fees are collected by a county and otherwise set to zero, in place of the *IMPACT FEES/BUILDING PERMITS* variable.

If impact fees are a form of capital formation,

(3) $\ddot{a}NEW\ JOBS_{t(b)-t(a)} / IMPACT\ FEES_{t(a)} > 0;$

but if they are a tax on capital,

(4) $\ddot{a}NEW\ JOBS_{t(b)-t(a)} / IMPACT\ FEES_{t(a)} < 0.$

The dependent variable, *NEW JOBS,* is the change in the number of jobs associated with the imposition of impact fees from the year in which the fees were collected, *t(a),* to a later year, *t(b)*. The signs of the *IMPACT FEES/BUILDING PERMITS* and *IMPACT FEES* explanatory variables are indicative of the "boost-or-drag" employment effects of the fees. A log-linear transformation of the data series will permit interpretation of the explanatory variable coefficients as semi-elasticities as well as detrending (with year dummy variables) the time-series data to account for price inflation.

An important consideration in the model specification is the time lag, *t(a)–t(b),* between the imposition of an impact fee in a given year and the measurable manifestation of the resultant economic effects, if any. The revenues collected from impact fees are disbursed through capital improvement programs (CIP) that typically operate for five or six years. It seems reasonable to expect that the economic effects such as job gains should be measurable mid-way the CIP cycle on any one project, here taken to be two years. Thus the time lag between collection of the fee and resultant employment effects will be two years.

Dependent and Independent Variables. NEW JOBS – The dependent variable is the change in county-wide employment between a base year, *t(a),* and a later year, *t(b)*. The quantity *NEW JOBS* reflects, in part, investment decisions made at t(a) which affect the subsequent level of employment growth at t(b).

Experimental Variable

IMPACT FEES/BUILDING PERMITS – Aggregate county-wide impact fee revenues for a given base year, *t(a),* divided by the aggregate value of all county building permits for the same year. This explanatory variable normalizes county impact fee revenues by the value of building permits issued in that county for that year, producing a relative measure of the importance of impact fees in the local economy. If *NEW JOBS* is positively related to the *IMPACT FEES/BUILDING PERMITS* explanatory variable, then impact fees may be viewed as a beneficial form of capital investment. At a minimum, a positive sign on this variable implies that impact fees are not detrimental to local job growth and economic development. If negatively correlated with *NEW JOBS*, then impact fees can plausibly act as a tax on capital, stifling local job growth.

IMPACT FEES – A binary variable which assumes the value of unity for counties collecting impact fee revenue for a given base year, *t(a),* and a value of zero otherwise. Use of a dummy variable eliminates the influence in the model of the nominal size of impact fees collected in a county. As with the *IMPACT FEES/BUILDING PERMITS* variable, if *NEW JOBS* is positively correlated with the *IMPACT FEES* explanatory variable, then impact fees can be viewed as good for job growth.

Control Variables

BASE YEAR EMPLOYMENT CHANGE – The change in county-wide employment between the base year in which impact fees are collected, *t(a),* and the previous year, *t(a-1)*. *BASE YEAR EMPLOYMENT CHANGE* controls for the effects of the economic environment in the base year on subsequent (2-year lagged) employment.

PRIOR DECADE EMPLOYMENT CHANGE – The change in county-wide employment between 1980 and 1990. *PRIOR DECADE EMPLOYMENT CHANGE* controls for the long-term effects of the economic environment in the decade prior to the period of this analysis.

PROPERTY TAX PER CAPITA – County-wide property taxes revenues for a given future year, *t(a)*, divided by the population of that county for that year. The expected correlation to the dependent variable is ambiguous depending on the effects of the tax. The traditional view is that high property taxes can redirect investment capital from economic development. A contrasting and increasingly appreciated view is that high property taxes reflect high quality services and a high quality of life, both desirable characteristics of firms and households choosing a place to locate. Moreover, since many local governments give property tax concessions to lure targeted economic development opportunities, such firms benefit from higher taxes paid by everyone else. No direction of association can be predicted with much reliability (Nelson, Drummond, and Sawicki 1995).

YEAR DUMMIES – The intercepts on the year dummy variables account for the likely possibility that the model's explanatory variables have different variance distributions in different time periods. Log-linear transformations of the model including the year dummy variables will effectively detrend the time-series data. Calendar year (CY) 1993 is taken to be the reference year.

REGIONAL DUMMIES – The spatial fixed-effects model uses binary variables to allow for regional variation in the economic environment. These dummies aggregately control for the particular bundle of attributes present in a region including the demographic characteristics of the population (age, race, and education) and other sources of regional variation. The Florida Comptroller's Department of Banking and Finance has divided the 67 counties into eight economically homogenous groupings: Pensacola/Northwest, Jacksonville/Northeast, Orlando/Central, West Palm Beach/Southeast, Miami/South, Ft. Lauderdale/South Central, Ft. Myers/Southwest, Tampa/West Central. The Pensacola/Northwest region will provide a reference for the regions to the south.[10]

Statistical Analysis: The empirical results of the pooled cross-sectional regression analyses are presented in Table 2. Two models are presented, each with the dependent variable the natural logarithm of the lagged (two-year) change in employment. For the cross-sectional analysis the last year analyzed was 1997 because of the two-year lag in the dependent variable; the most recent employment data from BEBR was 1999. The coefficients of both models consistently reflect a significant positive effect of impact fees on job growth even when controlling for base year employment growth, property taxes per capita, the value of local building permit activity, regional, and other factors.

[10] The Florida Comptroller's Department of Banking and Finance definitions of the eight economic regions can be found at http://www.dbf.state.fl.us/regions.html.

TABLE 2

Empirical Modeling Results

Variables	Cross-sectional (1993-1999) Generalized Least Squares Regression Model Coefficients	
	Model 1: Log-Linear Functional Form	*Model 2: Log-Linear Functional Form*
Dependent Variable		
Lagged (2-year) Change In Employment		
Explanatory Variables [Std. Error]		
Impact Fees / Value of Building Permits	8.779 [1.885]	
Impact Fee Dummy		.482 [.085]
Control Variables [Std. Error]		
Baseline Year Change in Employment	4.877E-06 [3.251E-06]	4.526E-06 [3.328E-06]
Value of Building Permits		9.403E-10 [3.017E-10]
Property Tax Per Capita	9.320E-03 [.001]	5.933E-03 [.001]
Prior Decade Employment Growth	2.053E-05 [1.296E-06]	1.623E-05 [2.391E-06]
Regional Dummies (a)		
FtLauder (SCen)	-.713 [.233]	-1.218 [.332]
FtMyers (SW)	.344 [.195]	.206 [.169]
Miami (S)	.447 [.156]	.662 [.184]
Orlando (Cen)	.962 [.158]	.730 [.172]
WestPalm (SE)	.249 [.144]	.253 [.156]
Tampa (WCen)	1.196 [.147]	.893 [.172]
Jax (NE)	-9.123E-02 [.144]	-.130 [.157]
Year Dummies (b)		
CY 94	-1.653E-02 [.038]	-1.624E-02 [.107]
CY 95	-3.051E-02 [.063]	2.611E-03 [.108]
CY 96	-8.331E-02 [.042]	7.682E-03 [.106]
CY 97	-5.690E-02 [.054]	8.223E-03 [.106]
Constant	9.077 [.130]	9.086 [.166]
Statistics		
Adjusted R-Square	0.919	0.799
Standard Error	1.507	1.602
N	334	334

(a) = reference region Pensa (NCen); (b) = reference year CY 93.

Initially Model 1, a log-linear functional form, produced a positive (+7.965) and significant coefficient (t=2.62) for the explanatory variable *IMPACT FEES/BUILDING PERMITS*. A Breusch-Pagan test indicated a possible problem with heteroskedasticity ($p<0.001$). A Generalized Least Squares estimation approach[11] was used to correct for heteroskedasticity. The results reflect a positive coefficient (+8.779) and higher significance (t=4.657) for the *IMPACT FEES/BUILDING PERMITS* variable. This significant positive association endorses the hypothesis that impact fees spent on infrastructure development are not a drag on local economies with respect to job growth but, instead, may be beneficial to local economies.

Of particular concern in a model with several potentially related predictors is collinearity. The variance inflation factor (VIF) for the *IMPACT FEES/BUILDING PERMITS* coefficient was 2.588, substantially less than the rule of thumb of VIF > 10.0 (Kleinbaum 1988) for problematic collinearity characteristics. Similarly, computations of the eigenvalues of the correlation matrix show a minimum eigenvalues of 0.221 and a maximum condition index of 3.258. Belsley, Kuh, and Welsch (1980) recommend interpreting a condition index of 30 or more as reflecting moderate to severe collinearity so no significant problem with collinearity is indicated. Additionally, the variance proportions of the principal components do not reflect high loadings onto multiple components with large condition indices, again reflecting acceptable collinearity characteristics.

The coefficient for the *PROPERTY TAX PER CAPITA* variable is significant and greater than zero indicating a positive relationship between tax and resultant job growth as with the *IMPACT FEES* variables. As noted, the expected correlation to the dependent variable can be ambiguous depending on the effects of the tax in a particular setting. Given the positive sign and high significance of the *PROPERTY TAX PER CAPITA* variable, it is plausible to conclude that property taxes do not exert a chilling effect on job growth in the Florida case.

The variable *PRIOR DECADE EMPLOYMENT GROWTH* is significant and greater than zero indicating a positive relationship between tax and resultant job growth as with the *IMPACT FEES* variables. In a sense, past performance is a good predictor of the future. The performance of this control variable combined with performance of our experimental variable suggests the “rich get richer” but when the “rich” also use impact fees to sustain infrastructure expansion to accommodate growth the rich get richer still.

None of the year dummy control variables were statistically significant. Compared to the Pensacola/Northwest reference region, the Orlando, West Palm, Fort Myers, Jacksonville Tampa and Miami regions fared better with respect to employment increases during the period 1993-1997. The Fort Lauderdale region performed relatively less well than the Pensacola region. The aggregate nature of the regional dummy variables makes detailed interpretation of constituent causal factors impossible.

[11] After Wooldridge (2000).

Model 2, also a log-linear functional form, uses the explanatory dummy variable *IMPACT FEES* in place of the *IMPACT FEES/BUILDING PERMITS* variable as potentially indicative of the effects of impact fees on job growth. The *IMPACT FEE* binary variable indicates the presence of an active impact fee policy in a specific county. Computations of the eigenvalues of the correlation matrix show a minimum eigenvalues of 0.39 and a condition number of 9.3, neither of which indicate a significant problem with collinearity. A Breusch-Pagan test indicated substantial heteroskedasticity ($p<0.001$).

Again, GLS estimation of the model reduced heteroskedasticity and produced a positive coefficient (+0.482) and high significance (t=5.684) for the *IMPACT FEES* dummy variable. This highly significant positive association again confirms the hypothesis that impact fees can positively benefit local employment.

In summary, results from GLS estimation of both models consistently indicate a positive association between impact fees and employment. The values for both IMPACT FEE coefficients seem higher than would be expected and will be the subject of further scrutiny. A liberal interpretation of these model results would argue that the imposition of impact fees typically results in substantial positive effects on local employment, at least in Florida during the 1990s. A more conservative interpretation would at least claim that no discernable adverse economic impacts from impact fees could be found.

REFERENCES

Alterman, Rachelle. 1988. Private Provision of Public Services: Evaluation of Real Estate Exactions, Linkage, and Alternative Land Policy. New York: New York University Press.

Altshuler, Alan, and Jose Gomez-Ibanez. 1993. "Regulation for Revenue: The Political Economy of Land Use Exactions." Washington: Brookings and Cambridge: Lincoln Institute of Land Policy.

American Society of Civil Engineers. 2001. Report Card for America's Infrastructure. (http://www.asce.org/reportcard/index.cfm?reaction=full [April 27, 2003]).

Arnott, Richard, and Frank Lewis. 1979. "The Transition of Land to Urban Use." Journal of Political Economy 87: 161–169.

Baumann, Gus, and William Ethier. 1987. "Development Exactions and Impact Fees: A Survey of American Practices." Law and Contemporary Problems 50 (1): 51–68.

Beatley, Timothy. 1988. "Ethical Issues in the Use of Impact Fees to Finance Community Growth. In Arthur C. Nelson, ed. Development Impact Fees: Policy Rationale, Theory, and Practice. Chicago: American Planning Association.

Belsley, David A., Edwin Kuh, and Roy E. Welsch. 1980. Regression Diagnostics: Identifying Influential Data and Sources of Collinearity. New York: John Wiley and Sons.

Blair, John P., and Robert Premus. 1987. "Major Factors in Industrial Location." Economic Development Quarterly 11: 72–85.

Blair, John P., and Laura A. Resse. 1999. Approaches to Economic Development. Thousand Oaks, CA: Sage Publications.

Blakley, Edward J. 2000. "Economic Development." In Charles J. Hoch, Linda C. Dalton, and Frank S. So, eds. The Practice of Local Government Planning, third edition. Washington: International City-County Management Association and American Planning Association.

Breukner, Jan K. 1997. "Infrastructure Financing and Urban Development: The Economics of Impact Fees." Journal of Public Economics 66: 383-407.

Bureau of Economic and Business Research and Warrington College of Business Administration. Florida Statistical Abstracts: 1993-2000. Gainesville: University of Florida.

Burchell, Robert W., and others. 2000. The Costs of Sprawl – Revisited. Washington: National Academy Press.

Carrión, Carmen, and Lawrence W. Libby. 2001. "Development Impact Fees: A Primer." Working Paper: AEDE-WP-0022-01. Ohio State University Extension, Department of Agricultural, Environmental and Development Economics.

Cory, D.C. 1985. “Development Taxation and Conversion of Low Intensity Land Uses on the Urban Fringe.” Journal of Environmental Systems 15 (2): 159–169.

Delaney, Charles J., and Marc Smith. 1989. “Impact Fees and the Price of New Housing: An Empirical Study.” AREUA Journal 17: 41–54.

Downing, Paul, and James E. Frank. 1983. “Recreational Impact Fees: Characteristics and Current Usage.” National Tax Journal 37 (4): 477–490.

Downing, Paul, and Thomas S. McCaleb. 1987. “The Economics of Development Exactions.” In James Frank and C.H. Romesburg, eds., Development Exactions. Chicago: American Planning Association.

Fischel, William A. 1987. “The Economics of Land Use Exactions: A Property Rights Analysis.” Law and Contemporary Problems 50 (1): 101–113.

———. 2001. The Home Voter Hypothesis: How Home Values Influence Local Government Taxation, School Finance, and Land-Use Policies. Cambridge, MA: Harvard University Press.

Ihlanfeldt, Keith R. and Timothy M. Shaughnessy. 2002. An Empirical Investigation of the Effects of Impact Fees on Housing and Land Markets. Cambridge, MA: Lincoln Institute of Land Policy.

Kaiser, Edward J., and Raymond J. Burby. 1988. "Exactions in Managing Growth: The Land Use Perspective." In Rachelle Alterman, ed., Private Provision of Public Services: Evaluation of Real Estate Exactions, Linkage, and Alternative Land Policy. New York University Press.

Kleinbaum, David G. 1988. Applied Regression Analysis and Other Multivariable Methods. Boston: PWS-KENT Publishing Company.

Kolo, Jerry, and Todd Dicker. 1993. "Practical Issues in Adopting Local Impact Fees." State and Local Government Review 253: 197–206.

Levine, Jonathan C. 1994. “Equity in Infrastructure Finance: When Are Impact Fees Justified?” Land Economics 70 (2): 210–222.

Malizia, Emil, Richard Norton, and Craig Richardson. 1997. “Reading, Writing, and Impact Fees.” Planning 63 (9): 17–20.

McMillen, Daniel P. 1990. “The Timing and Duration of Development Tax Rate Increases.” Journal of Urban Economics 28: 1–18.

Meck, Stuart, ed. 2002. Growing Smart Legislative Guidebook. Chicago: American Planning Association.

Nelson, Arthur C., ed. 1988. Development Impact Fees: Policy Rational, Practice, Theory, and Issues. Chicago: American Planning Association.

Nelson, Arthur C., and others. 1991. “Price Effects of Road and Other Impact Fees.” Transportation Research Record 1305: 36–41.

———. 1992. “Impact Fees As a Positive Factor in Urban Planning and Development.” Journal of Urban Planning and Development, 118(2): 45-58.

Nelson, Arthur C., William J. Drummond and David S. Sawicki. 1994. “Economic Development Policy Implications of Exurban Industrialization.” Economic Development Quarterly 9(2): 91-100.

Nicholas, James, C. 1987. “Impact Exactions: Economic Theory, Practice, and Incidence.” Law and Contemporary Problems 50 (1).

Nicholas, James C., Arthur C. Nelson, and Julian C. Juergensmeyer. 1991. A Practitioners’ Guide to Development Impact Fees. Chicago: American Planning Association.

Shoup, Donald C. 1970. “The Optimal Timing of Urban Land Development.” Papers and Proceedings of the Regional Science Association 25: 33–44.

Singell, Larry D., and Jane H. Lillydahl. 1990. “An Empirical Examination of the Effect of Impact Fees on the Housing Market.” Land Economics 66 (1): 82–92.

Skaburskis, Andrejs and M. Qadeer. 1992. “An Empirical Estimation of the Price Effects of Development Impact Fees.” Urban Studies 29 (5): 653–667.

Skidmore, Mark, and Michael Peddle. 1998. “Do Development Impact Fees Reduce the Rate of Residential Development?” Growth and Change 29 (4): 383–400.

Snyder, Thomas P., and Michael A. Stegman. 1986. Paying for Growth: Using Development Fees to Finance Infrastructure. Washington: Urban Land Institute.

State of Florida Comptroller’s Office, Department of Banking and Finance. Impact Fee Datasets: 1993-1999. Tallahassee.

Tiebout, Charles. 1956. “A Pure Theory of Local Expenditures.” Journal of Political Economy 64: 416–424.

Townsend, Bradford. 1996. “Development Impact Fees: A Fair Share Formula for Success.” Public Management 78 (4): 10–16.

Watkins, A. 1999. “Impacts of Land Development Charges.” Land Economics. 75 (3): 415–424.

Wicksell, Knut. 1934. Lectures on Political Economy. London: Routledge and Kegan Paul Ltd

Wooldridge, Jeffrey M. 2000. Introductory Econometrics: A Modern Approach. Cincinnati: South-Western College Publishing.

Yinger, John. 1998. “The Incidence of Impact Fees and Special Assessments.” National Tax Journal 51 (1): 23–41.

Zorn, Peter, Seymour Schwartz, and David E. Hansen. 1986. “Mitigating the Price Effects of Growth Controls: A Case Study of Davis, California.” Land Economics 62 (1): 46–57.

CASES

Associated Home Builders v. City of Walnut Creek, 4 Cal. 3d 633, 638, 484 P.2d 606, 610, 94 Cal. Rptr. 630 (1971), appeal dismissed, 404 U.S. 878 (1971).

Banberry Devl. Corp. v. South Jordan City, 631 P.2d 899 904 (Utah 1981). Broward County v. Janis Development Corp., 311 So.2d 371 (Fla. 4th Dist. 1975).

Call v. City of West Jordan, 606 Pa.2d 217 (Utah 1979).

City of Arvida v. City and County of Denver, 663 P.2d 611 (Colo. 1983).

City of College Station v. Turtle Rock Corp., 680 S.W.2d 802 (Texas 1984).

City of Dunedin v. Contractors and Builders Association of Pinellas County, 358 So. 2d 846 [Fla. 2d DCA 1978]).

City of Fayetteville v. IBI Inc., 659 S.W.2d 505 (Ark. 1983).

Contractors and Builders Association of Pinellas County v. City of Dunedin, 329 So.2d 314 (FL 1976), cert denied 444 U.S. 867 (1979).

Dolan v, City of Tigard, Oregon, S.Ct. 2309 (1994).

Hollywood Inc. v Broward County, 431 So.2d 606 (Fla.4th DCA 1983), cert. denied 440 So.2d 352 (Fla. 1983).

Home Builders and Contractors Association v. Palm Beach County, 446 So.2d 140 (Fla. 4th DCA 1983), cert. denied 451 So.2d 848 (Fla. 1983).

Homebuilders Ass'n v. South Jordan City, 631 P.2d 899 (Utah 1981).

Lafferty v. Payson City, 642 P.2d 376 (Utah 1982).

Nollan v. California Coastal Commission, 107 S.Ct. 314 (1987).

Russ Building Partnership v. San Francisco, 234 Cal.Rptr. 1 (Cal.App. 1 Dist. 1987).