



# DEEP IMPACT

By Ali Anari and James P. Gaines

Support for public and private development projects often is based on their expected economic impacts at the local, regional or national levels. All real estate related activities — construction of a shopping center, hospital expansion, closing of a manufacturing plant, creation of a subdivision or residential remodeling — have an effect on the amount of money circulating in an area.

Economic impact studies measure the expected economic consequences of specific *economic activities* (such as residential construction, new commercial developments or expansion of an existing property) or *legal activities* (such as new zoning or building regulations or changes in the property tax code).

Economic impacts typically include changes in levels of business or retail sales, employment and earnings, and tax revenues expected to derive from the activity.

Residential construction illustrates the economic impact of one type of real estate activity. When a house is built or substantially remodeled, a series of other business transactions occur. Construction materials are purchased and transported to the site. Framers, carpenters, masons, roofers, electricians, plumbers and painters are employed during construction.

Expenditures for labor and materials generate business sales, employment and earnings for others as well as tax revenues

for federal, state and local governments. When these expenditures are made locally, the local economy benefits; if purchased materials and services come from other areas of the state or from out of state, the economic impact is expanded.

## What are Economic Impact Studies?

**E**conomic impact studies fall into several categories. One class measures the comprehensive economic effects of already established industries, such as the Texas chemical industry. Other types of studies analyze the economic consequences of new laws or proposed changes to existing laws. For example, a study might focus on the effects of a proposed tax on imported crude oil. Impact analyses sometimes include estimates of potential changes in the volume of future development, public services or other similar activities, such as road construction.

The economic impacts of some activities may be temporary, spurred by a one-time event, such as a Super Bowl game. Other projects, such as construction of a shopping center or a large sports stadium, have economic impacts that last for years.

Economic impacts are not always positive. Some activities result in diminished economic outcomes. If a military base is closed or loses troops, for example, the lower base operations expenditures result in loss of local employment and earnings along with reduced local retail sales and sales taxes. The same is true when an industrial plant closes.

Projected economic impacts are most often used to promote or defend projects or activities. In real estate, economic impact studies may be used to obtain local government support and possibly financing for infrastructure or other necessary improvements. Studies may be used to obtain regulatory variances for development or a particular type of construction. In other situations, economic impact studies may be used to direct public policy or obtain support for industries, economic development or even public developments, such as transportation improvements or public facilities.

Estimating the economic impacts of any action is a complex process. One person's expenditure is another person's revenue, which when spent becomes yet another person's revenue. When a house is sold, expenditures on property appraisals, sales commissions, legal fees, mortgage loan fees, moving expenses and other costs generate revenues for licensees, lenders, attorneys and other service providers.

These people, in turn, spend part of these revenues to purchase other goods and services, generating revenues for still others. This is referred to as the *multiplier effect*. Economists identify and measure economic impacts in an orderly and methodical process based on the nature of the activity under investigation, data availability, geography of the impact area and timing of events.

## Impacts Classified

Economic impacts typically are divided into two groups: initial impacts and ongoing impacts. In most cases, initial

impacts occur in the "action" period of the motivating activity, such as during development and construction of a real estate project.

Initial impacts occur only one time, and they disappear once the action phase is completed. Ongoing impacts begin after the action phase is completed, are repetitive in nature and may continue year after year. Retail and local property taxes are examples.

Economic impacts, whether initial or ongoing, can be further classified by four broad categories: direct, indirect, induced and total impacts. *Direct impacts* are new business sales, earnings, employment and taxes originating from the initial project expenditures, such as construction material purchases, construction employment and wages paid during the construction of a house.

*Indirect effects*, also called secondary, ripple or spillover effects, consist of additional business sales, employment and

taxes generated from the original primary expenditures. When builders buy goods and services to construct a house, the suppliers of the goods and services purchase goods and services from other suppliers, generating additional earnings and employment.

*Induced impacts* result as direct earnings are spent on subsequent goods and services. For instance, as construction workers spend their wages, they stimulate further

spending. The *total impact* is the sum of the direct, indirect and induced impacts.

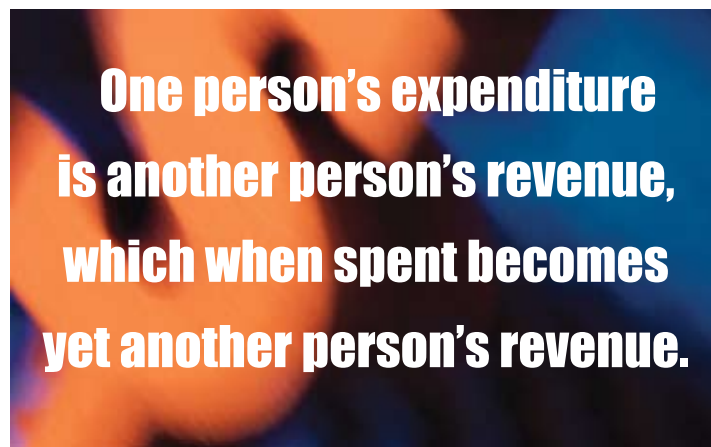
Economists use the concept of a multiplier to express the quantitative relationships between initial, direct expenditures and additional, future expenditures stemming from the initial expenditures. An individual multiplier is associated with each of the indirect, induced and total impacts.

**F**or instance, a Real Estate Center input-output model estimated that one dollar spent to construct a single-family house in Texas in 2002 generated 51 cents in indirect expenditures and a further 18 cents in induced expenditures, resulting in \$1.69 in total expenditures. The employment multiplier was an estimated 0.47; that is, every construction job created to build a house generated an additional 0.47 jobs in the state.

## Area of Analysis

Economic impacts are identified and measured relative to a defined geographical area. Depending on the purpose of the impact study, the analysis area might be a state, county, city, local community, nation or even the world. The analysis area encompasses the place where the original activity takes place and any other areas that might be impacted by the activity.

For the purposes of the study, the defined analysis area is treated as an economic "country," and goods and services purchased from and sold to other areas are treated as "imports" and "exports." The choice of the analysis area has important implications for quantifying the economic impacts. Purchasing



bricks for a house from a brick manufacturer located within the area creates more local jobs than if the bricks are “imported” (purchased from a manufacturer outside the area).

A construction project may have little local economic impact if most of the initial expenditures go outside the area. This is why many jurisdictions have a local content requirement for major construction projects.

### Direct Spending Critical

Correctly specifying an activity’s initial, direct cost and any ongoing expenditures is the key to estimating total potential impacts. All other economic impacts derive from the direct and ongoing expenditures. But measuring the amounts and types of expenditures of projects often presents interesting challenges. Construction project costs, for example, are divided into hard and soft costs. Interest payments on construction loans often go outside the region, labor or materials may come from outside the area, and the costs may be spread out over time for large, multiyear projects.

Economists use an analytical framework called an input-output model for estimating total economic impact generated from initial expenditures. An input-output model is a table of purchases and sales by all industries to and from each other in the area of analysis. The input-output model is an essential

tool of economic analysis in economic impact studies, so much so that its inventor, Harvard professor Wassily Leontief, was awarded a Noble Prize in economics in 1973.

The model computes new business sales, employment, value added and taxes for all industries resulting from the direct initial and ongoing project expenditures. Input-output models are extremely complex and expensive, requiring substantial data and skill to build. Most economic impact studies, therefore, rely on existing multiplier estimates developed by known research organizations that specialize in developing the models. One model used quite often is the table of regional multipliers developed by the Bureau of Economic Analysis. ↴

*Dr. Anari (m-anari@tamu.edu) and Dr. Gaines (jpgaines@tamu.edu) are research economists with the Real Estate Center at Texas A&M University.*

### THE TAKEAWAY

Economic impact studies measure the expected economic consequences of economic or legal activities, including direct, indirect, induced and total impact of initial activities. Results are used for project selection and public policy design, such as taxes and subsidies.

## Economic Impact of Building a \$1 Million Apartment Complex in College Station, Texas

The initial direct, indirect, induced and total impacts on Texas’ and Brazos County’s economy theoretically total \$1,396,750 from the construction of a new \$1 million apartment complex. The ongoing impacts, especially local property taxes, continue for years.

The example assumes total construction cost of \$1 million with \$500,000 for materials (all purchased in-state and 20 percent purchased in Brazos County), \$300,000 in labor costs and 11 new jobs created. The \$200,000 additional costs are assumed to be spent outside Texas. Construction expenditures are estimated to generate revenues for local businesses and residents as well as tax revenues for the state, county and city.

Using the multiplier effects described in the article, the \$500,000 in material costs leads to \$847,500 in total sales through \$255,500 in indirect sales and another \$92,000 in induced sales.



The \$300,000 in direct salaries and wages creates additional indirect and induced income of \$192,900 resulting in total income of \$492,900 in construction expenditures percolating through the local economy.

The state collects 6.25 percent sales tax on all of the generated sales that occur within the state (for simplicity, assumed to be all sales) or a total of \$52,960. If 20 percent of all sales occur within College Station, local sales taxes total \$3,390 at an assumed 2 percent local sales tax rate.

On completion, the apartment complex will pay local property taxes. Assuming an assessed value of \$1 million and an effective property tax rate of 3.3 percent, total property tax revenues of \$33,000 the first year will be divided between the city, county and local school districts.

Initially, construction is expected to create 11 new construction jobs (full-time equivalent at 2,080 hours per year). The ripple effects of the expenditures lead to the creation of 19 total jobs.

Theoretical Economic Impacts

	Direct	Indirect	Induced	Total
New Business Sales	\$500,000	\$255,500	\$92,000	\$847,500
Wages & Salaries	300,000	100,000	92,900	492,900
State Sales Taxes	31,250	15,960	5,750	52,960
Local Sales Taxes	2,000	1,020	370	3,390
Local Property Taxes				\$33,000
Employment (number)	11	8		19

Source: Real Estate Center at Texas A&M University



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Texas A&M University  
2115 TAMU  
College Station, TX 77843-2115

<http://recenter.tamu.edu>  
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