FE840

Using Implicit Economic Multipliers to Guide Local Economic Development: An Agricultural Example in St. Johns County, Florida[1]

Rodney L. Clouser, Mohammad Rahmani, Alan Hodges, and David Dinkins[2]

Introduction

Not since the Great Depression have job losses and unemployment had such dramatic effects throughout the United States, and Florida in particular has experienced significant unemployment rates that have been higher than the national average. In April 2010, Florida's unemployment rate rose as projected to 12.3 percent, with 1.14 million people unemployed. In some sections of the state, the unemployment rate was higher, and in some instances lower than the state average.

As a result of the overall conditions brought on by the economic recession that began in 2007, job growth and economic development are high-priority concerns among Florida residents, especially to those unemployed, and to Florida local and state government policy makers.

To make informed economic development decisions requires realistic and timely data and information. It appears that at least in some instances economic development decisions are being made based on beliefs, myths, hearsay, and anecdotal information and that these sources of information will not result in informed decisions.

In the current economic environment, funding is relatively tight and expenditures on economic development studies by external groups can be a difficult sell, especially at the local government level. Costs for detailed studies would probably start in the $40,000 range and go upward into six figures. Because of fiscal concerns, funding for these types of studies is currently limited. However, some information on economic development can be secured for much less than this amount and any information is better than no information.

The intent of this fact sheet is to provide an example of information for a Florida county that can assist in the economic development decision process, which can be completed for minimal expenditures

1. This is EDIS document FE840, a publication of the Food and Resource Economics Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL. This study was jointly funded by St. Johns County and PWAC (Partnership for Water and Agriculture Commodity Sustainability). Published August 2010. Please visit the EDIS Web site at http://edis.ifas.ufl.edu.

2. Rodney L. Clouser, professor and extension public policy specialist; Mohammad Rahmani, economic analyst; Alan Hodges, extension scientist, Food and Resource Economics Department, University of Florida, Gainesville, FL; and David Dinkins, former county extension director, St. Johns County Extension, St. Augustine, FL, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL.

and can aid in the success of economic development efforts. St. Johns County, Florida is used as an example.

Background and Model

Many local economic development efforts concentrate on the same types of economic growth: seeking firms or businesses that employ a large number of employees (500–1,000); offer higher than prevailing wage rates; or target medical, biotechnology, bio-fuel, and/or green industries.

In reality, there are not enough firms with these type characteristics for all cities and counties in Florida, let alone the United States. Automatically taking this approach to economic development may lead to overlooking firms and industries that could contribute to the area in terms of output and employment, and may lead to inefficient allocation of fiscal resource to "grow," "retain," or "attract" firms and industries that do not exhibit these characteristics. Comparing local implicit economic multipliers for a range of industries is a low-cost method of identifying industries, or a group of industries, that have an above average potential to generate jobs and income for a county. Such multipliers can be obtained from Input-Output software such as IMPLAN Pro.

The IMPLAN Pro Economic Impact and Social Accounting software package, which is licensed to the University of Florida, was used to generate estimated output and output impacts for 17 economic sectors in St. Johns County with specific emphasis on the agriculture and natural resource sectors of the local economy. The agricultural sector was subdivided into production agriculture, agriculture inputs, mining production and natural resources, and food product manufacturing and distribution. In addition to direct sales of the industries in question, the implicit economic multipliers capture inter-industry purchases (indirect effects) and employee household spending (induced effects).

The analysis focused only on the economic data for St. Johns County internal to the IMPLAN model; no attempt was made to adjust for particular local conditions. The agriculture and natural resource sector information reported consisted of production agriculture, natural resource industries (forestry, mining, fishing and golfing), food and forest products manufacturing and distribution, agricultural input supply, and agricultural services. The information derived from IMPLAN should be considered "relative" in nature rather than precise absolute estimates of economic activity. Data represent conditions in 2007 (see Table 1 for glossary of economic impact terms).

This study was jointly funded by St. Johns County and PWACS (Partnership for Water and Agriculture Community Sustainability). The total cost for computation of the implicit economic multipliers was less than $3,000.

St. Johns County Economic Sectors

Table 2 displays results for 17 industry sectors in St. Johns County: industry output, total output impacts (direct, indirect, and induced), and an implicit economic multiplier. The industry sectors are standard with other economic impact assessments completed by the Food and Resource Economics Department and are not aggregations suggested by IMPLAN. Output in the county was about $8.2 billion and the implicit economic multiplier was 1.20. This means that for every $1 county output is increased, the model indicates that, on average, about $1.20 in economic activity is generated in the county, including $0.20 through indirect and induced activity.

The most economic activity generated from a $1 increase in output in St. Johns County was in the Agriculture, Natural Resources, and Mining Production Industry Sector. The model indicates that for every $1 increase in output/sales from production agriculture, mining, and natural resources, economic activity in the county increases by $1.53, and thus the implicit economic multiplier is 1.53 [note that the manufacturing and distribution sectors have been separated from the production, mining, and natural resource sectors as mentioned previously].

Other leading industry sectors and the associated implicit economic multipliers are: Travel and Entertainment Services (1.50), Social Services and Organizations (1.50), and Manufacturing (1.40). These sectors along with Agriculture, Natural Resources, and Mining Production generate the most

economic activity from an increase in output/sales in the county.

Even though the economic sectors in St. Johns County identified above generate the most economic activity from an increase in output/sales, this does not imply that other sectors are overlooked, such as Real Estate and Financial Services, Professional and Technical Services, Retail Trade, and Wholesale Trade. These sectors are very large in the county in terms of direct impacts. However, they do not generate large amounts of indirect and induced economic activity in the county.

Indirect effects represent changes in sales, income, or employment within the region in backward-linked industries supplying goods and services to businesses (e.g., increased sales in input supply firms resulting from more nursery industry sales). **Induced effects** represent increased activity within the region from household spending of the income earned in the direct and supporting industries. Employees in direct and supporting industries spend their incomes on housing, utilities, groceries, and other consumer goods and services, which generate sales, income, and employment throughout a regional economy.

Commodity-Level Detail

Table 3 presents more detail for the Agriculture, Natural Resources, and Mining Production Industry Sector at the commodity level. Economic activity generated from an increase in output activity is largest in the following sectors: Forest nurseries, forest products, and timber tracts (1.96); Sand, gravel, clay, and ceramic and refractory minerals (1.69); Vegetable and melon farming (1.67); Golf courses (1.66); and Recreational fishing (1.66). Although none of these sectors is larger than $76 million in terms of direct output/sales (for the vegetable and melon farming sector), when indirect and induced impacts are considered, the output impacts of this sector increase considerably, to over $125 million. In total, there are 11 agriculture, natural resource, and mining production commodity sectors that have an implicit economic multiplier that exceeds the county average of 1.20.

Other St. Johns County Industry Commodity Sectors

Table 4 presents information on other industry commodity sectors in St. Johns County. These commodity sectors represent "targeted industries" for future economic development as identified in a report prepared for the county (St. Johns Target Industry Study: An Update, Urbanomics, Inc., April 2003). Industry sectors to be considered for "targeted growth" included Aviation and Automotive Industries, Food Products and Distribution, Medical Products and Health Sciences, and Distribution and Logistics firms.

The implicit economic multipliers for specific commodity sectors are Automotive consumer service (<1.08), Automotive manufacturing (1.06), Health care medical and health services (1.10), Surgical and medical instrument manufacturing (1.23), Food and kindred products distribution (1.07) and Wholesale trade (1.07). Many of the “targeted industries” have implicit economic multipliers less than the county average of 1.20. Most of the multipliers are also smaller than the Agriculture, Natural Resource, and Mining Production multipliers previously identified.

Implications and Summary

The information presented in this fact sheet should be considered "relative" rather than "precise absolute" estimates of economic activity in St. Johns County based on the IMPLAN model. Use of information such as this should improve the decision-making ability to allocate resources for economic development in the county. The use of the implicit economic multipliers should result in more informed decisions relative to economic development decisions that are made based on beliefs, myths, hearsay, and anecdotal information. It also needs to be remembered that information such as this can be obtained for relatively modest costs (less than $3,000).

The information presented in no way implies that sectors such as Real Estate and Financial Services, Professional and Technical Services, Retail Trade, and Wholesale Trade be overlooked as economic

development opportunities. While these sectors in general have smaller implicit economic multipliers, they are very large in the county in terms of direct impacts. However, these sectors do not generate large amounts of indirect and induced economic activity in the county.

What does this information convey about economic development in St. Johns County? That agriculture, natural resource, and mining production should not be overlooked from an economic development perspective. With a need for current and future job growth, it is important not to overlook opportunities. However, it also must be remembered that economic development is more than just economic analysis. Other factors such as environmental and community values need to be considered in economic development decisions.

References

Bureau of Labor Statistics (BLS). 2010. *Bureau of Labor Statistics Table 3: Civilian labor force and unemployment by state and selected area, seasonally adjusted*. Economic News Release, April 16. http://www.bls.gov/news.release/laus.t03.htm

Bureau of Labor Statistics (BLS). 2010. *Bureau of Labor Statistics Table 3: Civilian labor force and unemployment by state and selected area, seasonally adjusted*. Economic News Release, July 10. http://www.bls.gov/news.release/laus.t03.htm

Clouser, R.L. 2009. Presentation to Florida Association of Counties County Commissioner Certification class (May).

Hodges, A.W. and M. Rahmani. 2010. Economic contributions of Florida's agricultural, natural resource, food and kindred product manufacturing and distribution, and service industries in 2008. Electronic Data Information Source (EDIS) FE829, Food and Resource Economics Department, University of Florida, Gainesville, FL. http://edis.ifas.ufl.edu/FE829

Hodges, A.W. and M. Rahmani. 2008. Economic contributions of Florida agriculture, natural resources, food and kindred product manufacturing and distribution, and service industries in 2006. Electronic Data Information Source (EDIS) FE702, Food and Resource Economics Department, University of Florida, Gainesville, FL. http://edis.ifas.ufl.edu/FE702

Minnesota IMPLAN Group (MIG), Inc. 2008. *IMPLAN Professional Software and Database for Florida Counties, 2007*. MIG, Stillwater, MN.

Urbanomics, Inc. 2003. *St. Johns Target Industry Study: An Update*. Urbanomics, Ponte Vedre, FL (April).

Table 1. Glossary

Glossary of Economic Impact Terms
IMPLAN is a microcomputer-based input-output modeling system and Social Accounting Matrix (SAM). With IMPLAN, one can estimate I-O models of up to 440 sectors for any region consisting of one or more counties. IMPLAN includes procedures for generating multipliers and estimating impacts by applying final demand changes to the model. The current version of the software is IMPLAN Pro 2.0.
Input-output (I-O) model is a representation of the flows of economic activity between industry sections within a region. The model captures what each business or sector must purchase from every other sector to product its output of goods or services. Using such a model, flows of economic activity associated with any change in spending may be traced backwards (e.g., purchases of plants that lead growers to purchase additional inputs, such as fertilizers, containers, etc.). Multipliers for a region may be derived from an input-output model of the region's economy.
Sector is a grouping of industries that produce similar products or services, or production processes. Most economic reporting and models in the United States are based on the Standard Industrial Classification System (SIC code) or the North American Industrial Classification System (NAICS).
Direct effects are changes in economic activity during the first round of spending.
Indirect effects are changes in sales, income, or employment within the region in backward-linked industries supplying goods and services to businesses (e.g., increased sales in input supply firms resulting from more nursery industry sales).
Induced effects are increased sales within a region from household spending of the income earned in the direct and supporting industries. Employees in direct and supporting industries spend their incomes on housing, utilities, groceries, and other consumer goods and services. This generates sales, income, and employment throughout a region's economy.
Total effects are the sum of direct, indirect, and induced effects.
Multipliers capture the total effects, both direct and secondary, in a given region, generally as a ratio of the total change in economic activity in the region relative to the direct change.
Multipliers (implicit, economic, imputed, or derived) are total output impacts divided by total output. This includes direct, indirect, and induced effects.
Margins (retail, wholesale, and transportation) are the portions of the purchaser price accruing to the retailer, wholesaler, and grower, respectively. Only the retail margins of many goods purchased by consumers accrue to the local region, as wholesalers, shippers, and manufacturers often lie outside the local area. For manufactured good, the purchaser price equals the producer price plus a retail margin, a wholesale margin, and a transportation margin.
Basic industries sell goods and services to markets located outside the local area.
Service industries provide goods and services to local businesses and residents.
Sources: Clouser (2009); Hodges and Rahmani (2008).

Table 2. St. Johns County, Florida industry output, output impacts, and implicit multipliers

Industry Group	Industry Group Output ($M)	Industry Group Impact ($M)	Total Output Impacts / Industry Output
Agriculture, Natural Resources, Related Manufacturing & Services	1,004	1,271	1.27
Food and Kindred Product Manufacturing & Distribution	776	923	1.19
Agriculture, Natural Resources, and Mining Production	228	348	1.53
Construction	742	777	1.05
Consumer Services	327	426	1.30
Education*	68	81	1.19
Government	550	552	1.00
Health Care	453	498	1.10
Households	758	758	1.00
Information and Communications	164	177	1.08
Manufacturing	952	1,333	1.40
Professional and Technical Services	634	774	1.22
Real Estate and Financial Services	956	1,209	1.27
Retail Trade	471	561	1.19
Social Services & Organizations	205	306	1.50
Transportation	98	118	1.21
Travel and Entertainment Services	328	490	1.50
Utilities	127	133	1.05
Wholesale Trade	388	417	1.07
Grand Total	8,224	9,835	1.20

*Computed at state average
Source: MIG, Inc. (2008)

Table 3. Selected St. Johns County, Florida commodity group output, output impacts, and implicit economic multipliers

Commodity Group (Agriculture, Natural Resources, and Kindred Products)	Industry Output ($M)	Output Impacts ($M)	Total Output Impacts / Industry Output
Agricultural Inputs & Services	68.20	92.82	1.36
Landscape services	35.11	45.41	1.29
Pest control services	10.75	13.90	1.29
Veterinary services	20.82	31.49	1.51
Crop, Livestock, Forestry & Fisheries Production	102.43	162.89	1.59
Cattle ranching and farming	0.63	0.92	1.46
Forest nurseries, forest products, and timber tracts	1.72	3.36	1.96
Greenhouse, nursery, and floriculture production	16.59	23.75	1.43
Support activities for agriculture and forestry	5.42	5.42	1.00
Vegetable and melon farming	75.23	125.89	1.67
Food & Kindred Products Distribution	697.93	817.68	1.17
Wholesale trade, food & kindred products	971.0	104.27	1.07
Food & Kindred Products Manufacturing	87.43	109.68	1.25
Seasoning and dressing manufacturing	0.51	0.52	1.02
Soft drink and ice manufacturing	65.84	89.32	1.36
Forest Products Manufacturing	5.25	6.98	1.33
Mining	17.48	27.95	1.60
Sand, gravel, clay, and ceramic and refracting minerals	14.80	25.05	1.69
Nature-based Recreation	34.51	57.17	1.66
Golf courses	28.56	47.32	1.66
Recreational fishing	5.95	9.86	1.66

Source: MIG, Inc. (2008)

Table 4. St. Johns County, Florida targeted industry commodity output, output impacts, and implicit multipliers

Commodity Group (Targeted Industry)	Industry Output ($M)	Output Impacts ($M)	Total Output Impacts / Total Industry Output
Consumer Services (Automative)	327.34	425.52	1.30
Automotive equipment rental and leasing	10.11	10.94	1.08
Automotive repair and maintenance, except car washes	39.49	39.50	1.00
Health Care Medical and Health Services (Medical Products)*	452.68	498.00	1.10
Home health care services	19.50	21.50	1.10
Medical and diagnostic labs and outpatient and ambulatory services	14.85	16.33	1.10
Nursing and residential care facilities	59.69	65.66	1.10
Offices – physicians, dentists, other health practitioners	201.58	221.74	1.10
Private hospitals	157.07	172.78	1.10
Manufacturing (Automotive, Aviation, Other Industry)	951.89	1,332.83	1.40
Surgical and medical instrument manufacturing	2.15	2.65	1.23
Aircraft manufacturing	65.22	93.88	1.44
Printed circuit assembly (electronic assembly)	33.18	47.12	1.42
Ship building and repairing	13.32	22.87	1.72
Automobile manufacturing	2.11	2.24	1.06
Food & Kindred Products Distribution	697.93	817.68	1.17
Wholesale trade, food & kindred products	97.10	104.27	1.07
Wholesale Trade (Distribution and Logistics)	388.42	417.08	1.07
Wholesale trade and other products	388.42	417.08	1.07

*Calculated at state average
Source: MIG, Inc. (2008)