

The Economic Impact of Higher Education: A Case Study of Georgia

Dr. Jeffrey M. Humphreys

Director, Selig Center for
Economic Growth
Director, Economic Forecasting
Terry College of Business
The University of Georgia
110 East Clayton Street, Suite 608
Athens, GA 30602-5269
Office Phone: (706) 425-2962
Office Fax: (706) 425-2965
e-mail: jhumphreys@terry.uga.edu
website: www.selig.uga.edu

Dr. David R. Kamerschen

Distinguished Professor of Economics
and Jasper N. Dorsey Chairholder
Economics Department
Terry College of Business
536 Brooks Hall
The University of Georgia
Athens, Georgia 30602-6254
Office Phone: 706-542-3681
Office Fax: 706-542-8774
e-mail: davidk@terry.uga.edu
website: www.arches.uga.edu/~davidk

Higher education has important social, political, and economic benefits to any economy. While this paper examines empirically the economic benefits of higher education in one state (Georgia), we believe that it has application for other states. We calculate the economic benefits that the University System of Georgia's 34 institutions bring to their home regions and communities. The benefits are estimated for three important categories of college/university-related expenditures: (1) spending by the institutions themselves for salaries and fringe benefits, operating supplies and expenses, and other budgeted expenditures; (2) spending by the institutions for capital projects (construction); and (3) spending by the students who attend the institutions.

Higher education has important social, political, and economic benefits to any economy. The social benefits of education involve, among other things, the opportunities it provides to understand and design new, effective solutions to serious social problems and make the world a better place. The political benefits of better education include, among other things, the opportunities it provides to become better-informed citizens which, in turn, permits voting for elected officials more rational. There have been studies, too numerous to list here, showing the value of education to the students and to the region. However, we are unaware of any study that has the rich data base and sophisticated economic model that is presented here to show the positive multiplier and "gross" benefits (it is not "net" as we consider only the spending and not the taxation side) of a state college system. In this paper we investigate empirically the economic benefits of higher education to the regional economics. Our working hypothesis is that the economic impact of higher education is significant in terms of a typical region's gross production. While this paper considers the economic benefits of higher education in one state (Georgia), we believe that it has application for other states.

How much does a region benefit

economically from hosting an institution of higher education? Those who discuss the benefits in broad, qualitative terms do not consider the economic linkages between the academic community and the community as a whole.¹ This paper quantifies the economic benefits that the University System of Georgia's 34 institutions convey to the communities in which they are located.²

The benefits are estimated for three important categories of college/university-related expenditures:

- (1) spending by the institutions themselves for salaries and fringe benefits, operating supplies and expenses, and other budgeted expenditures;
- (2) spending by the institutions for capital projects (construction); and
- (3) spending by the students who attend the institutions.

The economic impact estimates are based on regional input-output models of each institution's regional economy, certain necessary assumptions, and readily available data regarding annual spending in the three specified categories. Moreover, the emphasis is on funds received by residents of the region that host each institution of higher education. This paper reports expenditures and impacts for fiscal years 1998 (July 1, 1997 through June 30, 1998) and 1999 (July 1, 1998 through June 30, 1999).

We use two years in the event there is an aberration in one of these years. Such an aberration is less likely in both years. As it turns out, the numerical comparisons will show there are no significant differences. But that is a result discovered in the hypothesis-testing stage.

This paper does not account for all of the short-term impacts of the 34 institutions on their host communities, however. For example, several sources of college/university-related spending are identified, but no dollar amounts are estimated for them, because this would require collecting survey data, a task beyond the resources available to this project. It also does not quantify the many long-term benefits flowing to the economic development of the host communities through the presence of an

institution of higher education, or measure intangible benefits (such as cultural opportunities, intellectual stimulation, and volunteer work) to residents of their host communities. Finally, this paper is not a net benefit analysis; it estimates only economic benefits and does not calculate what the presence of a tax-exempt college/university costs the community. We leave it to future researchers to determine if a net benefit calculation would provide different conclusions for those reached here.

This five-part paper discusses economic impact highlights, describes the economic impact concept, and summarizes methodology and results, limitations, and conclusions.

Economic Impact Highlights

In the simplest and broadest terms, the total economic impact of all 34 institutions of the University System of Georgia on their host communities, as shown in Table 1, was \$7.7 billion in FY 1999, up by 6.4 percent or \$464 million, from the FY 1998 total of \$7.3 billion. The output impact of each institution is the change in regional output that is due to spending by the institution (including capital projects) and spending by the students who attend the institution. Of the FY 1999 total, \$4.9 billion (64 percent) is the initial spending by the institutions and students; \$2.8 billion (36 percent) is the induced or re-spending (multiplier) impact. Dividing the FY 1999 total output impact (\$7.7 billion)

TABLE 1
Total Economic Impact of all 34 Institutions of the University System of Georgia on their Regional Economies in the 1997-98 Fiscal Year and the 1998-99 Fiscal Year^a

		Initial Spending ^{b,c,d} (millions of current dollars)	Output ^e Impact (millions of current dollars)	Value Added ^f Impact (millions of current dollars)	Labor Income ^g Impact (millions of current dollars)	Employment ^h Impact (jobs)
1997-98	System Total	4,689.0	7,262.9	4,179.8	3,232.9	94,703
	Budget Unit "A" and Unit "B"	3,062.5	5,077.5	3,091.9	2,613.3	67,678
	Capital Projects Funded	140.5	218.6	106.0	85.4	2,419
	Students' Personal Expenditures	1,489.0	1,996.7	982.0	534.3	24,605
1998-99	System Total	4,964.4	7,727.0	4,537.5	3,559.1	99,965
	Budget Unit "A" and Unit "B"	3,246.6	5,344.7	3,328.5	2,827.9	70,853
	Capital Projects Funded	356.6	569.2	279.1	224.5	6,127
	Students' Personal Expenditures	1,361.2	1,813.0	929.9	506.7	22,985

a Olsen and Lindall (2003).

b Initial spending for Budget Unit "A" and Unit "B" Board of Regents (2000a).

c Board of Regents (2001).

d Initial spending for Students' Personal Expenditures were estimated by the authors based on data obtained from the enrollment reports, Board of Regents (2000b); U.S. Bureau of Labor Statistics (2001); and U.S. Bureau of Economic Analysis (2001).

e Output refers to the value of total production, including domestic and foreign trade.

f Value Added includes employee compensation (including fringe benefits), proprietary income, other property type income (e.g., rents, royalties, dividends), and indirect business taxes (e.g., excise taxes, property taxes, fees, licenses, and sales taxes paid by businesses).

g Labor income includes both the total payroll costs (including fringe benefits) of workers who are paid by employers and payments received by self-employed individuals.

h Employment includes both full-time and part-time jobs.

Source: Selig Center for Economic Growth (2000)

by initial spending by the institutions and students (\$4.9 billion) yields an average multiplier value of 1.56. On average, therefore, every dollar of initial spending generates an additional 56 cents for the economy of the region hosting the institution.

In FY 1999, value added comprises \$4.5 billion (59 percent) of the \$7.7 billion output impact, with domestic and foreign trade comprising the remainder \$3.2 billion (41 percent) of the output impact. The \$4.5 billion value-added impact reported for FY 1999 equals almost two percent of Georgia's gross state product. Labor income received by residents of the communities that host one or more institutions equals \$3.6 billion, and represents 78 percent of the value-added impact.

The collective or rolled-up employment impact of all 34 institutions on their host communities in FY 1999, including multiplier effects, is 99,965 jobs. Approximately 42 percent of these positions are on campus—employees of the University System of Georgia—and 58 percent are off-campus jobs in either the private or public sectors. On average, for each job created on campus, there are 1.4 off-campus jobs that exist because of spending related to the institution. The 99,965 jobs generated by the University System of Georgia account for 2.7 percent of all the jobs in Georgia, or about one job in 37.

Understanding the Concept of Economic Impact

Short-term economic impacts are the net changes in regional output, value added, labor income, and employment that are due to new dollars flowing into a region from a given enterprise or event of economic development. In this paper, the enterprises or events of economic development are the 34 institutions of the University System of Georgia and the regions are the host communities, which include the surrounding counties from which most employees and students commute. The effects of expenditures that go to people, businesses, or governments located outside the region are not included in the value added, labor income, and employment impact estimates, but the output impacts include both domestic and foreign trade.

Economists speak of economic impacts in terms of the changes in output, value added, labor income, or employment that occur in the region's industries (including households) when they produce goods and services to satisfy demand by consumers, businesses, investors, or governments that are from outside the region. Throughout this paper, expenditures that represent the regional repercussions of spending originating from outside the region are counted as economic impacts. Because local residents who want to attend a college or university may relocate to another area, the spending of the area's residents who are students at an institution of the University System of Georgia also counts as an economic impact. Expenditures that immediately flow to recipients located outside the region, however, are not counted as economic impacts.

For goods made outside of the region, local value is created by wholesale and retail firms within the region, but not by the manufacturing firms that originally produced the goods elsewhere. So when these goods are purchased locally, the benefit to the region's economy consists only of the wholesale and retail margins. For example, since the petroleum production and refining industry is not present in the host regions, the portion of students' expenditures for gasoline that represents a payment to producers and refiners is not a local economic impact, but the portion that represents payments to local retail, wholesale, and distribution companies is counted as a local economic impact.

Methodology and Results

Estimating the economic impact of University System of Georgia institutions on their regional economies in FY 1998 and in FY 1999 involved four distinct steps. First, initial spending and employment for each institution were obtained for Budget Unit "A" and Budget Unit "B"; and then the institutional expenditures were allocated to industrial sectors recognized by the economic impact modeling system. Second, expenditures associated with capital projects (construction) funded were obtained for each institution and allocated to the appropriate industrial

sector. Third, spending by students was estimated based on each institution's enrollment reports and on data obtained from both the U.S. Bureau of Labor Statistics and the U.S. Bureau of Economic Analysis. Students' personal expenditures then were allocated to industrial sectors. Finally, the IMPLAN Professional Version 2.0 modeling system was used to build regional economic models that are specific to each institution. IMPLAN is a PC based economic analysis system or an economic impact assessment modeling system that allows users to develop local level input/output models that can estimate the economic impact of new firms moving into an area, recreation and tourism, and many more activities.³ The study area for each institution's regional model, which includes the institution as well as the labor force directly involved, is based on standard county classifications and are available for all 34 institutions.⁴ The IMPLAN data also contains social accounting matrix (SAM) data that, with the IMPLAN software, can generate a balanced SAM for any region.

For analytical purposes, all dollar amounts were converted to inflation-adjusted 1996 dollars, but the amounts expressed in this paper are reinflated to current dollars. Using the IMPLAN model and Type SAM multipliers, impacts associated with all categories of initial spending then are estimated in terms of output, value added, labor income, and employment. Type SAM multipliers capture the original expenditures resulting from the impact, the indirect effects of industries buying from industries, and the induced effects of household expenditures based on information in the social account matrix; and also account for Social Security and income tax leakage, institutional savings, commuting, and inter-institutional transfers.⁵ Wherever appropriate, the IMPLAN software applied margins to convert purchaser prices to producer prices. In addition, the entire analysis was conducted using the full range of industrial sectors in order to avoid aggregation bias. We used IMPLAN instead of a regional macromodel approach because of the enormous cost of building regional macromodels for each region that contains a unit of the

University System precluded the construction of regional macromodels. Also, the main advantages that regional macromodels have over input/output models is that they explicitly consider time as a factor and can estimate the impact of policy changes. Since neither of these factors were a primary focus of our analysis, the extra expense of building a dynamic regional macromodel instead of building static input/output models could not be justified.

Initial Spending by the Institutions: Budget Unit "A" and Unit "B"

Institution-specific data on total budgeted expenditures, travel, operating supplies and expenses, equipment, salaries and fringe benefits, and EFT positions (employment) were obtained from the report entitled *The University System of Georgia Budget 1998-99*, published by the Board of Regents. Data were obtained for Budget Unit "A" and Budget Unit "B" for both FY 1999 and FY 1998. These amounts were treated as an industry change. Expenditures include spending for general operations, special initiative funds, lottery funds, research consortium, departmental services, and sponsored operations. To avoid double counting, the estimates of initial spending exclude expenditures arising from two budgetary classes: auxiliary enterprise funds (self-supporting activities for housing, food service, bookstore, athletics, and other) and student activity funds (cultural and recreation programs operated by students). The spending associated with such activities is included in the students' personal expenditures, however.

Since a detailed analysis of spending patterns at each institution is not practical, budgeted expenditures are allocated to various economic sectors based on a typical expenditure pattern estimated for U.S. colleges that was developed by the IMPLAN 2.0 modelers. For each institution, however, the "typical" sectoring scheme is modified to reflect that institution's EFT positions and its spending for personnel services.

Capital Projects Funded

Institution-specific data on capital

projects (construction) funded were obtained on diskette from the Board of Regents. The expenditures were allocated to the year of reported funding, regardless of whether or not all of the funds actually were spent during that fiscal year. Budgeted funds were allocated to the appropriate IMPLAN 2.0 industrial sector.

Students' Personal Expenditures

The students who attend an educational institution spend significant amounts of money in the local economy as a part of their living expenses, so the dollar value of this spending—based on average spending per quarter or semester for all items except tuition and fees—also is estimated. Since a detailed survey of students' spending habits at each institution is impossible, the expenditure estimates primarily are based on data obtained from the 1997 Consumer Expenditure Survey released on the Internet by the U.S. Bureau of Labor Statistics (BLS) on September 8, 1998. Although expenditure data cover consumer units consisting of one person at the lowest income level, no data are available expressly for college students; therefore, in order to adapt the data for this paper, spending estimates for several categories of goods or services are increased, decreased, or eliminated. For example, expenditures for books are increased substantially, while expenditures for education are eliminated because of possible double counting. (System institutions receive payments from students for tuition and fees, which in turn support the institutions' expenditures, which have already been estimated.) After adjustment, the average expenditure per student is estimated at \$2,804 per quarter in FY 1998. For Summer Quarter 1998, the average expenditure per student is estimated at \$2,827. For both Fall Semester 1998 and Spring Semester 1999, the average expenditure per student is estimated at \$4,240. These amounts do not include tuition and fees.

Many institutions also prepare annual estimates of the estimated cost of attendance, and although such estimates are not detailed enough to be used in the IMPLAN modeling system, they do

provide useful comparisons. For example, The University of Georgia's Office of Student Financial Aid indicates that the cost of attendance for an undergraduate who lived off campus in FY 1998 (the 1997-98 academic year) was \$3,004 per quarter (excluding tuition and fees). Similarly, the estimate for a graduate student was \$3,012 per quarter. For students who live on campus, the Financial Aid Office estimates costs of \$2,221 per quarter for undergraduates and \$2,216 for graduate students.

Moreover, students residing in the study area are assumed to make all of their attendance-related purchases in the local economy, while those who lived outside the study area are assumed to make no attendance-related purchases (except for tuition and fees) locally. For all institutions, it is assumed that 95 percent of the students reside in the study area and five percent live outside it. Expenditures are distributed to the IMPLAN sectoring scheme based on both national average expenditure patterns and data provided by the 1997 Consumer Expenditure Survey already described.

The final step in estimating students' personal expenditures is to multiply the number of quarters or semesters of student spending by the average spending per respective quarter or semester. The number of quarters or semesters of students' spending equals 95 percent of each institution's EFT enrollment as reported in the Quarterly and Semester Enrollment Reports issued by the Board of Regents.

Total Initial Spending

For each institution, total initial spending accruing to the institution's regional economy is the sum of spending originating from Budget Unit "A" and Budget Unit "B", spending due to capital projects funded, and students' personal expenditures. For FY 1999 and FY 1998, total initial spending for all 34 institutions is \$5 billion and \$4.7 billion, respectively—a year-over-year percentage increase of 5.9 percent.

In FY 1999, spending originating from Budget Unit "A" and Budget Unit "B" accounted for 65.3 percent (\$3.2 billion) of initial spending, spending due to capital projects funded accounted for

7.2 percent (\$357 million), and students' personal expenditures accounted for 27.4 percent (\$1.4 billion) of initial spending. In FY 1998, spending originating from Budget Unit "A" and Budget Unit "B" accounted for 65.3 percent (\$3.1 billion) of initial spending, spending due to capital projects funded accounted for three percent (\$141 million), and students' personal expenditures accounted for 31.7 percent (\$1.5 billion).

Total Output Impact

Output impacts, which are the most inclusive, largest measure of economic impact, include both initial spending and the impacts generated by the re-spending of these amounts. Because of their size, output impacts typically are emphasized in economic impact studies and receive much media attention.

For each category of initial spending, an IMPLAN 2.0 model of the institution's regional economy is used to calculate the total output impact of that institution. Collectively, the 34 institutions of the University System of Georgia generated an output impact on their host regions of \$7.7 billion in FY 1999 and \$7.3 billion in FY 1998—a year-over-year percentage increase of 6.4 percent. For all institutions combined, the output impact of the 34 institutions was 1.6 times greater than their initial spending.

Total Value-Added Impact

Because value-added impacts exclude expenditures related to foreign and domestic trade, they provide a much more accurate measure of the actual economic benefits flowing to businesses and households in a region than the more inclusive output impacts.

Collectively, the 34 University System institutions generated a value-added impact of \$4.5 billion—almost two percent of Georgia's gross state product—in FY 1999 and \$4.2 billion in FY 1998, an increase of 8.6 percent. For all institutions combined, the value-added impact equaled 91 percent of initial spending in FY 1999 and 89 percent of initial spending in FY 1998.

Labor Income Impacts

The IMPLAN 2.0 model also is used

to calculate impacts in terms of labor income. Collectively, the 34 University System institutions generated a labor income impact of \$3.6 billion in FY 1999 and \$3.2 billion in FY 1998, an increase of 10 percent. For all institutions combined, the labor income impact equaled 72 percent of initial spending in FY 1999 and 69 percent of initial spending in FY 1998.

Employment Impacts

The economic impact of hosting a unit of the University System of Georgia probably is most easily understood in terms of its effects on employment. Collectively, the 34 institutions generated an employment impact of 99,965 jobs in FY 1999 and 94,703 jobs in FY 1998—an increase of 5.6 percent. Approximately 42 percent of these positions are on campus (University System employees), and 58 percent are off-campus jobs in either the private or public sectors. On average, for each job created on campus there are 1.4 off-campus jobs that exist because of spending related to the University System of Georgia (Tables 4 and 5).

The employment impact associated with the University System accounts for 2.7 percent of all the jobs held by Georgians, or about one job in 37. For all institutions combined, 20.1 jobs were generated for each million dollars of initial spending in FY 1999. Similarly, 20.2 jobs were generated for each million dollars of initial spending in FY 1998.

Limitations

Because the goal of this paper is to estimate the economic impact of all 34 institutions, certain necessary assumptions were designed to work well for the average institution, but may lead to an over- or under-estimate of the economic contribution that a specific institution makes to its host community.

Several important types of short-term college or university-related expenditures are not estimated, including spending by visitors and spending by retirees who live in the host communities. Expenditures supported by System employees' non-institutional income also are not estimated. Such income may result from an employee's consulting,

investments, and other personal business activities, and often would not come to the host community if that person's job at the college/university did not exist.

Perhaps the greatest limitation of this paper is that no attempt is made to evaluate the long-term impacts of the University System's institutions on the economic development of the host communities and the state. Colleges and universities not only spend money year by year, but also have long-term impacts on the labor force, local business and industry, and local government. A college or university improves the skills of its graduates, thereby increasing their productivity and their lifetime earnings; and local businesses benefit from easy access to a large pool of part-time and full-time workers. These benefits are particularly important when unemployment rates are low and labor markets are tight. Moreover, companies and agencies that depend on highly specialized skills often cluster around universities, and this may be particularly true of high-tech and information-based companies—which are expected to account for a disproportionately large share of future economic growth.

In addition, the outreach and service units of the college or university provide valuable services to local businesses, government, and households. Moreover, cultural and educational programs and facilities often are available to the general public and provide intangible benefits to the host community by improving local residents' quality of life.

Conclusions

To the extent that currently available information allows, this paper estimates some of the economic benefits that hosting a unit of the University System of Georgia brings to a community. In the simplest terms, the collective or rolled-up economic impact of all 34 institutions on their host communities was \$7.7 billion in FY 1999, up by 6.4 percent from the FY 1998 impact of \$7.3 billion. This amount represents the impact of spending by the institution (including capital projects) and spending by students. Of the \$7.7 billion output impact, \$5.9 billion was generated by the institutions' expenditures and \$1.8 billion by students' expenditures. In

addition, the University System of Georgia added \$3.6 billion in labor income to the economies of the regions that host colleges/universities and nearly 100,000 jobs.

Clearly, the economic as well as the social and political benefits are significant to an economy. The actual economic impact is much higher than our estimates, however, because the paper's limited scope does not include the short-term impacts of spending by visitors, retirees, and non-university-related income received by University System employees. Furthermore, the paper does not measure any of the long-term benefits of the University System of Georgia to the state's economic development, quality of life, or the increased lifetime earnings of its graduates.

Appendix: Study Areas for Institutions

Universities and Regional Universities

Georgia Institute of Technology – Atlanta MSA
 Georgia State University – Atlanta MSA
 Medical College of Georgia – Columbia, Lincoln, McDuffie, and Richmond
 University of Georgia – Barrow, Clarke, Jackson, Madison, Oconee, and Oglethorpe
 Georgia Southern University – Bryan, Bulloch, Candler, Effingham, Evans, Jenkins, Screven
 Valdosta State University – Berrien, Brooks, Cook, Echols, Lanier, Lowndes

State Colleges and Universities

Albany State University – Baker, Calhoun, Dougherty, Lee, Mitchell, Terrell, and Worth
 Armstrong Atlantic State University – Bryan, Chatham, Effingham, and Liberty
 Augusta State University – Columbia, Lincoln, McDuffie, and Richmond
 Clayton College & State University – Atlanta MSA
 Columbus State University – Chattahoochee, Harris, Marion, Muscogee, Stewart, and Talbot
 Fort Valley State University – Bibb, Crawford, Houston, Jones, Macon,

Peach, and Twiggs
 Georgia College and State University – Baldwin, Hancock, Jones, Putnam, Washington, and Wilkinson
 Georgia Southwestern State University – Crisp, Dooley, Lee, Macon, Sumter, Terrell, Schely, and Webster
 Kennesaw State University – Atlanta MSA
 North Georgia College & State University – Dawson, Hall, Lumpkin, Union, and White
 Savannah State University – Bryan, Chatham, Effingham, and Liberty
 Southern Polytechnic State University – Atlanta MSA
 State University of West Georgia – Carroll, Coweta, Douglas, Haralson, and Heard

Associate Degree Colleges

Abraham Baldwin Agric. College – Berrien, Colquitt, Cook, Irwin, Tift, Turner, and Worth
 Atlanta Metropolitan College – Atlanta MSA
 Bainbridge College – Decatur, Grady, Miller, Mitchell, and Seminole
 Coastal Georgia Community College – Brantley, Camden, Glynn, McIntosh, and Wayne
 Dalton College – Catoosa, Goron, Murray, Walker, and Whitfield
 Darton College – Baker, Calhoun, Dougherty, Lee, Mitchell, Terrell, and Worth
 DeKalb College – Atlanta MSA
 East Georgia College – Burke, Candler, Emanuel, Jefferson, Jenkins, Johnson, and Treulten
 Floyd College – Bartow, Chattooga, Floyd, Gordon, and Polk
 Gainesville College – Banks, Dawson, Forsyth, Gwinnett, Habersham, Hall, Jackson, Lumpkin, and White
 Gordon College – Butts, Lamar, Monroe, Pike, Spalding, and Upson
 Macon State College – Bibb, Crawford, Houston, Jones, Monroe, Peach, and Twiggs
 Middle Georgia College – Bleckley, Dodge, Laurens, Pulaski, and Twiggs
 South Georgia College – Atkinson, Bacon, Ben Hill, Coffee, Irwin, Jeff Davis, Telfair, and Ware
 Waycross College – Atkinson, Bacon, Brantley, Charlton, Clinch, Coffee, Pierce, and Ware

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Endnotes

¹ See, e.g., Caffrey and Isaacs (1971), Booth and Jarrett (1976), Elliott, Levin, and Meisel (1988), National Association of State Universities and Land-Grant Colleges (1996, 2001), and Stokes and Coomes (1998).

² Those 34 institutions are listed in Appendix A.

³ More technically, the IMPLAN Professional model is an input-output accounting system that describes the commodity flows from producers to intermediate and final consumers. The total industry inputs of commodities, services, employment compensation, value-added and imports is equal to the value of the commodities produced. Purchases for final use (final demand) drive the model as producers purchase goods and services from other producers, who in turn, must purchase commodities to provide for the producers who are selling to final demand. This cycle of indirect purchases continues until leakages from the region stop the cycle.

In the input-output model, multipliers are mathematically derived which uniquely describe the change of output for each and every industry as a result of producing one dollar of final demand which are unique to each industry. The definitions of IMPLAN and SAM multipliers can be found in Olson and Lindall (2003 website).

⁴ These are available upon request as are each of the individual items discussed in this section.

⁵ The total production requirements of all industries within a given region to meet the industry and institution(s) demands, as specified by the user, triggered by \$1 of consumption of the goods/services produced by a specified industry. Type SAM multipliers are model's default and include the direct, indirect and induced effects, where the induced effect is based on information in the social account matrix. This relationship accounts for social security and income tax leakage, institutional savings, and commuting. It also accounts for inter-institutional transfers.