

Economic Base Multipliers and Community Growth

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An economic base study

An economic base study gives detailed information about how a community earns its living. The study attempts to answer the following questions:

- What are the current sources of employment and income?
- Which of these sources depend on markets outside the local economy and are affected by external forces? These we call basic.
- Which of these sources serve markets within the local economy? These are called non-basic.

By the use of the multipliers shown in Table 1, the additional impact that can be expected from changes in basic employment or basic income can be calculated for the various industries.

Table 1

Employment and income group averages and multipliers for midwestern non-metropolitan counties, 1984-86

| Economic sector | Employment | | Earnings | |
|---|------------------------------------|-----------------------------|------------------------------------|-----------------------------|
| | Group average percent distribution | Multiplier for Basic Change | Group average percent distribution | Multiplier for Basic Change |
| Totally basic industries | | | | |
| Farming | 8.1 | 0.77 | 6.0 | 0.77 |
| Agricultural services, forestry, fisheries | 0.6 | 0.12 | 0.5 | 1.13 |
| Mining | 1.0 | 0.67 | 1.7 | 0.63 |
| Manufacturing | 10.3 | 0.54 | 14.6 | 0.72 |
| Federal government | 2.1 | 0.34 | 2.2 | 0.21 |
| Transfer payments or Social Security recipients | 28.3 | 0.75 | 20.0 | 1.17 |
| Commuters | 7.5 | 0.23 | 6.5 | 0.49 |
| Mixed Industries | | | | |
| Construction | 3.0 | 0.55 | 4.1 | 0.26 |
| Transportation, communications, utilities | 2.8 | 0.85 | 4.9 | 1.32 |
| Wholesale trade | 2.5 | 1.86 | 3.1 | 1.83 |
| Retail trade | 9.8 | 0.38 | 6.6 | 0.36 |
| Finance, insurance, real estate | 3.3 | 0.41 | 2.3 | 1.32 |
| Services | 12.5 | 1.10 | 3.7 | 1.25 |
| State and local government | 8.2 | 0.93 | 8.5 | 1.00 |
| Dividends, interest and rent (adjusted) | NA | NA | 15.3 | 1.45 |

Division of an area's economic forces into basic and non-basic categories can provide valuable information for concerned citizens. For example, how much of the area's basic employment is tied to one industry or firm? Base studies identify the area's primary sources of employment and earnings.

In some communities, small industries may be identified as major supporters of service or locally oriented employment.

When you understand the economic forces that mold your local economy, it is easier to project the area's economic future. Forecasts of economic development trends are helpful to project a wide range of public and private needs, such as capital budgeting for education and public safety, housing developments, expansion of utility services, and many others.

Multiplier impacts: basic changes

The use of multipliers as predictive tools has been validated and documented. Multipliers are popular primarily because they can deal with "what if" questions. For example, what happens in terms of local non-basic employment if basic manufacturing employment increases?

Table 1 lists the average **basic employment or income** that either have or will take place in your county.

The multipliers in Table 1 represent the additional employment in non-basic or mixed sectors of the local economy per new employee in the basic component. Multiplier impacts are not instantaneous; research indicates it may take at least four years for all non-basic impacts to occur.

For example, as calculated on Worksheet A, an increase of 50 employees in mining in a county would cause an average increase of 34 jobs in the non-basic, mixed sectors. The total number of new jobs would be 84.

Worksheet A

Calculation of employment impacts with basic growth

| Item | Example of growth sectors (Total county employment in all sectors = 6277) | | | |
|--|--|-------------------------|-------------------------|----------------------------|
| | Totally basic sector | Mixed sector growth | | |
| | | More than group average | Less than group average | Social Security recipients |
| 1. Sector name | Mining | Services | Retail | Social Security |
| 2. Total employment = 6277 | | | | |
| 3. Mixed group average | | 0.125 | 0.098 | |
| 4. Expected non-basic employment (line 2 x line 3) | | 785 | 615 | |
| 5. Actual employment | 1 | 1178 | 519 | 1 |
| 6. Subtract line 4 from line 5 | | 393 | -96 | |
| 7A. New employment | 50 | 20 | 120 | NA |
| 7B. New Social Security | NA | NA | NA | 30 |
| 8. Enter line 6 if negative, 0 otherwise | 0 | 0 | -96 | 0 |
| 9. Subtract line 8 from line 7A or 7B; if negative, enter 0 | 50 | 20 | 24 | 30 |
| 10. Enter multiplier (from Table 1) | 0.67 | 1.10 | 0.38 | 0.75 |
| 11. Additional non-basic employment (line 10 x line 9) | 34 | 22 | 9 | 23 |
| 12. Add lines 7A and 11 for total new employment | 84 | 42 | 129 | 23 |
| 13. Enter population multiplier, employment (from Table 2) | 1.23 | 1.23 | 1.23 | 1.23 |
| 14. Total additional population, employment (line 12 x line 13) | 103 | 52 | 159 | 28 |
| 15. Enter population multiplier, Social Security (from Table 2) | NA | NA | NA | 2.07 |
| 16. Total additional population, Social Security (line 15 x line 7B) | NA | NA | NA | 62 |
| 17. Total additional population, employment (add lines 14 and 16) | 103 | 52 | 159 | 90 |

If the area's residents are fully employed, new employees will move in from elsewhere and the population also will increase. For example, using the population multiplier of 1.23 for employment change (Table 2) the 34 new non-basic jobs combined with the 50 new mining jobs could possibly increase population by 103 people. Population multipliers will require downward adjustment in areas having large pools of unemployed or under-employed residents.

Table 2

Population multipliers for midwestern non-metropolitan counties, 1984-86

| Demographic change | Total population multiplier |
|--------------------------------------|-----------------------------|
| Employment change | 1.23 |
| Change in social security recipients | 2.07 |

This same procedure may also apply in areas where basic employment is declining or is expected to decline. However, declining areas may not respond quickly to decreases in basic employment. Their adjustment may include extensive periods of under-employment and over-capacity.

Multipliers for the mixed sectors may often be larger than those for the totally basic sectors. However, total basic employment and income in the mixed sectors generally are less than in the totally basic sectors. The net combined effect is that farming, commuters, social security or transfer payments, and manufacturing account for the major portion of basic employment and income.

Import substitution

Although basic employment and income are the prime cause of area growth, local trades and services need to be developed to capture the **multiple** benefits of area growth. If total employment in an area's local, mixed sector is considerably less than expected, then employment in that mixed sector probably is not meeting local demands.

With this information, community leaders might focus development efforts on expansion of the mixed sectors, leading to retention of earnings in the local economy.

Local awareness

These multipliers are based upon the average typical conditions in 439 non-metropolitan counties in a nine-state, midwestern region. As such, you may need to modify these standards to fit unique local conditions. For example, nearness to larger trade centers or the importation of raw materials may reduce multiplier impacts. Also, we could expect multiplier impacts to be lower in totally rural counties than in counties with large urban populations. The mixed economic sectors listed in the tables are aggregated from more specific types of trades and services. It is quite possible that the basic portion of mixed sectors could be greater in specialized communities such as tourism areas.

Data availability

County employment and income data prepared by the Bureau of Economic Analysis, U.S. Department of Commerce, are available from the University's Office of Social and Economic Data Analysis. The only adjustment to these data is to reduce "Dividends, Interest and Rent" by 30 percent to account for imputed rent attributed to owner-occupied homes and free services associated with checking and savings accounts. Data for the number of social security recipients in a county can be obtained at the nearest social security office.

Additional information

- The procedure used to estimate economic base multipliers is explained in: Curtis Braschler and John A. Kuehn, "Estimation of Employment Multipliers for Planning in Ozarks Nonmetropolitan Counties," *Southern Journal of Agricultural Economics*, July 1976, pp. 187-192.
- A more detailed discussion of economic base concepts and applications is available in a publication from the MU Department of Community Development: John A. Croll and John Tharp, *Foundations of an Economic Base Study*.
- For assistance in applying these materials, contact your local MU Extension center.

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Related MU Extension publications

- DM3005, Understanding Your Community's Economic Base
<http://extension.missouri.edu/p/DM3005>
- DM3035, Potential for Retail Trades in Rural Communities
<http://extension.missouri.edu/p/DM3035>

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