11.481J / 1.284J / ESD.192J Analyzing and Accounting for Regional Economic Growth
Spring 2009

LOCATION QUOTIENTS AND ECONOMIC-BASE MULTIPLIER

METHODS OF DETERMINING BASIC AND NONBASIC SECTORS

1. *Assumption method*: analyst determines from intuitive knowledge of sectors in local economy

2. *Survey method*: an analyst surveys firms in local economy to determine amount each firm exports from one region.

3. *Location quotient method*

$$LQ = \frac{E_i^g}{E_o^g} \ / \ \frac{E_i^n}{E_o^n}$$

If $LQ > 1.0$ region exports
If $LQ = 0.0$ region neither exports nor imports

SOME OF MANY PROBLEMS WITH LOCATION QUOTIENTS
   a.   Some local industries (hotels) and federal and state government output depend largely on nonlocal therefore basic sector.
   b.   Local government is basic regardless of LQ.
   c.   Look carefully at real estate and construction activities that may be tied to a booming national economy or heavy immigration.

4. Minimum-requirements method
    Compare local employment in sector as share of total employment in region across a sample of regions.
    Assume local production in region with lowest ratio is just adequate to satisfy local needs. All else will be exported.

DATA SOURCES IN UNITED STATES

1. Employment data:
    (a)   County Business Patterns--U.S. Bureau of Census--2-digit, 3-digit, 4-digit
    (b)   County, state, and national--BLS employment and wages program--ES-202--Employment and Wages Reports 2-digit, 3-digit, 4-digit. Covers 98% hourly civilian labor, 40% agricultural labor, 90% S&LG labor.

2. Output data: Census information for value of shipments

3. Income data: Diverse sources.

Assumptions

1. Regional growth in income is a function of outflows from the base sector.
2. Growth in service (nonbasic) sector is directly dependent on growth in basic sector.
3. Relationship between the growth in the two sectors is stable.

Model

$$y^g = (s^g - m^g) + o^g \qquad (1)$$

where y^g = total income in region g,
s^g = local spending in region g,
m^g = inflows into region g, and
o^g = outflows from region g.

$$s^g = s^g y^g \qquad (2)$$

$$m^g = m^g y^g \qquad (3)$$

$$o^g = \overline{o}^g \qquad (4)$$

$$y^g = s^g y^g - m^g y^g + \overline{o}^g \qquad (5)$$

$$y^g = \frac{\overline{o}^g}{1 - s^g + m^g} \qquad (6)$$

Regional income is a function of outflows from region g and marginal propensity to spend locally

$$k = d^{yk} / d\overline{o}^g = \frac{1}{1 - s^g + m^g} = y^g / \overline{o}^g \qquad (7)$$