SHIF T AND SHARE PROJECTION MODELS: A REFORMULATION

Charles F. Floyd

The shift and share method of regional analysis is a useful technique for comparing a region's historical economic growth to that experienced by some larger area, usually the nation. It has also been used to project future economic growth, based upon some projection of national employment and assumptions regarding the stability of the regional share component over time.

If it can be demonstrated that reasonable forecasts can be produced using the shift and share method, this would fill a significant gap. It would provide a projection model of intermediate sophistication between the simple extrapolation models and the more costly techniques such as input-output.

In order to test the model's ability to fulfill this role, this paper compares a naive shift and share employment projection model to three other simple models, modifies the shift and share model to improve its forecasts, and suggests directions of possible future research in the development of more effective projections techniques.

The Shift and Share Employment Projections Model

To utilize the shift and share technique to project future employment growth, an internal or external projection of national industry employment growth is required. These national projections make it possible to compute

1This research was partially supported by a grant from the Office of Water Resources Research, United States Department of the Interior.

2The author is an Associate Professor in the Department of Real Estate and Urban Development, College of Business Administration, The University of Georgia.

3Mathematically, the historical analysis can be represented as follows:

Let: $E_{1i}^1$ = Regional employment in industry $i$ in base period 1

$E_{1i}^2$ = Regional employment in industry $i$ in base period 2

$roo$ = United States all-industry employment growth rate between period 1 and period 2

$r_{io}$ = United States individual industry growth rate between period 1 and 2

$r_{ij}$ = Regional individual industry growth rate between period 1 and 2

$NG$ = National Growth component of regional growth

$IM$ = Industrial Mix component of regional growth

$RS$ = Regional Share component of regional growth
the National Growth and Industrial Mix components of projected regional growth. If:

\[ p^3_i \] = Projected regional employment in industry \( i \) at the end of the projection period,

\[ E^2_i \] = Regional employment in industry \( i \) at the end of the historical period,

\[ P_{oo} \] = National projected growth rate for all industries combined during the projection period,

\[ P_{io} \] = National projected growth rate for industry \( i \) during the projection period

Then:

Projected National Growth (NG') = \( E^2_i \ (P_{oo}) \), and

Projected Industrial MIX (IM') = \( E^2_i \ (P_{io} - P_{oo}) \).

The Industrial Mix component accounts for regional differences in projected employment growth arising from relative concentrations in slow growth or fast growth industries. The remaining elements of relative regional growth, and those by far more difficult to project, are embodied in the Regional Share component.

H. James Brown, addressing himself to the shift and share projection method in a recent critique asserted that the Regional Share component is unstable over time, and, therefore, the shift and share model is not useful as a

\[ TC \] = Total Change in regional employment between period 1 and 2

Then:

\[ \text{NG} = \sum_{i=1}^{n} [ r_{oo} \ (E^2_i) ] \]

\[ \text{IM} = \sum_{i=1}^{n} [ E^1_i \ (r_{io} - r_{oo}) ] \]

\[ \text{RS} = \sum_{i=1}^{n} [ (r_{ij} - r_{io}) \ E^1_i ] = TC - (\text{NG} - \text{IM}) \]

\[ \text{TC} = \sum_{i=1}^{n} (E^2_i - E^1_i) = \text{NG} + \text{IM} + \text{RS} \]