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DEVELOPMENT OF A REGIONAL BUSINESS INDEX
A CASE STUDY OF THE ARBI

by

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I. Introduction

Regional economic activity reflects a complex interaction between regional consumers, producers and government, as well as innumerous economic forces which emanate from beyond the immediate geographic area. For most of these sub-national regions which include states, regional planning areas, SMSA's and cities there exists almost no direct measures of changing economic activity. Although Gross Regional Product (GRP) has been estimated for some states on a yearly basis and less frequently on a quarterly basis, this measure has not been constructed or collected for any substate region on a regular basis. As a result, the measurement of short run behavior of local economics over various stages of the business cycle has been based on the behavior of specific economic series such as total employment, retail sales and bank debits or some overall business activity index, i.e. Duluth Business Index, which are composed of those specific series. These composite indexes substitute for GRP estimates but there is no attempt to determine how closely these indexes follow GRP since GRP is not available.[1]

In constructing local business indexes, such as the Duluth Business Index, the procedures for choosing component series and the assignment of appropriate weights to those components have varied from subjective judgements to econometric techniques. The analyst who use subjective judgements tend to base their conceptions on such readily discernible factors as the percentage distribution of employment across industries. This procedure may or may not capture the essence of the local economy. On the other hand, analysts who attempt to use econometric techniques tend to identify key independent or explanatory variables which they believe explain variations in overall economic activity. This technique is fraught with technical problems concerning both the choice and weighting of index components.

In this paper the theory of constructing a regional business index will be

explored with particular attention paid to the ability of the index to measure fluctuation in GRP or its surrogate. The technical problems of choosing the appropriate component indices, as well as weighting those indices, will be discussed. Finally, the paper will explore the procedures necessary to verify the index after construction.

II. Construction of a Regional Business Index

A regional business index attempts to measure area changes in economic activity. Most existing indices attempt to measure these trends by collecting data on what appear to be key indicators of shifting economic activity. These key indicators include such series as building permits, telephones, electric power usage, or unemployment statistics. Usually these indicators are chosen because of the availability of data and the historic trend this data provides. Implicitly these regional business indexes are attempting to measure economic changes which ultimately impact on area employment, Gross Regional Product, income or expenditures for major SIC code industries.[2]

Unfortunately, regional statistics by industry code for area employment, income or expenditures are normally available only after a considerable lag in time. Therefore, regional economists must rely on coincident indicators of changes in regional economic activity to estimate changes in business conditions.

The Arrowhead Regional Business Index (ARBI) will be constructed as the weighted average of several component index.[3]

$$I_{ARBI_t} = \sum_{i-1}^{n} W_i X_{it}$$

Where I_{ARBI_t} is the value of the time period "t",

X_{it} is the value of the component index representing important regional export and regional service industries.

W_i is the constant weight assigned to the i^{th} component.

$0 < W_i < 1.$

$\Sigma W_i = 1.$

n = number of components.

The actual construction of the local index involves three important processes. First, the appropriate major export and domestic services industries must be identified. The choice of the appropriate industries depends on the importance of the industry to the overall regional employment, income, or expenditures. In the Arrowhead Region of Minnesota, there are five major export industries and one domestic service industry. The major export industries include mining, transportation, timber, tourism and manufacturing. Second, appropriate indicators have to be selected wich measure shifts in economic activity for these major industries. In essence, an indicator will be deemed appropriate if the indicator accurately identifies the turning points direction and magnitude of the economic change in the industries activity. Third, once the appropriate set of local time series have been chosen, weights need to be assigned to each series in constructing the composite index. This process may be complicated if more than one indicator is used in measuring the economic activity for each of the major industries included.

If more than one indicator is used to measure the fluctuation in economic activity of a major industry, then the component index is constructed as a weighted average of the several local time series.

$$X_{it} = \sum_{i-1}^{m} V_1 \; Z_i$$

Where X_{it} is the value of the component index representing important regional export and regional service industries,

V_i is the constant weight assigned to the i^{th} component.

$0 < V_i < 1.$

$\Sigma V_1 = 1.$

Z_i = time series data.

m = number of components.

The time series data selection procedure and the weighting techniques are outlined in the following paragraphs.

The selection of the major export and domestic service industries is based on the regional importance of these industries to regional income, employment, and spending. In Table 1, the employment and income is recapped by nine major industrial groups for the seven county area of the Arrowhead Region. With the exception of mining, this breakout of employment is in many cases too narrow for the purposes of developing broadly defined industries' classification. For example, the timber industry really includes both the agricultural, forest, and fishing segments of Table 1, as well as a large portion of the manufacturing industry. Most of the timber harvested in the forest is either used as pulp to manufacture paper products, as lumber, or made into chipboards. A shift in final demand and output of paper industries will influence both manufacturing and timber harvests. The major export and domestic service industries' employment and income are presented in Tables 2 and 3 and outlined below.

In most regional economic analyses export industries are designated through the use of location quotient. Any two digit SIC coded industry with a location quotient greater than one would be considered to be an export industry. All SIC coded industries with location quotients less than one would be considered to be import or domestic service industries.

In this study we have not used the location quotient method to designate export and service industries. The designation of the export industry stemmed from expert judgement of several of the authors as to which major industries were export or service industries. This process was chosen primarily for two reasons. First, the industries chosen have been aggregated beyond the two digit SIC code designation and, in some cases, across two digit code industries. The tourist industry represents such an industry which transcends two or more SIC coded industries. The demand of travelers coming into the region will affect a number of basic SIC coded industries; nevertheless, these SIC coded industries' demands all relate back to the tourist industry. Second, all of the industries included in the designation as export industries have location quotients greater than one. However, the process has excluded several industries which would have been included under the location quotient designated system. In most instances these SIC coded industries had location quotients only slightly greater than one.

The mining industry consists of 51 firms and employed on the average of 11,639 workers and generated $139,426,000 in wages paid in 1977. (See Table 1.) However, it should be noted that the industry also endured a significant strike in that year. Therefore, these employment and income statistics understate the real impact of this industry. In addition, a significant but unknown fraction of the 493 manufacturing firms in the area produced products primarily used by the mining industry.

TABLE 1

SEVEN COUNTY AREA EMPLOYMENT
AND WAGES BY SIC INDUSTRIES
1977

	No. of Firms	Employment	Total Wages Paid in (000's)
Agriculture, Forestry, Fishing[1]	75	3,393	$ 21,933
Mining	51	11,639	193,426
Construction	764	6,110	104,558
Manufacturing	493	15,876	197,934
Transportation, Communication, Public Utilities[2]	387	5,477	78,054
Whlse. and Retail Trade	2,780	26,565	192,147
Finance, Insurance, Real Estate	527	3,457	32,535
Services	1,920	18,806	150,241
Government	351	22,459	243,223
TOTAL	7,388	110,734	$1,214,091

[1]Estimate from Income Generation in the Primary Forest Industries of Northeastern Minnesota and Selected Economic Data.

[2]Excludes Railroad Employees not included in the Department of Economic Security Reports.

The transportation, communication and utility industry consists of 387 firms, with 5,477 employees and $78,094,000 in wages paid. This industry's primary activity provided power communication and transportation to move taconite, timber, and grain to various national and international markets. The Twin Ports of Duluth and Superior are a focal point for this transportation and utility activity. Several other north shore communities, such as Two Harbors, Silver Bay, and Taconite Harbor, also provide harbors for lake shipping. In addition, a large but unknown portion of the wholesale retail activity is tied to the transportation of goods down the lake.

The timber industry includes primary forest products and manufacturing activities. An estimated 3,047 workers were involved in harvesting timber products with an additional 5,072 involved in the manufacture of wood fiber products. Approximately 32 percent of the manufacturing activity carried on in the region involved the pulp and paper industries measured by employment. The timber industry, therefore, produced an estimated $170,406,000 in value-added products in 1977 and generated approximately $78,964,000 in wages.

The tourist industry consists of a conglomeration of related domestic service industries including restaurants, hotels, gas stations, transportation, retail trade, and other retail activities. The impact of tourist activity is often disguised in regional statistics with domestic trade. In 1977 the estimated tourist demand generated an estimated total spending of $126,858,000. A total estimated employment provided by tourist related activities amounted to 4,542 with $34,297,000 paid in wages. (See Table 2.) These estimates result from a complex manipulation of SIC industry data with several surveys taken in the region (See the footnotes with Table 2.)

TABLE 2

TOURIST DEMAND AND EMPLOYMENT
FOR ARROWHEAD REGION
1977

	Firms	Spending	Employment	Wage and Salary Income (000's)
Lodging	411	$32,211	2,259[1]	$17,842[3]
Eating, Drinking .5047 SIC 58, Based on 1978 Tourist Survey	1,486	43,485	1,049[2]	7,561[4]
Auto, Gas .0444 SIC 55	3,927	11,382	275[2]	1,982[4]
Retail Sales .0818 SIC 53 + SIC 56		16,178	390[2]	2,811[4]
Other .0551 SIC 59		23,602	569[2]	4,101[4]
TOTALS		$126,858	4,542	$34,297

[1]Estimate Income for each employee. See Minnesota 1978 Tourist-Travel Industry, pp 14-15. Monthly Average Minnesota Employment x Receipt, Duluth Lodge/Receipt, Minnesota.

[2]Estimate Employment. Average Monthly Employment x Receipt, Duluth SIC, adjusted for Tourist Percent/Receipt SIC, Region 3.

[3]Column II x Average Annual Wages of $7,898. See Glenn O. Gronseth, Industry Distribution of Wage and Salary Covered Employment, Total Wages Paid, Annual Average Earnings...1978 Data, January 1980.

[4]Column II x $7,208.

Finally, other manufacturing represents the last major export component of the regional economy. A number of small, medium and large manufacturing firms producing a diverse group of products provides jobs for 11,160 individuals and provides income of $140,903,000. The total employment export-based industries amounted to 40,927 and generated $525,684,000 in gross income for the region. Service industries and government provided 69,807 jobs and generated $688,407,000 in gross wages in 1977.

The Arrowhead Regional Business Index, therefore, should consist of six component indices. Each of these component indices will attempt to measure the economic activity of some segment of the regional economy. In a perfectly constructed regional index, these component indices will accurately reflect changes occurring in either employment or income for each major export or domestic industries. In this context, the ARBI will have an index for each industry, i.e. Transportation, Mining, Timber, Tourism, Other Manufacturing, Domestic Services and Government.

In developing each of these indices, particular care must be taken to use or develop time series data which will correlate with industry expenditure employment or income statistics. In some cases these data series will be similar to data series which are currently available, i.e. telephones, electric power usage, building permits, etc. In other cases new data must be developed or found to estimate changing economic conditions. For example, retail sales index may have to be constructed by surveying a number of regional retail outlets to help estimate the impact of tourist and domestic demand on retail expenditures or employment. At the present time, all of these data series have not been fully identified or constructed.

Nevertheless, the process for constructing each component requires that the resulting data series be correlated strongly with spending, employment or income generated by the industry. For example, the data series which at the present appear to be available and may provide estimates of employment and income for the taconite mining industry are taconite production, taconite shipments, and state metal mining employment. Although taconite mining is not the only mining process developed in the Arrowhead Region, it is at the present time the most predominate.

As part of the development of this component index, each data series must be weighted to arrive at the composite index when more than one data series is utilized.[4] The weighting of each individual data series may follow one of the essential three weighting procedures--value added, employment, income. If the data series measures a portion of the overall industrial process, the weighting procedure might develop along the lines of value added. If the index purports to measure the change in activity in that portion of the industrial process, then the appropriate weight for that component of the index is the value added for the activity. From a practical point of view, value added statistics for major regional industries by activity are usually not available. However, both income and employment statistics are available for major industries and job covered for unemployment compensation. Since data series for each component index have not yet been identified, the weighting process for each subcomponent of the ARBI cannot be illustrated here.

However, the weighting process for developing the overall ARBI from the subcomponent has been developed and will provide some insight into the problem. In Table 4, the estimated weights of each component indice are shown. The weights are developed from the aggregate data provided in Table 3 of estimates of employment and income by industry and total for the region. For example, the transportation component weighted by employment is found by dividing

TABLE 3

CRUDE ESTIMATES
EMPLOYMENT AND INCOME
BY
MAJOR EXPORT AND DOMESTIC
INDUSTRIAL CATEGORIES
For 1977

	Firms	Employment	Wage and Salary Income (000's)
Transportation	387	5,477	$ 78,094
Mining	51	11,639	193,426
Timber	239	8,109	78,964
Tourism	411	4,542	34,297
Manufacturing - Other	329	11,160	140,903
	1,417	40,927	$525,684
Domestic Service and Government	5,971	69,807	688,407
TOTALS	7,388	110,734	$1,214,091

TABLE 4

ESTIMATED WEIGHTS
OF
COMPONENTS
A R B I

	Employment Weights	Income Weights
Transportation	.0495	.0643
Mining	.1051	.1593
Timber	.0732	.0650
Tourism	.0410	.0282
Other Manufacturing	.1008	.1161
Subtotal	.3696	.4329
Domestic Industries	.6304	.5671
	1.0000	1.0000

industry employment by total employment or 5,477/100,734. The transportation component weighted by income is found in a similar fashion by dividing industry wage salary income by total regional income, or 78,094/1,214,091. It is not surprising to note that the two weighting processes yield differing weights.

The choice of the weighting process becomes quite important since it can alter substantially the importance of each subcomponent in the overall index. If the ARBI utilizes the employment weight, then the total weight of the major export industries is .3696 while the weight of the domestic service industries is .6304. In contrast, if the income weighting approach is chosen, then the total weight of major export industries rises to .4329 and the weight of the domestic services industries falls to .5671.

It would appear that the actual choice between the income or employment weighting process should be made based on what the index is attempting to measure. Although, much of the literature reviewed dealing with construction of regional and national indices appears to be unclear as to the actual economic activity that these indices are attempting to estimate; implicitly, most regional business indices appear to be attempting to reflect changing economic activity that would impact gross regional product, gross regional income, or employment. If the analogy of national economic indices is carried through to the regional index, then the regional index should reflect changes in either gross regional product or income. Unfortunately, estimates of either gross regional product or gross regional income are not readily available for regions any smaller than a state. Thus, the ARBI will attempt to measure shifts in wage and salary income or industry employment. Therefore, either employment or income weighting procedures seem to be appropriate at lease at the present time.

If the regional index is attempting to measure either gross regional product or gross regional income, then the income weighting procedure is more appropriate. Both gross regional product and gross regional income are closely related to output. Industrial output is a function of imputs used given

technology. In a highly simplified example, inputs are labor and capital. The labor input includes both the quantity and quality of the labor power in the activity. Thus, employment and output or the value of output are not likely to be as highly correlated as labor income and the value of the industries output. In this respect the use of employment data for the assignment of weights will ignore the very significant differences that exist between the skills and quality of the labor force used in various industries. Distribution of skills across industries is very different and will only be captured when using an income weight process. With the passage of time the weights in the regional index must be adjusted to reflect changing industry conditions.[5]

III. Evaluation of the Resulting Index

One of the key components of developing a regional business index is to determine whether the index measures what it is intented to measure. A number of studies on the construction of business index suggest that such an index should provide information about the timing, direction and magnitude of shifts in economic activity.[6]

A business indicator often will provide information about the timing of cyclical economic fluctuation. A particular indicator may lead, be coincident, or lag trends in business activity. If the indicator consistently leads shifts in business activity, the indicator, of course, becomes a good forecasting device. Business indicators which are coincident with shifts in economic activity provides information about general economic trends as they occur. Finally, business indicators which consistently lag shifts in economic activity often are useful in dating the cyclical activity. In this case the dating of a cyclical trend refers to the development of precise timing information as to when the peak or trough of a particular cycle occurs.

The development of a regional business index requires the finding of time series data which generally coincide with shifts in economic activity. A regional business index requires coincident indicators primarily because of the delay in the availability of regional data on gross regional products, employment and income. The regional business index in many cases becomes a rough estimate of shifting economic activity in the absence of these other data series.

In evaluating a particular business index, the procedure of evaluation ought to include some estimate of timing of index in relationships to regional economic activity. A business index which is consistently coincident in its timing will provide more useful information about the regional economy than an index which is inconsistent or which either leads or lags shifts in economic activity.

Second, a business indicator ought to provide accurate information about the direction of the change in regional economic activity. If the regional economic activity is falling, then the regional business index ought to consistently reflect the slow down in regional activity. Naturally, if regional business activity is rising, then the business index ought to consistently show this upward trend in business activity.

In a similar fashion, a business index ought to provide some information about the magnitude of the change in business activity. In many cases current business index for many regional areas do a poor job of measuring the magnitude of the cyclical activity. Nevertheless, this is a key ingredient in developing an accurate and useful measure of changing economic conditions.

Evaluation of a regional index requires attempts at measuring the index ability to coincide with changes in regional economic activity, to consistently provide accurate information about the turning points and direction of economic activity and to provide some information about the magnitude of economic change.

In the next section of this paper the development and testing of the Duluth Retail Sales Index will illustrate some of the procedures required to adequately construct and evaluate a business index.

IV. Duluth Retail Sales Index: An Illustration of The Construction and Evaluation of a Regional Measure of Economic Activity

The Duluth Retail Sales Index, DRS, is a component of the Duluth Business Index and attempts to measure fluctuations in Retail Sales activity. The DRS is a monthly series with a sixteen-year history. Essentially, the DRS is an aggregate index comprised of five component indices which attempt to measure sales activity for each of four major retail activities, as well as shifts in overall retail sales. The data for each component, as well as the overall index, is collected by surveying thirty-one different retail outlets. These survey forms solicit information from stores in each of four major two digit SIC industries which include SIC 53 General Merchandise, SIC 54 Grocery Sales, SIC 55 Automotive and Gas Sales, and SIC 56 Apparel Sales.[7]

Each of these component monthly index is weighted by the employment of the surveyed store in relationship to the overall employment of all surveyed stores. The decision to weight by employment as opposed to income or gross sales was made on the practical basis that employment was the only data known for each store in the sample. The surveyed stores response to each category are then added together and compared with the surveyed data for a base year. The index is then deflated for price level changes to estimate shifts in real sales volume rather than current price sales volume. Finally, each component index is aggregated to arrive at the DRS.

Although no attempt at present has been made to evaluate either the timing or direction of the DRS as measure of sales volume, the DRS has been evaluated

TABLE 5

TEST OF RETAIL SALES INDEX
AS A MEASURE OF
RETAIL SALES IN DULUTH

$$R_{sic} = A + b\,R_d + U$$

{T values are in parenthesis}

1) $R_{gsic} = 11{,}119.72 - \underset{(2.57)}{.2919}\ R_g$ $\qquad R^2 = .27$

2) $R_{ausic} = 3{,}709.52 + \underset{(5.10)}{.7600}\ R_{au}$ $\qquad R^2 = .63$

3) $R_{asic} = -\ 1{,}608.80 + \underset{(3.30)}{1.6010}\ R_a$ $\qquad R^2 = .40$

4) $R_{tsic} = 18{,}048.98 + \underset{(10.07)}{397.01}\ R_t$ $\qquad R^2 = .87$

List of Variables

R_{gsic}	Quarterly Gross Retail Sales in Grocery and Food Stores, adjusted for price level changes.
R_{ausic}	Quarterly Gross Retail Sales in Automobile and Gas Stations, adjusted for price level changes.
R_{asic}	Quarterly Gross Retail Sales of Apparel, adjusted for price level changes.
R_{tsic}	Quarterly Gross Retail Sales, adjusted for price level changes.
R_g	Quarterly Grocery Store Retail Index, adjusted for price level changes.
R_{au}	Quarterly Automotive Retail Sales Index, adjusted for price level changes.
R_{ap}	Quarterly Apparel Retail Sales Index, adjusted for price level changes.
R_t	Quarterly Duluth Retail Sales Index, adjusted for price level changes.

Note: One percent increase in R_d leads to .72 percent increase in R_{sic} or a $480.38 increase in Retail Sales measured in 1967 dollars.

as to its ability to estimate the magnitude of shifts in Duluth Retail Sales activity. In Table 5 the results of several regression estimates of shifts in various components of the DRS and their ability to estimate shifts in actual retail sales are shown. The data used in these regression equations represent quarterly sales data for Duluth by SIC coded industry adjusted for price level changes for the years 1975-1978, and the price adjusted quarterly retail sales index by component.

Each regression equation represents a component retail sales industry so that in equation 1, R_{gsic} is the deflated quarterly gross retail sales of all grocery and good products in Duluth, while R_g represents the quarterly grocery retail sales index. Although I have not tried to test the direction of any index directly, the sign of the beta coefficient does suggest that all but the grocery retail index move in the same direction as the actual retail sales volume. All of the beta coefficients estimated are significant to the .05 level or above as suggested by their "t" test. In addition, the value of the R^2 range from .27 for the grocery index to .87 for total index suggesting that a sizeable portion of the variation of retail sales volume is reflected by variation in the retail sales index or its components.

An analysis of the regression equation for the total index provides some useful information. It would appear that a 1.21 point increase in the Duluth Retail Sales Index will provide approximately a .72 percent increase in total retail sales or $480,380 increase in quarterly retail sales volume.

The DRS index, therefore, can provide a fairly accurate estimate of Duluth's real dollar gross sales activity months, if not years, before the actual sales volume is available by SIC coded industry. The Duluth Retail Sales index provides a reasonably good measure of sales activity in the area because it provides a good measure of the magnitude of change in retail sales activity.

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Note: One percent increase in R_d leads to .72 percent increase in R_{sic} or a $480.38 increase in Retail Sales measured in 1967 dollars.

V. Summary

The construction and evaluation of a regional business index can proceed only after deciding exactly what the index is attempting to measure. A regional business index probably ought to measure either the area's gross expenditures, gross income or employment. Since most regional business activities involve export related industries and domestic related service industries, a regional business index ought to be built around the important export industries since these industries will provide most of the impetus for initial cyclical and secular changes.

After the components of the regional business index are decided upon, the second and equally important problem of weighting these components must be handled. It would appear that this problem can be resolved by weighting each subcomponent by either SIC industry coded sales, employment, or income. While there appears to be no good theoretical argument which can resolve the three choices to a best choice, this choice probably is income since the lost income to the region will have more indirect impacts than the lost jobs. Assuming a procedure for weighting the components of the index is chosen, the regional index may then be constructed.

After a regional index has been constructed, it should still be evaluated to determine if the index measures what it was intended to measure. A regional index can be evaluated according to the timing of the index in relationship to the economic activity it is attempting to measure. The index also ought to be evaluated to insure that it identifies the turning points and direction of the cyclical economic activity. Finally, the regional business index should be evaluated to determine whether it measures the magnitude of the shift in economic activity.

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NOTES

[1]Much of the first section of this paper stems from Paul J. Kozlowski, A Local Index of Leading Indicators: Construction, Uses and Limitations, Kalamazoo, W. E. Upjohn Institute for Employment Research, October 1977. Ajmer Singh, "Local Business Activity Index: Its Construction and Uses," Journal of Regional Science, Summer, 1967. L. S. Pyn and C. V. Hcek, "The Local Business Index: An Employment Series Approach," Southern Journal of Business, January 1966.

[2]See Phillip E. Fincher and Philip F. Rice, "Estimated Gross State Product," The Louisiana Economy (Ruston, Louisiana: Louisiana Technical University, 1980, Vol. XIII, No. 3, February 1980), pp 1-5. Joseph D. Brown, Kathryn M. McLaughlin and Gary N. Young, The Muncie Business Index (Muncie: Bureau of Business Research, Ball State University, April 1975, Report No. 7), pp 1-26. Bureau of Business Research, School of Business Administration, College of William and Mary, Business Trends, 1950-1985, Williamsburg-James City, County of Virginia, Williamsburg, Virginia, May 1978, p 7. Jerrold M. Peterson and Glenn O. Gronseth, Duluth Business Indicators, Bureau of Business and Economic Research, School of Business and Economics, University of Minnesota, Duluth, various issues.

[3]See Kozlowski, op. cit. Cecil H. Meyers, Toward an Index of Business Activity in St. Louis County, Minnesota (Duluth: Social Science Research Trust Fund Publication, Division of Social Science, Department of Economics, University of Minnesota, Duluth. Samuel B. Redman, Statistical Analysis (New York: The Ronald Press Company, 1964), pp 475-510.

[4]Kozlowski, op. cit.

[5]This idea resulted from the important criticism of an earlier draft of this paper by Professor G.K. Kripalani, Department of Economics, Western Michigan University. Although Professor Kripalani provides this idea, he is in no way responsible for my misuse of it.

[6]Kozlowski, ibid. Geoffrey Moore, Statistical Indicators of Cyclical Revivals and Recession (New York: National Bureau of Economic Research, Occasional Paper 31, 1950). Geoffrey Moore and Julius Shiskin, Indicators of Business Expansion and Contraction (New York: National Bureau of Economic Research, 1967). Victor Zarnowitz and Charlotte Boschar, "Cyclical Indicators: An Evaluation and New Leading Indexes," Business Conditions Digest, May 1975. Since most indicators relate to national economic change, many regional indexes attempt to reference to National Economic Indicators. This process may cause the regional economists to miss important regional changes that do not result in cyclical swings in national cyclical indicators. This may in some lines be referred to as the extra cycle. It seems more appropriate to attempt to evaluate regional indicators against the regional economic variables they are attempting to measure. This evaluation process is outlined above.