Understanding Your Local Economy

Economic Base Analysis and Local Development Strategies
Why Analyze Your Local Economy?

In recent years, several forces have combined to create a broad range of development problems and concerns in the rural, or nonmetropolitan, West. On the one hand, industry and population from other regions have been attracted to the West so that the overall population growth rate in that area was twice the national average between 1970 and 1980. Nonmetropolitan counties in the western United States grew 9.2 percent from 1970 to 1980, a rate that was three times the national average and twice the rate of growth for all nonmetropolitan counties.

Another feature of western rural economies which has brought rapid growth to previously isolated, sparsely populated areas is large scale mineral and energy development. At present, many communities are suffering the "boom and bust" cycle which characterizes such fast-growing economies.

On the other hand, while growth has been a dominant factor in much of the West, it is not universal. Many agriculturally-based areas continue to experience adjustment problems as a result of farm consolidation and emigration. Furthermore, communities heavily dependent on a single economic resource (such as timber or minerals) are greatly affected by national and international economic conditions. The early 1980's have provided a vivid reminder of this, with each economic condition generating high unemployment and a generally depressed economy.

The combination of overall rapid economic growth, boom and bust, and severe economic downturns in industries which historically have been the region's economic mainstay, has generated renewed interest in economic development among policy makers at all levels of government. In their search for clean, light industry—ranging from high-tech to tourism—communities are initiating a variety of approaches to economic development, including ideas copied from other communities.

To select the most appropriate economic development strategy for a community, the decision makers and community leaders must begin with an understanding of how their local economy functions, what its economic base is, and how changes in that base may affect local economic structure and performance. This publication is for people concerned about economic development who wish to learn more about their local economy. It explains the process of local employment and income generation, illustrates several simple techniques for estimating the local economic base, and suggests how information on economic structure can be used to help select more promising economic development strategies. Readers wishing to obtain "how to" guidelines for conducting or implementing an economic base study are directed to reference numbers 1, 2, 4 and 13 at the end of this report.

The Economic Base Approach: How are Local Incomes and Employment Generated?

Changes in employment and income in a local economy are caused by many factors. Economic base theory is one approach used by many regional economists to explain growth or decline in the local economy. By understanding the economic base of a particular local economy, one can appreciate which sectors "drive" the economy, i.e., those which determine the total incomes and employment size of a community. It can then be anticipated which of these might be vulnerable to decline, and sectors with more potential for growth can be identified.

In a totally self-contained and closed economy, everything required by the community or region is produced and consumed within its boundaries. While this description may have fit a few isolated pioneer communities, most local economies today are more nearly the opposite. They are open economies purchasing, or importing, a great proportion of their needs from outside the community. In order to make those purchases, money must be earned through exports, or the sale of goods and services outside the community's boundaries. Not all export earnings, however, are immediately spent on imports. Certain goods and services are produced locally, and export earnings are also spent on these. Thus, larger export earnings may lead to larger local expenditure and expansion of the local economy.

Figure 1 summarizes this process. As exports, local products and services flow out of the community to satisfy an external demand (A). To produce the exports that satisfy this demand, jobs have been created locally which generate a flow of income (B) into the local community. This income is used in various ways. One use is to purchase goods and services (C) from outside the local economy (imports). Income (D) "leaks" out of the community to pay for these imports. A second major use is to purchase goods and services locally (E). This local circulation of money generates additional local employment and income. Not all of the income which is spent locally remains in the community, however. Local business and industry also require goods and services that are not available locally, and these purchases add to the leakage of income.

The investment of savings and payment of taxes are other uses for income. Some stays in the local economy, but much leaves the community. With the dollars that leave the economy through savings and taxes, the community is, in a sense, paying for imported financial and government services and expected future income. Thus, for every dollar generated by exports, part circulates in the local economy and part leaks out.

This flow process illustrated in Figure 1, determines the level of local income and employment. The level of economic activity will remain unchanged unless something changes either the level of exports (A) which changes the dollar flow into the local economy (E), or the proportion of export earnings leaked out of the economy (D) to purchase imports (C). The level of local income and employment can be increased in this process either by increasing the level of exports (A) or increasing the share of export income spent locally (E).

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Figure 1. Process of Local Income and Employment Generation
According to the economic base approach, the demand is the driving force behind the process of local income and employment generation. The economic base concept determines the level of goods and services produced by a community for local consumption, and the external demand generated at the local level determines the level of goods and services produced by a community for export. The external demand generated at the local level determines the level of goods and services produced by a community for export.

The export base approach does not overlook the role and importance of the demand for locally produced goods and services. However, the demand for local output is not really determined locally, at least in the short-run. Rather, it is determined indirectly by the level of employment and income generated for producing exports to meet external demand. Over time, however, it is acknowledged that there may exist a potential for the diversion of local demand from the importing sector, employed to produce external demand, to the purchasing sector, employed to produce locally produced goods and services. Therefore, in the case of a longer term horizon that allows for the adjustment and response of local production, local demand assumes a more direct role in the process of income and employment generation.

Gross Exports and Net Exports
In Figure 1, the flow of export earnings is shown as a generating process of export and the goods and services represent the "gross exports." This demand is thought of as a production which is not consumed locally. For example, gross imports in the agricultural sector of a county in the Palouse (a fertile belt in western Washington and northern Idaho) would include all the wheat produced, less that which is consumed locally.

However, the other external flow in Figure 1 shows import expenditure in exchange for imported goods and services. Agricultural imports in the same county in the Palouse would include wheat products for local consumption produced or processed elsewhere, such as flour, bread, and cereal. In contrast to gross exports, the imports may be thought of as goods from products imported for local consumption. Within each sector, then, the gross exports minus the gross imports equal net exports. In some sectors, net exports will be negative because gross imports in that sector exceed gross exports. The gross export, gross import, and net export concepts will be discussed again.

Investment Income and Transfer Payments
Two other flows of income into the local community are from transfer payments and investment income. These sources of earnings, whose growth and local importance are often overlooked, perform a function similar to that of the export of goods and services. Income from these two sources has grown from 21.1 percent of total personal income in the U.S. in 1962 to 33.3 percent in 1982. Transfer payments are primarily social security and other retirement-related income, unemployment insurance payments and expenditures for income maintenance programs. Transfer payments as a percentage of total personal income has almost doubled nationally from 7.7 percent in 1962 to 14.6 percent in 1982. Investment income increases in the form of earnings from dividends, interest, and rent has increased as a share of total personal income between 1962 and 1982 from 13.4 to 18.8 percent [U.S. Department of Commerce]. These flows are a major source of personal income in many rural communities, especially those with large numbers of retirees. The local employment generation potential of this major external source of local income should not be overlooked in local economic development planning.

Strategies for Economic Development
The economic base model identifies two fundamental ways to increase local income and employment: (1) increasing exports, and/or (2) decreasing the proportion of income leakage from the community. Export promotion is the traditional way of attempting to stimulate more economic activity. This focuses on enlarging the flow of income into the community. While attracting an export industry from the outside or offering tax incentives to such industries may be an ideal for those activities should not overlook the obvious alternative of expanding existing export companies. In times of economic decline, the strategy of retaining existing export employment to sustain the existing flow of dollars into the community should also be considered.

Local income and employment can also be increased by increasing the proportion of income spent on local purchases, thereby decreasing the leakage of income out of the community. This does not require any direct import substitution—producing locally those goods and services that were previously imported. Thus, more money circulates locally, in turn generating local employment that was previously generated elsewhere. Import substitution can take place in both the export and import sectors. Inputs needed by the export sector, previously imported, could be produced locally, as could goods and services for local consumption. Local production of each domestic sector is a leakage of income out of the community. The import substitution objective may be accomplished by the same three strategies introduced for export promotion: namely, expanding existing firms, attracting new firms, and retaining existing firms to prevent increased leakage of income.

How Can Your Local Economic Base Be Measured?
The economic base view of the world implies that employment and income-generating activities in a given economy can be separated into those activities serving the demand for exports and those serving local demand. Economic base development involves four primary ways of separating the economy into export and local employment (or income). A direct method is to survey firms and ask them what percentage of their product is exported from the community. This method can be quite expensive and time-consuming.

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Table 1. Major Non-Cash Methods of Estimating Export Employment

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<th>Basis for Estimating Export Employment</th>
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<td>Assignment</td>
<td>Gross</td>
<td>All employment in certain sectors is considered for &quot;export&quot;</td>
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Assignment Method
The belief that these methods is the assignment method, which assigns all employment in certain sectors to the export sector, usually agriculture, forestry, mining, manufacturing, tourism, federal and state government are included as exports for all counties in the study. It is assumed that all production in those sectors is for export and all production in the remaining sectors is for local consumption. This assumption is clearly unrealistic. If information is available from other sources (e.g., an input-output model or a local survey) about the percentage of exports in certain sectors, that percentage of employment can be assigned to exports to obtain more realistic estimates.

Minimum Requirements Method
Both the minimum requirements and the location quotient methods are based on the notion that one can make a reasonably good estimate of employment for local consumption in any industry by comparing the region's share of employment in that industry with that of a selected reference region. For the minimum requirements method, the region chosen is the one with the lowest percentage of employment for any industry. The location quotient method uses the location quotient, which is the ratio of the region's share of employment in a particular industry to the national share of employment in the same industry. Industry sectors with high location quotients (e.g., manufacturing) have a larger share of employment in manufacturing than the nation, and consequently have a higher positive location quotient. Conversely, a location quotient less than one means that the regional share of employment is lower than the national share. The location quotient technique uses the information about the national and regional shares of employees to generate estimates of net export employment. All employment in excess of the national share of employment in any industry is considered to be an estimate of net export employment. Since the location quotient equals one for any industry, the only positive employment that can be considered is engaged in net export production. Analysts often establish different minimum requirements for counties based on the size of the economy. The minimum requirement is different for large and small counties.

Other analysts recommend using the percentage of the minimum share of the region's employment in a particular industry for the assignment method. Conversely, above the lowest percentage, a negative net export employment estimate would indicate a situation in which there is net import of employment. For example, if employment in a particular industry is divided into imports and exports, estimates of net exports can be obtained for each industry. In this report and in companion reports, the employment for each industry was estimated for each county.

Location Quotient Method
The location quotient method for the location quotient method is generally the state or national economy. The national economy is used in this study. The location quotient is the ratio of the regional share of employment in a particular industry to the national share of employment in the same industry. Industry sectors with high location quotients are large. The location quotient, then, is a measure of specialization. Regions which specialize in manufacturing, for example, have a large share of employment in manufacturing than the nation, and consequently have a location quotient greater than one. Conversely, a location quotient less than one means that the regional share of employment in a given industry is less than the national share. The location quotient technique uses the relationship between the national and regional shares of employees to generate estimates of regional share of employment. All employment in excess of the national share of employment in any industry is considered to be an estimate of net export employment. Since the location quotient equals one for any industry, the only positive employment that can be considered is engaged in net export production. Analysts often establish different minimum requirements for counties based on the size of the economy. The minimum requirement is different for large and small counties.

A Pacific Northwest County Economy: An Example
There are a number of dimensions in the economic structure of any region. This structure can be characterized, for example, by its industrial structure, its national or international transactions, or its income structure. The distribution of income between labor and proprietors, income or property, income or transfer payments, or industrial structure can be described in terms of factors such as government or income generated in each industry. These sections of the report will explore two dimensions of county industrial employment structure. The first is the industrial composition of the export base—those columns of total gross export employment contributed by various industrial sectors. The second is specialization and trade—those columns of net export and import employment of the various sectors of the economy. These two dimensions of the economic structure will be described for one rural county, Baker County, Oregon. (Table 2) Information on the gross export base and the net export/ import structure for each of the counties in the Pacific Northwest is contained in three companion publications.

The Gross Export Base
Two methods are commonly used to estimate the gross export base of a region: the assignment method and the minimum requirements method. These methods were described in the first section of this report. A graphical comparison of export employment estimates using the two techniques is presented in Figure 2. While it is clear that the general pattern of the export base composition is similar under both techniques, there are differences. Export employment estimated via the assignment method (the left bar) produces a fairly stark profile in which there are six export sectors: agriculture, forestry, mining, manufacturing, tourism, and government. All the employment in these sectors is assigned to the export sector. Export employment estimated via the minimum requirements technique (the center bar) shows a much more diversified export base structure. There is some export employment in every small sector (except high technology manufacturing) in which there is no employment at all in Baker County.

The minimum requirements method of estimating export employment provides a more realistic representation of the export base. It should be cautioned, however, that the assignment approach is likely to provide estimates of the gross export employment that are completely accurate. For those sectors which the assignment method defines as export sectors,

Table 2. Employment Structure of Baker County, Oregon 1980

<table>
<thead>
<tr>
<th>SIC Code</th>
<th>Industry</th>
<th>Total Employment (As%)</th>
<th>% Minimum Employment (M.R.)</th>
<th>Gross Export</th>
<th>County Employment</th>
<th>U.S. % Employment</th>
<th>Location Quotient (L.Q.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01,02,07,</td>
<td>Agriculture &amp; Forestry</td>
<td>1226</td>
<td>1226</td>
<td>5</td>
<td>924</td>
<td>21</td>
<td>6</td>
</tr>
<tr>
<td>08,24,26</td>
<td>Forest &amp; Related Products</td>
<td>381</td>
<td>381</td>
<td>1</td>
<td>296</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>19,14</td>
<td>Mining</td>
<td>104</td>
<td>104</td>
<td>0</td>
<td>104</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>25,35-38</td>
<td>Construction</td>
<td>114</td>
<td>0</td>
<td>1</td>
<td>35</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>22,23,25,27,34,39</td>
<td>Other Manufacturing</td>
<td>194</td>
<td>194</td>
<td>1</td>
<td>138</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>41-48</td>
<td>Transportation, Communication, Public Utilities</td>
<td>248</td>
<td>248</td>
<td>2</td>
<td>135</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>50,51</td>
<td>Wholesale Trade</td>
<td>211</td>
<td>0</td>
<td>1</td>
<td>145</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>56,70,79</td>
<td>Tourism</td>
<td>433</td>
<td>433</td>
<td>5</td>
<td>159</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>52-57,59</td>
<td>Other Retail Trade</td>
<td>639</td>
<td>0</td>
<td>7</td>
<td>238</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>60-67</td>
<td>Finance, Insurance, Real Estate</td>
<td>192</td>
<td>2</td>
<td>0</td>
<td>105</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>73-78,80-88</td>
<td>Other Services</td>
<td>741</td>
<td>0</td>
<td>5</td>
<td>469</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>74,75</td>
<td>State &amp; Local Government</td>
<td>618</td>
<td>618</td>
<td>4</td>
<td>395</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>76,77</td>
<td>Local Government</td>
<td>679</td>
<td>0</td>
<td>10</td>
<td>130</td>
<td>12</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: Percentages may not sum to 100 due to rounding error.
the actual gross export base is probably somewhere in between the gross export employment estimates of endogenous requirements and the assignment methods. It is likely that some of the employment in all these sectors produces for local consumption, but the “local consumption” employment may not be as much as suggested by the minimum requirements approach. For example, in an agricultural state like Oregon, the “minimum requirement” in the agricultural sector may not be a good estimate of the economic produced for local consumption. A significant amount of the employment in agriculture may be for export, for example, even in the county with the lowest proportion of agricultural employment. The minimum requirements approach would in this case underestimate the true gross export employment. For the export sectors defined by the assignment approach, the actual export employment in agriculture may be underestimated accordingly. If so, the minimum requirements method may be more fairly viewed as a minimum estimate and thus can serve as a conservative estimate of employment serving demand from outside the county or region.

One of the advantages of estimating export employment as the description of the dependence of the county economy on particular sectors (as opposed to merely using the total employment in each sector), may be apparent from Figure 2. The right bar indicates total employment in each sector of the county. If one looked merely at total employment in the county and attempted to understand the economic dependency, one would tend to overestimate the importance of certain service sectors, particularly government services and retail trade, and to underestimate the relative importance of the export sectors, particularly forestry and agriculture. For example, 21 percent of Baker County’s total employment is in agriculture and fishing, and 7 percent is in forestry and related products. These 2 sectors represent 20 and 9 percent, respectively, of the gross export base using the minimum requirements method. If “dependence” is defined in terms of the proportion of the export employment base in a given sector, the importance of agriculture and forestry is more accurately represented by an estimate of gross export sales than by the overall employment. For example, while 22 percent of the employment in Baker County is in government, the “dependence” of Baker County on government exports is quite a bit less (16 percent). While the differences between total employment shares and gross export shares are not overwhelming, the latter shares do more accurately reflect the dependence of an economy on specific sectors and give a more balanced and accurate view of the sectors that drive the economy.

It is sometimes noted that export base information is occasionally used to estimate multipliers. These multipliers are used in forecasting and impact analysis. The derivation of economic base multipliers and the uses of multipliers in impact analysis and forecasting are described in references 3, 6, 13. If gross export estimates are used for deriving economic base multipliers, rather than the net export estimates sometimes used, then one would use gross export estimates in gross export employment in both impact analysis and forecasting. If one were interested, for example, in gross export employment in 1990 in Baker County, one would want to forecast gross exports, not net exports. Subsequently, one could use the fact that gross export employment forecast times a gross export multiplier. Gross export multipliers derived via economic base techniques are rather crude and specialized and the Export/Import Structure.

While the gross export estimates described above provide indicators of economic dependence and may be useful in forecasting and multiplier analysis, one may also be interested in the dependence of trade flows in which both imports and exports can provide perspective on current and historical specialization and the local market potential in specific sectors. The net export/import profile for Baker County in 1980 is shown in Figure 3. This profile was derived using the location quotient described in an earlier section. It is evident, for example, that Baker County was quite specialized in agriculture relative to the nation. For example, the agricultural employment in the county was about 850 employees, when employment required from food and beverage manufacturers to produce imports for the agricultural sector was subtracted from the local employment producing agricultural exports. Similarly, the net export employment in this table, and to a lesser extent, the agricultural sector and the transportation, tourism, retail, and government sectors was positive. This suggests that, under the assumptions of the model Table 1, the county exported more in these sectors than it imported. The same analysis shows that for seven other sectors, Baker County was a net importer; that is, the county imported more in these various sectors than it exported. The major importing sectors included the high technology manufacturing, other manufacturing, and social service. It is sometimes speculated that these import estimates can give some indication of sectors with import substitution potential. It is not as clear where local production could be profitably increased to substitute for imports that is currently being met through imports. For example, since Baker County is a rural and agricultural county, it is not clear that new businesses in the service sector might be profitably established to serve local residents. However, that these import estimates indicate potential for import substitution in all cases, it is likely, for example, that there is not a lot of potential for high technology manufacturing employment in Baker County. Although the county appears to be a substantial net importer of high technology and other manufactured goods, the production cost structure and access to markets are such that imports may preclude the development of a significant production capacity in Baker County in some sectors. Similarly, while the Baker County economy is a substantial net exporter in agriculture, forestry, tourism, and retail, local firms and households do purchase imports in these sectors and there may well be potential for important substitution in these sectors also. Thus, sectors with significant net imports may not necessarily have the potential for profitable production for local markets.

How Can Information on Economic Structure be Used?

As suggested above, there are three basic uses of information on economic structure: (1) assessment of economic and social impact; (2) assessment of economic dependence for export promotion; and (3) analysis of market potential for import substitution. It is likely that new businesses in the service sector might be profitably established to serve local residents. However, that these import estimates indicate potential for import substitution in all cases. It is likely, for example, that there is not a lot of potential for high technology manufacturing employment in Baker County. Although the county appears to be a substantial net importer of high technology and other manufactured goods, the production cost structure and access to markets are such that imports may preclude the development of a significant production capacity in Baker County in some sectors. Similarly, while the Baker County economy is a substantial net exporter in agriculture, forestry, tourism, and retail, local firms and households do purchase imports in these sectors and there may well be potential for important substitution in these sectors also. Thus, sectors with significant net imports may not necessarily have the potential for profitable production for local markets. They are, however, sectors in which market potential exists (in which local supply is not adequate to meet local demand). Identification of these sectors is therefore a place to start in understanding the industries and markets of the county and the potential for changes in that structure.
Summary

Community decision makers selecting an economic development strategy must appropriate for their local community must begin with an understanding of how their local economy functions, what its economic base is, and how changes in that base may affect local economic structure and performance. The economic base approach emphasizes the roles of exports and imports in generating local income and employment.

Export promotion is a traditional strategy to stimulate more economic activity by enlarging the flow of income into the community. Import substitution is an economic development strategy alternative geared toward decreasing the leakage of income out of the community. Both the export promotion and import substitution objectives can be accomplished by attracting new firms as well as retaining or expanding existing firms. Furthermore, the increasing importance of investment income and transfer payments as a major external source of earnings flowing into the community should not be overlooked in local economic development planning.

Three non-survey methods of separating the economy into export and local employment (or income) to measure the economic base were introduced. The assignment method and the minimum requirements method provide two different estimates of gross exports to determine which sectors drive the local economy. The location quotient method provides estimates of net exports that identify those sectors in which a local economy is relatively specialized and those in which the local economy depends on other regions for imports. These three methods were illustrated for one Pacific Northwest regional economy—Baker County, Oregon. Two dimensions of the county's economic structure were explored: the shares of total gross exports contributed by various industry sectors, and the net exports and imports of the various sectors of the county's economy.

Three companion publications, "The Employment Structure of Idaho (Oregon, Washington Counties, 1980)" provide comparable economic base analysis information for each of the counties in the Pacific Northwest. Information in the composition of the gross export base indicates each county's dependence on particular export sectors. Information in the net export/import structure (the composition of export specialization and trade) suggests sectors where import substitution potential may exist and provides a starting place for further study of market potential. This information on county economic structure has been provided to help people who are concerned about their local economy select more promising economic development strategies.

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References:


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