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Different Perspectives on Economic Base

Lisa K. Crone, Richard W. Haynes, and Nicholas E. Reyna

Abstract

Two general approaches for measuring an economic base are discussed. Each method was used to define the economic base for each of the counties included in the Interior Columbia Basin Ecosystem Management Project area. A more detailed look at four selected counties results in similar findings from both approaches. Limitations of economic base analyses are noted.

Keywords: Economic base, functional economies, Columbia River basin.

Introduction

Initial comments on the environmental impact statements from the Interior Columbia Basin Ecosystem Management Project¹ (ICBEMP; USDA and USDI 1997a, 1997b) indicated dissatisfaction with descriptions of the economy and economic conditions of the Columbia River basin. Much of the dissatisfaction stemmed from the scale used to portray the economic situation in the area. Most comments expressed disagreement with the summary finding that only 4 percent of the region's employment is natural resource based (that is, in wood products, ranching, and mining).

LISA K. CRONE and RICHARD W. HAYNES are research foresters, Forestry Sciences Laboratory, P.O. Box 3890, Portland, OR 97208-3890; and NICHOLAS E. REYNA was an economist, Pacific Northwest Region, P.O. Box 3623, Portland, OR 97208-3623. Portland, Oregon. Crone is located at the Interior Columbia Basin Ecosystem Management Project, 112 E. Poplar, Walla Walla, WA 99362. Reyna is a program manager, State and Private Forestry, 3825 E. Mulberry Street, Fort Collins, CO 80524.

¹ The Interior Columbia Basin Ecosystem Management Project was organized to develop a scientifically sound, ecosystem-based management strategy for FS- and BLM-administered lands in the interior Columbia River basin. The project's Science Integration Team developed an ecosystem management framework, a scientific assessment, and an evaluation of alternative management strategies. This paper is one of a series developed as background material for those documents. It provides more detail than was possible to disclose directly in the primary documents.

In this paper, we will attempt to clarify the manner in which the information on the economic base was derived for the environmental impact statements at the U.S. Bureau of Economic Analysis (BEA) area and county level. We begin by defining what an economy is, as described in the economics component of the assessment of ecosystem components (referred to as the economics assessment; Haynes and Horne 1997). We introduce the economic base concept and present two methods for determining the economic base of an area. County-level data are used to describe the economic base of the counties in the project area according to each method, with four counties selected for illustrative purposes. Finally, we point out the limitations of these approaches in describing present and predicting future economic conditions in an area.

An Economy

An economy can be defined as a set of interrelated production and consumption activities (Lipsey and others 1984). In the economic assessment, we adopted the BEA definition of functional economies;² that is, a functional economy is one large enough to include the bulk of economic transactions or flow of trade. In general, functional economies are larger than a community or county. Projected employment levels for 1995 for the BEA areas (or portions thereof) in the project area are summarized in table 1.

Note that a region's economy is not the same as that of a county or community. Some confusion arises because economic data are generally collected and reported at the county level, even though this is not the scale at which economies operate. Just because counties are the reporting level does not imply that they represent the economy in a broader area, or at the community level; for example, while a regional economy may be thriving, the county or community economy could be contracting and vice versa.

Economic Base

The economic base of an area consists of those activities that provide the core employment and income on which the rest of the local economy depends. Concerns about what constitutes the economic base and its size are part of trying to understand how various activities might affect opportunities for the people living in the area and those whose well-being depends on the level of economic activity in the area.

² For a detailed description of the methodology used by the BEA to delineate these areas, see Johnson (1995). In 1995, the BEA areas were redefined based mainly on new information on commuting patterns. This resulted in the aggregation of the Butte BEA region into the Missoula BEA region. Because the data reported in the economic assessment were based on the previous area definitions, those area definitions are maintained here for consistency.

Table 1—Projected employment for the Nation and interior Columbia basin, 1995

Industry	Nation	Interior Columbia basin													
		Interior Columbia basin average	Tri Cities ^a	Spokane	Missoula	Idaho Falls	Twin Falls	Boise	Pendleton	Redmond-Bend ^b	Butte				
		Percent													
Manufacturing employment:															
Agriculture services	1.14	2.56	4.41	1.13	1.92	2.69	4.72	2.53	2.63	2.13	0.92				
Mining	.66	.45	.23	.61	.64	.83	.26	.38	0	0	1.47				
Construction	5.20	4.65	4.21	4.55	5.40	5.38	5.37	5.09	3.48	4.58	3.48				
Manufacturing—	14.11	11.71	11.29	11.20	11.53	9.59	11.66	12.55	14.96	16.04	4.40				
SIC 24 ^c	.57	2.52	1.00	2.79	4.98	.51	.50	2.32	2.65	5.54	2.35				
Transportation	4.76	4.30	3.34	4.30	5.67	3.72	4.72	4.88	4.53	3.76	6.04				
Trade	21.49	21.14	21.11	22.10	21.41	21.93	21.10	20.38	18.97	20.70	20.33				
FIRE ^d	7.53	6.00	4.64	6.65	6.22	5.52	5.64	7.71	4.53	5.48	6.78				
Services	28.38	25.02	23.21	26.79	27.36	27.24	21.36	24.17	20.86	23.65	31.68				
Government (all):	14.57	16.39	14.60	18.76	15.00	15.79	11.01	16.34	17.81	15.14	23.08				
State and local government	10.44	12.18	11.92	14.04	10.52	11.79	9.04	10.32	13.38	11.05	18.50				
Farm employment^e	2.16	7.78	12.96	3.92	4.85	7.31	14.15	5.98	12.22	8.51	1.83				

Bold = employment sectors greater than the national average.

^a Tri Cities are Kennewick, Richland, and Pasco, WA.

^b Redmond-Bend is the portion of the Portland-Salem BEA region that is in the interior Columbia basin.

^c Sources for SIC 24 (wood products) employment were State Bureau of Labor Statistics Reports except for the national average which was from 1990 data in Beuter (1995).

^d Financial, insurance, and real estate industries.

^e Farm employment is calculated as the difference between total employment and covered employment. Because it is calculated as a difference, it includes rounding errors.

Source: Haynes and Home 1997.

The fundamental problem is how to identify and measure the economic base of an area. Several methods have been used to define what constitutes the economic base; here we discuss and compare two. The first method is called the assumption (or assignment) approach. In this approach, selected industries are assumed to comprise the economic base. A frequently used assumption is that all manufacturing and agriculture defines the economic base, because these industries traditionally produce exports sold outside the local area. The other method is called the location quotient approach. With this approach, the economic base is defined by those industries that reflect local specialization. Sales, value added, income, and employment can all be used as “units of measure” to identify the economic base of the local economy. Both approaches generally rely on indirect measures, such as income or employment data, to determine the basic industries and their sizes, because detailed surveys of exactly what gets exported are difficult and costly.

In the economic work for ICBEMP, the location quotient approach was used to identify the industries forming the foundation of a region’s economy. The implication was that anything that harms or decreases these industries threatens the regional economy. We adopted this approach after vigorous debate at public meetings hosted by ICBEMP staff early in the development of the project. Much of the debate focused on what constituted functional economies and the roles of various industries in a functional economy.

In the economic assessment, we used the convention that every industry can be divided into the proportion that is exported (referred to as “basic” activities) versus that serving local markets (or “nonbasic” activities). Proponents of economic base models argue that basic activities help support nonbasic activities by increasing the flow of money into and within an economic area.

We adopted the view that the economic growth of the project area depends on those economic sectors producing a significant share of their output for export. This is a departure from the traditional approach taken by the Bureau of Land Management and the Forest Service of focusing only on jobs in the ranching or manufacturing sectors. Many exporting sectors would have been missed with the traditional approach, but they were accounted for with our approach. Because many of these nontraditional export industries are growth industries, and many of the traditional ones are not, it is important to portray these evolving industries as accurately as possible.

Determining the Economic Base

The economic bases in 1994 for the project area counties, from several variations of the assumption method, are shown in table 2. Figure 1 illustrates the amount of natural resource employment in each county. This figure indicates significant variation among counties in the project area in terms of their levels of natural resource employment.

An example of the location quotient approach is shown in table 3. Here, the 1994 percentage of county employment in a particular sector (such as construction) is compared to the 1995 national percentage of projected employment in that sector. If the county percentage exceeds the national percentage, the sector is considered a basic sector.

Table 2—Various assumption method definitions of economic base for 1994

County	State	Manufacturing ^a	SIC 24 ^b	Mining ^c	Ranching ^d	Total resource ^e
Ada	ID	X				
Adams	ID	X	X			X
Bannock	ID					
Benewah	ID	X	X			X
Bingham	ID	X				
Blaine	ID					
Boise	ID	X				
Bonner	ID	X				
Bonneville	ID					
Boundary	ID	X	X			X
Butte	ID	X				
Camas	ID					
Canyon	ID	X				
Caribou	ID	X		X		X
Cassia	ID	X				
Clark	ID				X	X
Clearwater	ID	X	X			X
Custer	ID			X		X
Elmore	ID					
Fremont	ID					
Gem	ID	X	X			X
Gooding	ID					
Idaho	ID	X				X
Jefferson	ID	X				
Jerome	ID					
Kootenai	ID	X				
Latah	ID					
Lemhi	ID					X
Lewis	ID	X	X			X
Lincoln	ID					
Madison	ID	X				
Minidoka	ID	X				
Nez Perce	ID	X				
Owyhee	ID				X	X
Payette	ID	X				
Power	ID	X				
Shoshone	ID					X
Teton	ID					
Twin Falls	ID	X				
Valley	ID					
Washington	ID	X				X
Deer Lodge	MT					
Flathead	MT	X				
Granite	MT	X	X			X
Lake	MT					

**Table 2—Various assumption method definitions of economic base for 1994
(continued)**

County	State	Manufacturing ^a	SIC 24 ^b	Mining ^c	Ranching ^d	Total resource ^e
Lewis and Clark	MT					
Lincoln	MT	X	X			X
Mineral	MT	X				
Missoula	MT					
Powell	MT	X				X
Ravalli	MT	X				
Sanders	MT					X
Silver Bow	MT					
Baker	OR					X
Crook	OR	X	X			X
Deschutes	OR	X				
Gilliam	OR					
Grant	OR	X	X			X
Harney	OR	X	X			X
Hood River	OR	X				
Jefferson	OR	X	X			X
Klamath	OR	X				X
Lake	OR	X	X			X
Malheur	OR					
Morrow	OR	X				
Sherman	OR					
Umatilla	OR	X				
Union	OR	X				
Wallowa	OR	X				X
Wasco	OR	X				
Wheeler	OR				X	X
Adams	WA	X				
Asotin	WA					
Benton	WA					
Chelan	WA					
Columbia	WA	X				
Douglas	WA					
Ferry	WA	X				X
Franklin	WA					
Garfield	WA				X	X
Grant	WA	X				
Kittitas	WA					
Klickitat	WA	X				X
Lincoln	WA					
Okanogan	WA					
Pend Oreille	WA	X				X
Skamania	WA	X				
Spokane	WA					
Stevens	WA	X				X

**Table 2—Various assumption method definitions of economic base for 1994
(continued)**

County	State	Manufacturing ^a	SIC 24 ^b	Mining ^c	Ranching ^d	Total resource ^e
Walla Walla	WA	X				
Whitman	WA					
Yakima	WA	X				
Teton	WY					

^aX = county has more than 10 percent of its total employment in manufacturing, which includes Standard Industrial Classification (SIC) 24.

^bX = county has more than 10 percent of its total employment in the wood products sector (SIC 24).

^cX = county has more than 10 percent of its total employment in mining.

^dX = county has more than 10 percent of its total employment in ranching.

^eX = county has more than 10 percent of its total employment in natural resources (the sum of mining, ranching, and wood products).

Source: U.S. Department of Commerce, Bureau of Economic Analysis 1996.

Figure 1—Resource employment in counties in the interior Columbia basin.

Table 3—Economic base of each county (in bold) according to an employment location quotient definition^a

Area	State	Agricultural			Manu-			SIC 24 ^c	Transportation	Trade	FIRE ^d	Services	Total	
		services	Mining	Construction	facturing ^b	facturing ^b	Government						Farm	
Nation		1.14	0.66	5.20	14.11	4.76	21.49	7.53	28.38	14.57	2.16			
CIB average		2.56	.45	4.65	11.71	4.30	21.14	6.00	25.02	16.39	7.78			
Ada	ID	1.19	.17	8.89	12.64	4.50	22.36	8.97	26.89	13.40	.98			
Adams	ID	2.36	D	D	18.58	3.34	13.41	3.80	13.18	23.36	21.98			
Bannock	ID	.87	.15	5.79	6.78	6.66	26.46	6.75	21.83	22.57	2.14			
Benewah	ID	D	D	5.03	27.73	6.82	15.18	3.20	17.92	16.35	7.77			
Bingham	ID	4.09	.28	4.99	14.37	2.78	22.21	3.43	18.87	17.17	11.80			
Blaine	ID	3.70	.63	13.84	2.81	2.31	23.11	10.89	31.07	8.71	2.94			
Boise	ID	5.50	L	8.90	11.19	3.89	14.93	1.99	27.43	21.30	4.86			
Bonner	ID	2.82	.53	10.29	16.99	3.82	22.59	6.60	20.01	13.26	3.09			
Bonneville	ID	1.64	.08	7.78	5.07	3.02	28.70	5.66	32.74	12.39	2.92			
Boundary	ID	3.03	L	7.39	17.91	4.44	17.93	4.07	18.95	18.26	8.02			
Butte	ID	.38	D	D	19.38	.19	3.72	.72	57.56	12.62	5.43			
Camas	ID	D	L	3.28	3.11	2.07	19.69	D	13.13	18.65	40.07			
Canyon	ID	4.16	.18	7.64	18.70	5.06	19.71	4.83	21.98	11.40	6.35			
Caribou	ID	2.60	11.68	6.99	15.73	4.21	16.00	3.09	11.59	14.70	13.40			
Cassia	ID	5.27	.78	4.81	11.17	4.46	22.99	5.64	17.58	13.41	13.89			
Clark	ID	5.84	D	L	D	1.52	8.88	1.52	3.55	20.30	58.38			
Clearwater	ID	4.08	.32	3.99	22.25	3.20	16.69	2.96	13.58	28.13	4.81			
Custer	ID	4.02	10.20	8.86	1.19	3.46	17.95	2.98	18.99	18.99	13.33			
Elmore	ID	1.51	L	3.95	3.79	2.87	14.99	4.63	10.75	49.53	7.98			
Fremont	ID	4.99	L	6.09	4.36	4.13	19.19	2.63	16.60	23.37	18.65			
Gem	ID	4.68	D	6.50	14.03	3.89	15.01	3.67	17.82	15.87	18.52			
Gooding	ID	7.70	D	6.09	6.20	8.11	16.79	0.00	15.92	16.44	22.75			
Idaho	ID	2.14	1.86	5.73	13.11	5.19	18.21	3.27	16.82	21.57	12.10			
Jefferson	ID	9.46	.25	10.06	11.18	3.11	18.27	3.45	10.17	16.58	17.47			
Jerome	ID	7.43	L	5.32	8.73	7.62	19.04	3.71	16.37	12.32	19.46			
Kootenai	ID	1.57	.35	10.81	11.16	3.53	24.53	7.65	25.54	13.48	1.36			
Latah	ID	1.48	.10	4.16	5.83	3.20	21.31	3.31	22.56	33.99	4.07			
Lemhi	ID	3.60	2.06	6.82	6.85	3.65	20.42	4.04	19.95	20.47	12.13			
Lewis	ID	3.08	L	4.46	16.81	3.79	23.41	2.99	17.08	17.88	10.52			
Lincoln	ID	4.62	D	2.47	D	3.47	11.09	1.47	12.19	28.27	36.42			
Madison	ID	D	D	3.62	10.47	2.13	25.02	4.38	31.93	12.58	9.87			
Minidoka	ID	7.94	L	4.73	19.19	5.06	19.05	2.42	13.64	14.57	13.40			

Table 3—Economic base of each county (in bold) (continued)

Area	State	Agricultural services		Mining	Construction		Manu- facturing ^b		SIC 24 ^c	Transportation	Trade	FIRE ^d	Services	Government	Total	Farm
		D	D		D	D	D	D								
Nez Perce	ID	D	2.38	D	5.17	16.99	2.67	5.19	23.52	6.73	25.61	12.61	4.18			
Oneida	ID	2.38	1.19	4.12	1.19	2.38	0	2.59	17.75	3.84	10.48	27.39	27.88			
Owyhee	ID	10.26	3.70	3.48	3.70	3.56	0	6.35	13.65	2.19	11.77	18.12	26.92			
Payette	ID	3.64	5.19	.19	5.19	18.50	0	7.55	16.88	4.31	17.47	12.60	13.65			
Power	ID	2.60	4.68	L	4.68	38.00	0	6.78	12.36	1.86	8.43	12.40	12.89			
Shoshone	ID	.84	4.91	8.15	4.91	6.87	2.34	4.62	21.54	4.77	22.81	24.76	.72			
Teton	ID	3.92	7.78	0.00	7.78	3.97	0	2.68	19.01	3.55	18.29	19.17	21.64			
Twin Falls	ID	3.44	5.94	0.24	5.94	11.62	.62	5.41	24.84	6.01	23.19	12.99	6.33			
Valley	ID	2.87	10.55	1.03	10.55	5.24	2.71	3.21	24.67	6.69	21.01	22.16	2.57			
Washington	ID	8.95	3.81	L	3.81	14.00	7.16	3.72	18.68	4.96	15.76	15.39	14.72			
Deer Lodge	MT	1.46	4.28	1.33	4.28	3.59	0	3.83	20.91	3.27	28.43	30.66	2.26			
Flathead	MT	1.60	8.13	.36	8.13	11.89	4.78	5.02	23.85	6.83	28.75	11.38	2.19			
Granite	MT	3.81	3.81	3.88	3.81	22.38	19.59	1.77	18.44	1.84	12.86	19.05	12.18			
Lake	MT	3.00	6.69	.19	6.69	8.32	2.93	2.82	19.20	4.83	30.66	13.21	11.08			
Lewis and Clark	MT	.74	4.46	.49	4.46	3.84	.30	3.98	19.90	7.55	31.59	25.76	1.69			
Lincoln	MT	2.11	4.10	.58	4.10	23.24	15.96	4.31	19.75	4.39	19.84	18.80	2.88			
Mineral	MT	1.66	3.52	0	3.52	11.13	4.77	3.73	25.36	3.18	24.95	22.60	3.87			
Missoula	MT	1.05	4.90	.12	4.90	6.82	1.62	6.38	25.54	6.44	30.58	17.29	.88			
Powell	MT	1.77	3.87	.60	3.87	10.10	6.53	3.03	15.97	4.83	17.77	31.40	10.67			
Ravalli	MT	2.96	8.76	.87	8.76	10.46	4.89	4.21	21.14	5.73	24.53	13.02	8.32			
Sanders	MT	2.04	6.28	.61	6.28	9.91	7.52	6.54	16.69	4.34	23.66	19.60	10.33			
Silver Bow	MT	.57	3.15	3.45	3.15	3.55	.03	7.50	27.01	5.04	33.00	15.93	.80			
Baker	OR	1.84	5.04	1.06	5.04	9.62	5.09	4.83	20.32	4.42	23.23	16.89	12.74			
Crook	OR	2.51	3.60	.29	3.60	26.97	23.67	4.97	19.21	3.48	15.83	13.85	9.30			
Deschutes	OR	1.56	9.07	.23	9.07	10.89	5.17	3.52	25.11	8.75	27.26	11.27	2.35			
Gilliam	OR	D	.91	0	.91	2.21	0	20.27	10.52	3.05	10.29	14.94	37.80			
Grant	OR	2.46	4.24	0	4.24	14.29	11.09	4.09	14.78	2.76	17.53	25.61	14.25			
Harney	OR	3.39	3.55	L	3.55	12.12	10.47	3.53	14.97	2.82	16.03	22.08	21.51			
Hood River	OR	4.89	3.66	D	3.66	11.89	4.06	5.34	22.84	0	25.19	10.94	15.25			
Jefferson	OR	D	2.72	0	2.72	22.68	15.93	2.12	17.53	0	22.08	16.60	16.26			
Klamath	OR	2.18	4.32	.10	4.32	14.26	9.47	4.46	22.76	5.20	23.34	15.85	7.53			
Lake	OR	2.55	3.01	.48	3.01	13.91	13.20	2.42	16.13	2.53	12.15	21.41	25.40			
Malheur	OR	6.05	3.30	.36	3.30	7.48	0	4.46	23.65	3.60	18.11	15.34	17.64			
Morrow	OR	8.72	2.53	L	2.53	15.09	3.32	6.17	9.18	2.75	8.15	16.40	31.02			
Sherman	OR	1.93	L	0	L	0	0	2.99	25.42	L	9.76	24.71	35.18			
Umatilla	OR	2.86	3.32	L	3.32	15.58	2.93	5.27	20.61	4.85	21.20	16.02	10.28			

Table 3—Economic base of each county (in bold) (continued)

Area	State	Agricultural			Manu-			SIC 24 ^c	Transportation	Trade	FIRE ^d	Services	Government	Farm
		services	Mining	Construction	facturing ^b	Construction	facturing ^b							
Union	OR	2.12	.14	4.27	13.47	8.04	5.32	22.01	4.24	20.45	19.48	8.51		
Wallowa	OR	3.44	L	4.62	12.75	6.58	4.33	16.29	4.38	14.69	19.50	20.00		
Wasco	OR	2.14	.10	2.65	10.24	1.99	3.11	24.61	4.74	26.25	17.50	8.66		
Wheeler	OR	3.17	0	L	3.02	.91	2.11	11.18	2.57	10.42	22.05	45.47		
Adams	WA	7.65	D	D	12.48	0	5.12	19.42	3.23	13.40	15.18	23.53		
Asotin	WA	D	D	8.49	5.10	2.18	2.47	25.55	5.49	32.13	16.00	4.76		
Benton	WA	1.88	.10	5.95	5.93	0	2.22	1.85	4.53	42.29	13.81	21.44		
Chelan	WA	6.92	.45	5.72	6.33	.47	2.81	23.73	6.24	21.06	13.61	13.13		
Columbia	WA	2.94	D	1.94	22.06	0	D	12.52	2.40	16.32	24.64	17.18		
Douglas	WA	6.17	L	4.26	1.42	0	4.81	19.66	4.19	16.96	16.39	26.16		
Ferry	WA	D	9.48	3.91	11.50	7.49	D	14.47	2.93	16.46	27.34	13.92		
Franklin	WA	6.08	.06	5.19	5.29	.13	5.76	21.42	3.45	20.90	16.09	15.75		
Garfield	WA	1.79	0	1.11	0.94	0	1.37	20.05	4.61	8.79	36.77	24.57		
Grant	WA	5.28	D	4.04	11.74	0	3.94	20.09	D	17.43	16.84	20.63		
Kittitas	WA	1.82	.11	3.43	5.67	.96	4.41	25.52	3.96	20.57	26.06	8.45		
Klickitat	WA	0	.30	4.23	16.96	7.53	6.82	11.27	3.16	17.23	21.15	18.88		
Lincoln	WA	2.13	L	3.85	2.08	0	2.13	20.56	5.97	14.26	26.89	22.13		
Okanogan	WA	5.46	.30	3.49	6.14	4.60	1.86	21.15	3.84	18.74	17.47	21.56		
Pend Oreille	WA	3.01	.73	6.62	14.83	4.14	2.96	16.95	4.47	17.09	26.72	6.62		
Skamania	WA	1.60	D	4.98	10.91	6.54	3.42	10.72	D	27.02	34.47	6.88		
Spokane	WA	.83	.16	6.13	9.96	.69	4.50	23.68	7.93	30.34	15.42	1.05		
Stevens	WA	2.03	.74	4.27	19.33	8.44	3.54	16.19	3.58	24.43	17.61	8.28		
Walla Walla	WA	1.74	.07	3.54	15.59	0	2.65	19.47	4.16	26.90	17.90	7.98		
Whitman	WA	1.36	L	2.43	1.49	1.11	2.40	18.64	4.35	18.68	43.10	7.55		
Yakima	WA	4.85	.04	4.99	11.85	2.00	3.71	9.64	4.92	27.26	14.78	17.96		
Teton	WY	.79	0	9.52	3.17	NA	2.38	23.81	7.14	41.27	10.32	1.59		

D = data not reported due to disclosure policy; L = less than 10 jobs; NA = not available.

^a Percentage of county employment in each sector with sectors having a larger percentage than the national percentage considered part of the economic base and shown in bold.

^b Manufacturing includes Standard Industrial Classification (SIC) 24.

^c SIC 24 for wood products employment.

^d Financial, insurance, and real estate industries.

Source: U.S. Department of Commerce, Bureau of Economic Analysis 1996.

The following tabulation can be used to compare tables 2 and 3. It shows four counties in the project area (chosen because they traditionally have been considered timber dependent) and their respective basic employment sectors.

County and state	Agricultural services	Farming	Mining	Manu- facturing	Government
Lincoln, MT	2.11	2.88		23.24	18.80
Grant, OR	2.46	14.25		14.29	25.61
Lake, OR	2.55	25.40			21.41
Ferry, WA		13.92	9.48		27.34

These data suggest that in all four counties, the level of agricultural³ activity is high enough to be considered part of the economic base, but in only two counties is the level of manufacturing high enough to say that it is part of the economic base.

Under a cooperative agreement, Paul Polzin provided an assessment of the economic base in each project area county.⁴ Polzin used the assumption approach in determining which industries to include. In general, he included agriculture and agricultural services, mining, wood products, and Federal Government as basic sectors, with additional basic sectors (such as railroad transportation and nonresident travel) differing by county. He computed the percentage of total economic base labor income accruing to each base sector, on average, for the 5 years (1988 to 1992). Polzin's results are shown in table 4. We can compare his findings for the above four counties with ours by first converting the above figures from percentage of total county employment to percentage of total county base employment. This yields the following tabulation:

County and state	Agricultural services	Farming	Mining	Manu- facturing	Government
Lincoln, MT	4.5	6.1		49.4	40.0
Grant, OR	4.3	25.2		25.2	45.2
Lake, OR	5.2	51.5			43.4
Ferry, WA		27.4	18.7		53.9

³Agriculture includes ranching.

⁴Paul Polzin. Economic base profiles Interior Columbia River basin, draft: December 8, 1994. Director, Bureau of Business and Economic Research, University of Montana, Missoula, MT. On file with: U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior, Bureau of Land Management; Interior Columbia Basin Ecosystem Management Project, 112 E. Poplar, Walla Walla, WA 99362.

Table 4—Economic base as defined in assumption approach used by Polzin

County	State	Agricultural services	Mining	Wood production	Pulp and paper	Manu- facturing	Food production	Other basic	Rail-roads	Nonres. travel	State govt.	Federal Govt.	Commuters	Miscellaneous
Ada	ID			X		X					X			
Adams	ID	X		X								X		
Bannock	ID					X			X					
Benewah	ID			X										
Bingham	ID	X					X							
Blaine	ID	X						X						
Boise	ID			X							X		X	
Bonner	ID			X										
Bonneville	ID	X		X								X	X ^a	
Boundary	ID	X		X							X			
Butte	ID													X ^a
Camas	ID	X		X							X			
Canyon	ID	X				X	X						X	
Caribou	ID		X			X								
Cassia	ID	X					X							
Clark	ID	X												
Clearwater	ID			X							X			
Custer	ID		X								X	X		
Elmore	ID	X									X	X		
Fremont	ID	X		X							X	X	X	
Gem	ID	X		X								X	X	
Gooding	ID	X										X	X	
Idaho	ID	X		X							X			
Jefferson	ID	X											X	
Jerome	ID	X					X						X	
Kootenai	ID			X		X							X	
Latah	ID			X						X				
Lemhi	ID	X		X							X			
Lewis	ID	X		X										
Lincoln	ID	X		X							X			
Madison	ID	X				X								X ^b
Minidoka	ID	X					X							
Nez Perce	ID	X		X										
Oneida	ID	X			X								X	

Table 4—Economic base as defined in assumption approach used by Polzin (continued)

County	State	Agricultural services	Mining	Wood production	Pulp and paper	Manu- facturing	Food production	Other basic	Rail- roads travel	Nonres.	State govt.	Federal Govt.	Commuters	Miscella- neous
Owyhee	ID	X	X										X	
Payette	ID	X		X			X						X	
Power	ID	X				X	X							
Shoshone	ID		X											
Teton	ID	X											X	
Twin Falls	ID	X					X							
Valley	ID		X	X					X					
Washington	ID	X		X							X			
Deer Lodge	MT									X			X	
Flathead	MT			X		X					X			
Granite	MT	X		X		X					X			
Lake	MT	X		X							X		X	
Lewis and Clark	MT									X				X ^c
Lincoln	MT		X	X							X			
Mineral	MT			X							X			
Missoula	MT			X	X						X			X ^c
Powell	MT	X		X	X					X				
Ravalli	MT			X							X		X	
Sanders	MT			X							X		X	
Silver Bow	MT		X			X					X			X ^d
Baker	OR	X		X				X			X			
Crook	OR			X							X			
Deschutes	OR			X		X				X				
Gilliam	OR	X												
Grant	OR	X		X							X			
Harney	OR	X		X							X			
Hood River	OR	X		X						X				
Jefferson	OR	X		X		X								
Klamath	OR	X		X			X				X			
Lake	OR	X		X							X			
Malheur	OR	X					X							
Morrow	OR	X					X							
Sherman	OR	X		X								X		
Umatilla	OR	X					X					X		

Table 4—Economic base as defined in assumption approach used by Polzin (continued)

County	State	Agricultural services	Mining	Wood production	Pulp and paper	Manu- facturing	Food production	Other basic	Rail- roads	Nonres. travel	State govt.	Federal Govt.	Commuters	Miscella- neous
Union	OR	X		X					X					
Wallowa	OR	X		X							X	X		
Wasco	OR	X		X		X				X	X			
Wheeler	OR	X												
Adams	WA	X					X					X		
Asotin	WA	X		X						X				X ^e
Benton	WA													
Chelan	WA	X				X				X				
Columbia	WA	X				X								
Douglas	WA	X											X	
Ferry	WA	X	X	X		X					X			
Franklin	WA	X					X		X					
Garfield	WA	X									X			
Grant	WA	X					X							
Kittitas	WA	X		X		X	X			X				
Klickitat	WA	X		X		X								
Lincoln	WA	X												
Okanogan	WA	X		X							X			
Pend Oreille	WA	X		X	X						X	X		
Skamania	WA	X		X							X	X	X	
Spokane	WA									X				
Stevens	WA	X		X		X								
Walla Walla	WA	X				X	X				X			
Whitman	WA	X				X					X			
Yakima	WA	X				X	X				X			
Teton	WY									X		X		

X = sector accounted for at least 10 percent of the total base labor income according to assumption approach used by Polzin.

^a Idaho National Laboratory.

^b Private college.

^c Trade center.

^d Utility headquarters.

^e U.S. Department of Energy Hanford site.

Source: Paul Polzin (see text footnote 3).

Polzin's findings are as follows:

County and state	Agriculture and agricultural services		Wood products Mining	Manu- facturing	Heavy construction	Rail- road	Nonresident travel	Federal Government	Other
Lincoln, MT	3.5	16.9	53.4		2.8	2.3	1.7	19.4	
Grant, OR	13.4	.6	48.6				5.0	32.2	
Lake, OR	33.0	2.0	31.7					30.5	2.8
Ferry, WA	27.1	39.1	20.0					10.9	2.8

Several points of clarification between the two tabulations are in order. First, our figures for the government sector included all levels of government in the county; Polzin classified Federal Government as basic but state and local government as nonbasic. Additionally, the wood products industry was not separated from the manufacturing sector in our tabulation, as was the case in Polzin's analysis for three of the four counties. Finally, it is not clear whether farm income is included in Polzin's agriculture and agricultural services sector in cases where a farm is incorporated.

For Lincoln County, it is worth knowing that in 1993 a copper and zinc mine closed, which caused mining employment and mining labor income to fall by 90 percent and 80 percent, respectively, between 1992 and 1994. Breaking out the wood products component of the manufacturing sector for Lincoln County reveals that 33.9 percent of base employment was in this sector. In Grant County, the wood products component of manufacturing accounts for 19.5 percent of base employment. In Ferry County, the percentage of employment in the manufacturing sector in 1994 is less than the national average; thus, neither it nor the wood products sector is included as part of the economic base in the location quotient approach. For Lake County, neither mining nor manufacturing meets the location quotient cutoff; however, the wood products sector does account for 95 percent of employment in the manufacturing sector and 13.2 percent of total employment in the county.

With these caveats noted and bearing in mind that we are comparing different years, the overall numbers do not appear to be too different across the two economic base approaches. If one is interested simply in examining the existing economic conditions in the counties, with no predictive emphasis, perhaps the best descriptor is a simple breakdown of total employment with no distinction in basic vs. nonbasic. In table 5, the employment data from table 3 are reproduced with the sectors having more than 10 percent of a county's total employment highlighted. The top five sectors for each of the four counties listed above are:

Lincoln: Services (19.84 percent), trade (19.75 percent), government (18.80 percent), wood products (15.96 percent), and other manufacturing (7.28 percent)

Grant: Government (25.61 percent), services (17.53 percent), trade (14.78 percent), farm (14.25 percent), and wood products (11.09 percent)

Lake: Farm (25.4 percent), government (21.4 percent), trade (16.13 percent), wood products (13.2 percent), and services (12.15 percent)

Ferry: Government (27.34 percent), services (16.46 percent), trade (14.47 percent), farm (13.92 percent), and mining (9.48 percent)

Table 5—Percentage of total county employment in each industry, interior Columbia basin, 1994

County	State	Agricultural				Manu-				SIC 24 ^b	Transportation	Trade	FIRE ^c	Services	Total	Farm
		services	Mining	Construction	facturing ^a	facturing ^a	facturing ^a	facturing ^a	government							
Ada	ID	1.19	0.17	8.89	12.64	1.28	4.50	22.36	8.97	26.89	13.40	0.98				
Adams	ID	2.36	D	D	18.58	17.15	3.34	13.41	3.80	13.18	23.36	21.98				
Bannock	ID	.87	.15	5.79	6.78	.08	6.66	26.46	6.75	21.83	22.57	2.14				
Benewah	ID	D	D	5.03	27.73	20.00	6.82	15.18	3.20	17.92	16.35	7.77				
Bingham	ID	4.09	.28	4.99	14.37	.12	2.78	22.21	3.43	18.87	17.17	11.80				
Blaine	ID	3.70	.63	13.84	2.81	.33	2.31	23.11	10.89	31.07	8.71	2.94				
Boise	ID	5.50	L	8.90	11.19	6.76	3.89	14.93	1.99	27.43	21.30	4.86				
Bonner	ID	2.82	.53	10.29	16.99	8.23	3.82	22.59	6.60	20.01	13.26	3.09				
Bonneville	ID	1.64	.08	7.78	5.07	.26	3.02	28.70	5.66	32.74	12.39	2.92				
Boundary	ID	3.03	L	7.39	17.91	10.24	4.44	17.93	4.07	18.95	18.26	8.02				
Butte	ID	.38	D	D	19.38	0	.19	3.72	.72	57.56	12.62	5.43				
Camas	ID	D	L	3.28	3.11	0	2.07	19.69	D	13.13	18.65	40.07				
Canyon	ID	4.16	.18	7.64	18.70	2.08	5.06	19.71	4.83	21.98	11.40	6.35				
Caribou	ID	2.60	11.68	6.99	15.73	0	4.21	16.00	3.09	11.59	14.70	13.40				
Cassia	ID	5.27	.78	4.81	11.17	0	4.46	22.99	5.64	17.58	13.41	13.89				
Clark	ID	5.84	D	L	D	0	1.52	8.88	1.52	3.55	20.30	58.38				
Clearwater	ID	4.08	.32	3.99	22.25	16.24	3.20	16.69	2.96	13.58	28.13	4.81				
Custer	ID	4.02	10.20	8.86	1.19	0	3.46	17.95	2.98	18.99	18.99	13.33				
Elmore	ID	1.51	L	3.95	3.79	0	2.87	14.99	4.63	10.75	49.53	7.98				
Fremont	ID	4.99	L	6.09	4.36	2.90	4.13	19.19	2.63	16.60	23.37	18.65				
Gem	ID	4.68	D	6.50	14.03	12.14	3.89	15.01	3.67	17.82	15.87	18.52				
Gooding	ID	7.70	D	6.09	6.20	0	8.11	16.79	0	15.92	16.44	22.75				
Idaho	ID	2.14	1.86	5.73	13.11	9.67	5.19	18.21	3.27	16.82	21.57	12.10				
Jefferson	ID	9.46	.25	10.06	11.18	1.55	3.11	18.27	3.45	10.17	16.58	17.47				
Jerome	ID	7.43	L	5.32	8.73	0	7.62	19.04	3.71	16.37	12.32	19.46				
Kootenai	ID	1.57	.35	10.81	11.16	3.98	3.53	24.53	7.65	25.54	13.48	1.36				
Latah	ID	1.48	.10	4.16	5.83	2.63	3.20	21.31	3.31	22.56	33.99	4.07				
Lemhi	ID	3.60	2.06	6.82	6.85	4.39	3.65	20.42	4.04	19.95	20.47	12.13				
Lewis	ID	3.08	L	4.46	16.81	12.57	3.79	23.41	2.99	17.08	17.88	10.52				
Lincoln	ID	4.62	D	2.47	D	0	3.47	11.09	1.47	12.19	28.27	36.42				
Madison	ID	D	D	3.62	10.47	1.32	2.13	25.02	4.38	31.93	12.58	9.87				
Minidoka	ID	7.94	L	4.73	19.19	0	5.06	19.05	2.42	13.64	14.57	13.40				
Nez Perce	ID	D	D	5.17	16.99	2.67	5.19	23.52	6.73	25.61	12.61	4.18				
Oneida	ID	2.38	4.12	1.19	2.38	0	2.59	17.75	3.84	10.48	27.39	27.88				

Table 5—Percentage of total county employment in each industry, interior Columbia basin, 1994 (continued)

County	State	Agricultural			Mining	Construction	Manu- facturing ^a	SIC 24 ^b	Transportation	Trade	FIRE ^c	Services	Total government	Farm
		services												
Owyhee	ID	10.26	3.48	3.70	3.56	0	6.35	13.65	2.19	11.77	18.12	26.92		
Payette	ID	3.64	.19	5.19	18.50	0	7.55	16.88	4.31	17.47	12.60	13.65		
Power	ID	2.60	L	4.68	38.00	0	6.78	12.36	1.86	8.43	12.40	12.89		
Shoshone	ID	0.84	8.15	4.91	6.87	2.34	4.62	21.54	4.77	22.81	24.76	.72		
Teton	ID	3.92	0	7.78	3.97	0	2.68	19.01	3.55	18.29	19.17	21.64		
Twin Falls	ID	3.44	.24	5.94	11.62	.62	5.41	24.84	6.01	23.19	12.99	6.33		
Valley	ID	2.87	1.03	10.55	5.24	2.71	3.21	24.67	6.69	21.01	22.16	2.57		
Washington	ID	8.95	L	3.81	14.00	7.16	3.72	18.68	4.96	15.76	15.39	14.72		
Deer Lodge	MT	1.46	1.33	4.28	3.59	0	3.83	20.91	3.27	28.43	30.66	2.26		
Flathead	MT	1.60	.36	8.13	11.89	4.78	5.02	23.85	6.83	28.75	11.38	2.19		
Granite	MT	3.81	3.88	3.81	22.38	19.59	1.77	18.44	1.84	12.86	19.05	12.18		
Lake	MT	3.00	.19	6.69	8.32	2.93	2.82	19.20	4.83	30.66	13.21	11.08		
Lewis and Clark	MT	.74	.49	4.46	3.84	.30	3.98	19.90	7.55	31.59	25.76	1.69		
Lincoln	MT	2.11	.58	4.10	23.24	15.96	4.31	19.75	4.39	19.84	18.80	2.88		
Mineral	MT	1.66	0	3.52	11.13	4.77	3.73	25.36	3.18	24.95	22.60	3.87		
Missoula	MT	1.05	.12	4.90	6.82	1.62	6.38	25.54	6.44	30.58	17.29	.88		
Powell	MT	1.77	.60	3.87	10.10	6.53	3.03	15.97	4.83	17.77	31.40	10.67		
Ravalli	MT	2.96	.87	8.76	10.46	4.89	4.21	21.14	5.73	24.53	13.02	8.32		
Sanders	MT	2.04	.61	6.28	9.91	7.52	6.54	16.69	4.34	23.66	19.60	10.33		
Silver Bow	MT	.57	3.45	3.15	3.55	.03	7.50	27.01	5.04	33.00	15.93	.80		
Baker	OR	1.84	1.06	5.04	9.62	5.09	4.83	20.32	4.42	23.23	16.89	12.74		
Crook	OR	2.51	.29	3.60	26.97	23.67	4.97	19.21	3.48	15.83	13.85	9.30		
Deschutes	OR	1.56	.23	9.07	10.89	5.17	3.52	25.11	8.75	27.26	11.27	2.35		
Gilliam	OR	D	0	.91	2.21	0	20.27	10.52	3.05	10.29	14.94	37.80		
Grant	OR	2.46	0	4.24	14.29	11.09	4.09	14.78	2.76	17.53	25.61	14.25		
Harney	OR	3.39	L	3.55	12.12	10.47	3.53	14.97	2.82	16.03	22.08	21.51		
Hood River	OR	4.89	D	3.66	11.89	4.06	5.34	22.84	0	25.19	10.94	15.25		
Jefferson	OR	D	0	2.72	22.68	15.93	2.12	17.53	0	22.08	16.60	16.26		
Klamath	OR	2.18	.10	4.32	14.26	9.47	4.46	22.76	5.20	23.34	15.85	7.53		
Lake	OR	2.55	.48	3.01	13.91	13.20	2.42	16.13	2.53	12.15	21.41	25.40		
Malheur	OR	6.05	.36	3.30	7.48	0	4.46	23.65	3.60	18.11	15.34	17.64		
Morrow	OR	8.72	L	2.53	15.09	3.32	6.17	9.18	2.75	8.15	16.40	31.02		
Sherman	OR	1.93	0	L	0	0	2.99	25.42	L	9.76	24.71	35.18		
Umatilla	OR	2.86	L	3.32	15.58	2.93	5.27	20.61	4.85	21.20	16.02	10.28		

Table 5—Percentage of total county employment in each industry, interior Columbia basin, 1994 (continued)

County	State	Agricultural			Manu-			SIC 24 ^b	Transportation	Trade	FIRE ^c	Services	Total government	Farm
		services	Mining	Construction	facturing ^a	SIC 24 ^b	Transportation							
Union	OR	2.12	.14	4.27	13.47	8.04	5.32	22.01	4.24	20.45	19.48	8.51		
Walla Walla	OR	3.44	L	4.62	12.75	6.58	4.33	16.29	4.38	14.69	19.50	20.00		
Wasco	OR	2.14	.10	2.65	10.24	1.99	3.11	24.61	4.74	26.25	17.50	8.66		
Wheeler	OR	3.17	0	L	3.02	.91	2.11	11.18	2.57	10.42	22.05	45.47		
Adams	WA	7.65	D	D	12.48	0	5.12	19.42	3.23	13.40	15.18	23.53		
Asotin	WA	D	D	8.49	5.10	2.18	2.47	25.55	5.49	32.13	16.00	4.76		
Benton	WA	1.88	.10	5.95	5.93	0	2.22	1.85	4.53	42.29	13.81	21.44		
Chelan	WA	6.92	.45	5.72	6.33	.47	2.81	23.73	6.24	21.06	13.61	13.13		
Columbia	WA	2.94	D	1.94	22.06	0	D	12.52	2.40	16.32	24.64	17.18		
Douglas	WA	6.17	L	4.26	1.42	0	4.81	19.66	4.19	16.96	16.39	26.16		
Ferry	WA	D	9.48	3.91	11.50	7.49	D	14.47	2.93	16.46	27.34	13.92		
Franklin	WA	6.08	.06	5.19	5.29	.13	5.76	21.42	3.45	20.90	16.09	15.75		
Garfield	WA	1.79	0	1.11	.94	0	1.37	20.05	4.61	8.79	36.77	24.57		
Grant	WA	5.28	D	4.04	11.74	0	3.94	20.09	D	17.43	16.84	20.63		
Kittitas	WA	1.82	.11	3.43	5.67	.96	4.41	25.52	3.96	20.57	26.06	8.45		
Klickitat	WA	0	.30	4.23	16.96	7.53	6.82	11.27	3.16	17.23	21.15	18.88		
Lincoln	WA	2.13	L	3.85	2.08	0	2.13	20.56	5.97	14.26	26.89	22.13		
Okanogan	WA	5.46	.30	3.49	6.14	4.60	1.86	21.15	3.84	18.74	17.47	21.56		
Pend Oreille	WA	3.01	.73	6.62	14.83	4.14	2.96	16.95	4.47	17.09	26.72	6.62		
Skamania	WA	1.60	D	4.98	10.91	6.54	3.42	10.72	D	27.02	34.47	6.88		
Spokane	WA	.83	.16	6.13	9.96	.69	4.50	23.68	7.93	30.34	15.42	1.05		
Stevens	WA	2.03	.74	4.27	19.33	8.44	3.54	16.19	3.58	24.43	17.61	8.28		
Walla Walla	WA	1.74	.07	3.54	15.59	0	2.65	19.47	4.16	26.90	17.90	7.98		
Whitman	WA	1.36	L	2.43	1.49	1.11	2.40	18.64	4.35	18.68	43.10	7.55		
Yakima	WA	4.85	.04	4.99	11.85	2.00	3.71	9.64	4.92	27.26	14.78	17.96		
Teton	WY	.79	0	9.52	3.17	NA	2.38	23.81	7.14	41.27	10.32	1.59		

Bold = employment sectors with more than 10 percent of a county's total employment; D = data not reported due to disclosure policy; L = less than 10 jobs.

^a Total manufacturing includes Standard Industrial Classification 24.

^b SIC 24 for wood products sector.

^c Financial, insurance, and real estate industries.

Source: U.S. Department of Commerce, Bureau of Economic Analysis 1996.

Limitations of Economic Base Models

Although economic base analysis can be useful as a first approximation for characterizing a region's economy, it is subject to limitations in describing the overall level of economic welfare and in predicting future economic conditions. Because these shortcomings have been dealt with extensively elsewhere in the literature, we provide only a brief summary drawn mainly from the more detailed treatments of Niemi and Whitelaw (1997), Power (1996), Rasker (1995), and Krikelas (1992).

Among the drawbacks of using an economic base model to describe the current level of economic welfare in an area are the following:

1. A simple measure, such as the number of jobs or amount of labor income, reveals little about the quality of jobs in the various industries. In other words, even though one sector may have more employment or higher wages than another sector, it may have higher safety risks, less chance for advancement, and embody fewer job skills easily transferable to other sectors.
2. Economic base models tend to focus on the industries that export physical goods and leave out those that export services or attract people who then consume local services. A classic example of this second type of industry is recreation and tourism.
3. The role of nonbasic industries in stopping leaks from an economy through import substitution is not adequately addressed.
4. The importance of nonlabor income to an area is not captured. Rasker (1995) found that nonlabor income accounted for 34 percent of personal income in the project area in 1993.
5. Implicit in the economic base model is the assumption that people follow jobs; in other words, people locate in an area because of the job opportunities available in that area. An alternative assumption is that jobs follow people. This is the assumption behind the quality of life model, which holds that people locate in high-amenity areas based on quality of life considerations and that industries follow, believing that workers will accept lower wages in order to remain in these high-amenity areas.⁵ This second thesis regarding the genesis of employment opportunities is not addressed in economic base models.
6. The externalities (costs not borne by the producers or consumers of a good or service) associated with various industries are not captured; for example, if an industry generates a large amount of pollution, the economic benefits of increasing employment in this industry may be outweighed by increased degradation of the environment or the increased costs of maintaining a given quality of the environment.

⁵ Niemi and Whitelaw (1997) use the phrase "the second paycheck" to represent "the value to residents of the various amenities contributing to the quality of life in the area, including access to social, cultural, and environmental amenities, access they would not enjoy if they lived elsewhere" (p. 31).

Because the economic base is essentially a static portrayal of current conditions, while economies are inherently dynamic, base models fall short for planning purposes or for predicting the future economic structure of a region in the following respects:

1. Base models do not reveal the relative volatility of industries; for example, some industries may be sensitive to external forces such as macroeconomic cycles, interest rates, world prices, and even weather conditions. In contrast, other industries may be insulated from these influences.
2. A single snapshot of the basic sectors in an area does not incorporate the dynamics of these sectors in the larger context. A county having a large amount of its base employment in an industry that is waning, may want to undertake a very different development strategy than a county with most of its base employment in an expanding industry.
3. General trends, such as labor-saving technological change, increasing importance of education in determining wages and income, and changing demographics, may influence the number and types of jobs created (lost) in the future when a particular industry expands (contracts). Because such trends are not reflected in economic base models, predictions based on these models may be skewed.

Conclusions

Different definitions of economic base are useful to the extent that they lead to different implications about the propensity for change. In this case, little difference was observed in the general findings from the assumption and location quotient approaches. An argument can be made that for examining potential growth in an area, the location quotient approach is preferable because it focuses on sectors where specialization has already taken place, presumably due to the comparative advantages inherent in those sectors.

The emphasis here has been to illustrate different notions of economic base by using county data, but the issue remains of what constitutes an economy and how well these measures describe economic conditions. In the economic assessment, we adopted the BEA definition of functional economies. This choice was frequently questioned, but no reasonable alternative was found that resolved all the various issues.

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