

The Contribution of Manufacturing to the St. Croix County Economy

James Janke
St. Croix County CNRED Agent
University of Wisconsin-Extension
Agricultural Center
1060 10th Avenue, PO Box 6
Baldwin, WI 54002-0006

and

Steven C. Deller
Community Economic Development Specialist
Department of Agricultural Economics
University of Wisconsin-Madison/Extension
517 Taylor Hall; 427 Lorch Street
Madison, WI 53706

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Introduction

Over the past several years the County of St. Croix has experienced significant changes in its economic composition. As the Twin Cities continues to grow, the close proximity of St. Croix dictates that we will be effected by that growth. These changes include, but are not limited to increased demand for housing, retail and services, recreational opportunities as well as public services. Another important change has been, and will continue to be, the changing structure of the economic base of St. Croix County. Historically a rural county with agriculture playing a vital role, the spread of the Twin Cities' economy has elevated the role of manufacturing in economic opportunities for the residents of St. Croix County.

The rapid and fundamental changes that this shift towards manufacturing has played in the County warrants a closer examination. The intent of this report is to provide an overview of recent historical changes to the economic structure of St. Croix County with particular attention to the contribution of manufacturing to the County's economy. We accomplish this task in two steps. First, we will provide an examination of historical data from 1969 to 1992 which details recent trends in population, income and employment. Second, using a regional economic modeling approach referred to as input-output analysis, we will describe the total contribution of manufacturing to the St. Croix County economy. The report will conclude with a brief discussion of future directions and policy implications.

Recent Trends

While manufacturing in St. Croix County is diverse, ranging from agricultural value added industries to the production of laser machining, space does not allow a detailed historical analysis of individual manufacturing enterprises. Therefore, for the historical presentation we limit our discussion to changes in County population, per capita personal income and manufacturing employment.

In order to assess the changes in the St. Croix County economy results are compared to those

of the national economy and that of the State of Wisconsin. To account for the differences in the relative sizes of these reference economies, growth indices are computed and reported.¹ By examining growth rates over time we can compare relative levels of growth and stability. The analysis examines the period 1969 to 1992.

Trends in Population Examining the growth rate in population for St. Croix County we see that population grew by 54.1 percent over the period (Figure 1). This was significantly higher than the population growth for either Wisconsin (14 percent) or the nation (26.7 percent). Except for a slight slow down in the early 1980s, the annual growth rate of St. Croix County has remained notably higher than either Wisconsin or the nation. This result is a direct cause of St. Croix County's close proximity to the Twin Cities.

Trends in Per Capita Income Between 1969 and 1992 real (i.e., adjusted for inflation) per capita income in the County grew by 50.5 percent, which is slightly above the nation and Wisconsin (Figure 2). The analysis reveals that the County was particularly hard hit by the mid 1970s recession as well as the early 1980s recession. Per capita income rebounded strongly in the mid 1980s only to be disproportionately affected by the most recent recession. The reason for the poor performance of the late 1980s is not exactly clear.

While the relative growth rates in per capita income are of interest, no insight is gained into the absolute level of per capita income relative to either Wisconsin or the nation. To gain such insight we compare St. Croix County's per capita income to both Wisconsin and the nation in terms of relative percentages (Figure 3). Relative to the nation we see that Wisconsin is consistently below the national average. Up to 1979 Wisconsin's per capita income was converging toward the national average, but with the onslaught of the early 1980s recession and the structural shifts within manufacturing, per capita income for the state diverged away from the national average. More recently, the data suggest a return to the convergence pattern for the state. St. Croix County has historically fallen below the national average except for a brief

¹ Please see Appendix A for a description of the construction of the growth and stability index.

period in the 1980s. The most recent period reveals the County to be on par with the national average.

figure 1

figure 2

figure 3

Analysis of County per capita income relative to the State of Wisconsin suggests a much stronger economic performance (Figure 4). Historically near or slightly below the state average, more recently the County's per capita income is about five percent above the state average with a peak in 1988 at 12.3 percent.

Trends in Employment Total employment in St. Croix County grew at a rapid rate, increasing by 134.2 percent between 1969 and 1992 (Figure 5). This is nearly three times the level of growth for either Wisconsin (49.5 percent) or the nation (53.3 percent). The only period of decline or no growth for the County was the three year period comprising the recession of the early 1980s. In terms of employment for the County there is no evidence of the mid 1970s recession or the most recent recession of the early 1990s. Indeed, while the state and nation were looking at no or slow employment growth in the early 1990s, St. Croix County experienced its single fastest year of growth.

Manufacturing employment trends are even more dramatic (Figure 6). Again, over the period examined, 1969 to 1992, employment in manufacturing for the County grew by 303.1 percent while manufacturing at the national level has shown a slight decline (9.1 percent) in employment and Wisconsin a slight increase (6.8 percent). Other than a few years in the late 1970s and early 1980s, manufacturing employment in the County has shown modest to strong growth. There is no evidence of the recent national recession in manufacturing. Clearly, manufacturing in St. Croix County is bucking the larger national and state trend away from this sector as a source of employment opportunities.

Even in light of the rapid growth in manufacturing employment in the County, service producing and other goods producing (e.g., farming and construction) industries accounts for the lions share of total employment in the County (Figure 7). For the most recent year of data, 1992, manufacturing accounts for 20.8 percent of all employment. This level of dependency on manufacturing is more than Wisconsin's (19.5 percent) and significantly above the nation's (13.4 percent).

The shifting dependence onto manufacturing is particularly evident when we examine the number of persons residing in the County relative to the number of manufacturing jobs (Figure 8).

In 1969, there were about 25 residents for each manufacturing job.

figure 4

figure 5

figure 6

figure 7

figure 8

This compares to 10 persons for the nation and eight for Wisconsin. Because this "population:employment" ratio is significantly larger for St. Croix County in 1969 than either the nation or the state suggests a relatively low level of dependency on manufacturing.²

Over time, the nation has become less dependent on manufacturing (i.e., the population:employment ratio trending upward), the state remaining about the same, whereas St. Croix County has become increasingly dependent on manufacturing as a source of employment opportunities. Since 1989, St. Croix County has become more dependent upon manufacturing than the nation and is most recently about the same as Wisconsin.

Economic Linkages

The large direct contribution of manufacturing to the County economy is only part of the picture. Other economic sectors are linked directly and indirectly to manufacturing firms. These sectors represent additional sources of economic activity, multiplying the effects of the direct impact of manufacturing. The manufacturing sector uses raw materials, machinery, fuel, trucks, financial services and other inputs from local businesses. These economic linkages create a network of interdependent industries, which in turn, generate additional jobs and income in non-manufacturing businesses. The income generated directly by manufacturing also adds to this interdependency. Manufacturing employees spend their income on groceries, housing, entertainment, and other consumer goods and services. In turn, employees in these businesses spend their income on consumer goods and services. These additional linkages help to further form the complex intertwining of businesses within St. Croix County. The relevant question to ask is not what manufacturing contributes directly to the County economy directly, but rather how much does manufacturing contribute to the County economy through this complex networking of businesses in multiple economic sectors.

To answer this question it is necessary to develop an empirical representation of the County economy. While there are numerous methods of regional analysis which can capture these linkages, the method adopted for this study is input-output analysis. An input-output model of the regional

² Please see Appendix B for a discussion of the Population:Employment Ratio.

economy (in this case St. Croix County) can be described as a "snapshot" of the economy detailing the sales and purchases of goods and services between all sectors of the economy for a given period of time. Business output (sales) can be purchased by other businesses as inputs, households for final consumption, or exported outside of the region (again in this case St. Croix County). Business inputs (purchases) are either from other businesses within the region, are purchased from households (labor), or imported from outside the region. The input-output model allows these linkages to be described empirically. By examining expenditures by and for manufacturing, an assessment of the importance of manufacturing to the County economy can be gained. In this study, Micro-IMPLAN (IMPact PLANning) computer software is used to create the input-output model for the St. Croix County economy. All figures are for 1991.³

Based on the input-output model of St. Croix County a collection of industry specific economic multipliers have been constructed. Specifically two types of multipliers are computed and analyzed and are referred to as Type I and Type III multipliers. In essence, a Type I multiplier captures the *indirect* ripple effects of the direct expenditures of the industry of interest in the local economy. The Type III multiplier adds additional information by capturing both the ripple effects of the direct and indirect expenditures of the industry plus additional spending which occurs through income that is created. This later effect is referred to as *induced* effects. The relative size of the multiplier gives an indication of the degree of "connectedness" or "linkage" to the local economy. The size difference between the Type I and III multipliers gives insight into the importance of labor to the industry. For example, a large difference between the two types of multipliers can be attributed to a) the industry being labor intensive, b) paying relatively high wages, c) non-wage expenditures taking place outside the local economy (e.g., some raw materials purchased from, say a supplier located in Chicago), d) or some combination of the three.

Take as an example a manufacturing firm which hires the services of a local accountant. The act of hiring that accountant represents a direct impact. In turn, the accountant will make additional expenditures in the local economy, for example the rental of office space. The rippling of these expenditures is captured by the Type I multiplier. In addition, the accountant may hire a secretary

³ The most recent year of data for the historical analysis is 1992. The most recent year of data for the county economic model is 1991. The two sources of data should not be confused.

who in turns spend his or her wages at the local grocery store. These additional "income" impacts are captured by the Type III multiplier.

Economic Contribution

In the historical analysis presented above we used three measures of economic activity: population, per capital personal income, and employment. For the multiplier analysis we again use three measures of economic activity; total place of work income, total value added, and employment. Total place of work income includes wages, salaries plus proprietary income plus transfer payments. Total value added includes total place of work income plus other property income plus indirect business taxes. Total value added is akin to gross domestic product or gross state product. Employment here includes both part- and full-time jobs and is measured by place of work, or in other words, only jobs located in St. Croix County are examined, commuters are not considered.

Total Place of Work Income In terms of direct contribution to the St. Croix County economy, the three most important manufacturing industries are non-electrical machinery, electrical equipment, and printing and publishing (Table 1). In terms of indirect linkages (i.e., Type I multiplier) food and kindred manufacturing is clearly the most tightly connected industry in the County. Industry-specific Type I multipliers range from 2.16 to 1.04, with an average of 1.25. For the overall manufacturing sector, for every dollar of place of work income generated there is an additional 25 cents of indirect income created. In terms of indirect and induced linkages (i.e., Type III multiplier) food and kindred manufacturing remains the most tightly linked industry to the County economy followed by chemicals and applied products (however, this latter industry is fairly small). Type III multipliers range from 3.38 to 1.16, with an average of 1.79. Again, for the overall manufacturing sector, for every dollar of place of work income generated there is an additional 79 cents of indirect and induced income created. The difference, 54 cents (79 - 25), is the induced effect.

In sum, manufacturing contributes \$162 million directly to St. Croix County income, or about a quarter of all income generated in the County, an additional \$40 million through indirect

Table 1. Contribution of Manufacturing to the St. Croix County Economy: Total Place of Work Income^a (1991)

	Direct Contribution (mill\$)	Type I Multiplier	Indirect Contribution (mill\$)	Type III Multiplier	In Cont. (m
FOOD & KINDRED MFG	8.7327	2.1651	10.1745	3.3823	10
APPAREL MFG	1.3961	1.1475	0.2059	1.8122	0
LUMBER & WOOD PRODUCTS MFG	9.1724	1.1552	1.4236	1.6420	4
FURNITURE & FIXTURES	0.1095	1.0860	0.0094	1.4021	0
PULP AND PAPER MFG	7.1558	1.1462	1.0462	1.6048	3
PRINTING AND PUBLISHING	14.9472	1.1118	1.6711	1.4881	5
CHEMICALS AND ALLIED	0.0506	1.5271	0.0267	2.3603	0
MISCELLANEOUS PLASTICS PRODUCTS	9.1668	1.0185	0.1696	1.2779	2
LEATHER AND LEATHER PRODUCTS	1.8372	1.1527	0.2805	1.6602	0
GLASS, CLAY AND STONE MFG	3.0723	1.1201	0.3690	1.4555	1
PRIMARY METALS INDUSTRIES	0.0922	1.1482	0.0137	1.5324	0
FABRICATED METAL PRODUCTS	8.8351	1.1757	1.5523	1.6151	3
NON-ELECTRICAL MACHINERY	67.4454	1.2732	18.4261	1.7595	32
ELECTRONIC EQUIPMENT	29.1819	1.2906	8.4803	1.8730	16
TRANSPORTATION EQUIPMENT	0.2575	1.0403	0.0104	1.1682	0
SCIENTIFIC INSTRUMENTS	0.7005	1.1404	0.0984	1.5472	0
MISCELLANEOUS MFG	0.1410	1.3565	0.0503	1.9410	0

a: All dollar figures are in millions of dollars. Income here is defined to include wages and proprietary income plus transfer payments.

effects, and an additional \$88 million through induced effects for a total of \$290 million. An important observation to be drawn from Table 1 is the consistently large difference from the Type I and Type III multipliers which suggests that the majority of the impact of manufacturing on the St. Croix County economy comes through the spending of wages (income) that are created through the direct and indirect effects. This highlights the importance of retaining local spending of those wages in the County's economy as an economic development strategy. A second observation is the consistently low Type I multiplier. This suggests that very little income is created in the County due to non-labor expenditures of manufacturing firms. In other words, many of the non-labor inputs used by manufacturing are purchased outside of the County.

Total Value Added Again, three manufacturing industries stand out as particularly large contributors to the County's total value added; non-electrical machinery, electronic equipment, and printing and publishing (Table 2). As with income above, food and kindred manufacturing is the most tightly linked industry to the local economy. Industry-specific Type I multipliers range from 2.25 to 1.02, with an average of 1.27. On average, for every dollar of total value added directly created by manufacturing creates 27 cents of additional value added through the indirect effect and an additional 63 cents through the induced effect for a total impact of 90 cents. Again, the two primary observations raised in regard to income multipliers above apply here as well.

In sum, manufacturing contributes \$165 million directly to St. Croix County value added, or slightly less than 24 percent of all value added created in the County, an additional \$45 million through indirect effects, and an additional \$104 million through induced effects for a total of \$314 million.

Total Employment As we look at manufacturing employment a similar pattern continues with a few variations. In terms of total jobs, non-electrical machinery, electronic equipment, and food and kindred products have created the most employment opportunities (Table 3). Other large job producers include printing and publishing, lumber and wood products, and fabricated metals. In terms of indirect linkages (i.e., Type I multiplier) food and kindred manufacturing is again the most tightly connected industry in the County. Industry-specific Type I multipliers range from 1.94 to 1.13, with an average of 1.36. For the overall manufacturing sector, for every

Table 2. Contribution of Manufacturing to the St. Croix County Economy: Total Value Added

	Direct Contribution (mill\$)	Type I Multiplier	Indirect Contribution (mill\$)	Type III Multiplier	Indirect Contribution (mill\$)
FOOD & KINDRED MFG	9.1804	2.2489	11.4654	3.6143	12.1804
APPAREL MFG	1.4109	1.1597	0.2253	1.9355	1.6362
LUMBER & WOOD PRODUCTS MFG	9.2856	1.1734	1.6101	1.7405	5.5152
FURNITURE & FIXTURES	0.1107	1.0935	0.0104	1.4625	0.1611
PULP AND PAPER MFG	7.3344	1.1627	1.1933	1.6903	3.9274
PRINTING AND PUBLISHING	15.1423	1.1221	1.8489	1.5603	6.1423
CHEMICALS AND ALLIED	0.0574	1.4993	0.0287	2.3653	0.1371
MISCELLANEOUS PLASTICS PRODUCTS	9.2713	1.0206	0.1910	1.3231	2.1793
LEATHER AND LEATHER PRODUCTS	1.8499	1.1561	0.2888	1.7505	1.9387
GLASS, CLAY AND STONE MFG	3.2115	1.1246	0.4002	1.5030	1.6117
PRIMARY METALS INDUSTRIES	0.0939	1.1587	0.0149	1.6034	0.1518
FABRICATED METAL PRODUCTS	9.0107	1.1945	1.7526	1.7026	4.5609
NON-ELECTRICAL MACHINERY	68.3777	1.2959	20.2330	1.8615	38.6107
ELECTRONIC EQUIPMENT	29.9815	1.3110	9.3242	1.9795	20.6517
TRANSPORTATION EQUIPMENT	0.2588	1.0471	0.0122	1.1972	0.3080
SCIENTIFIC INSTRUMENTS	0.7089	1.1507	0.1068	1.6248	0.8157
MISCELLANEOUS MFG	0.1480	1.3806	0.0563	2.0373	0.3006

a: All dollar figures are in millions of dollars. Total Value Added here is defined to include Work Income plus other property income plus indirect business taxes.

Table 3. Contribution of Manufacturing to the St. Croix County Economy: Total Employment

	Direct Contribution	Type I Multiplier	Indirect Contribution	Type III Multiplier	Ind Contr
FOOD & KINDRED MFG	380	1.9403	357	3.0757	4
APPAREL MFG	55	1.1291	7	1.8141	
LUMBER & WOOD PRODUCTS MFG	256	1.1670	43	1.8750	1
FURNITURE & FIXTURES	2	1.1585	0.3	1.8613	
PULP AND PAPER MFG	186	1.1804	34	1.8966	1
PRINTING AND PUBLISHING	321	1.1726	55	1.8840	2
CHEMICALS AND ALLIED	2	1.4620	0.9	2.3175	
MISCELLANEOUS PLASTICS PRODUCTS	160	1.0309	5	1.6342	
LEATHER AND LEATHER PRODUCTS	54	1.1553	8	1.8561	
GLASS, CLAY AND STONE MFG	57	1.2099	12	1.9439	
PRIMARY METALS INDUSTRIES	2	1.1848	0.4	1.9036	
FABRICATED METAL PRODUCTS	212	1.2251	48	1.9684	1
NON-ELECTRICAL MACHINERY	1628	1.3480	567	2.1657	13
ELECTRONIC EQUIPMENT	869	1.3085	268	2.1023	6
TRANSPORTATION EQUIPMENT	2	1.1423	0.3	1.8108	
SCIENTIFIC INSTRUMENTS	16	1.1917	3	1.9147	
MISCELLANEOUS MFG	4	1.3789	2	2.2153	

a: Total Employment here is defined to include both part- and full-time jobs.

b: Totals may not sum do to rounding.

100 jobs in manufacturing there are an additional 36 jobs indirectly created. In terms of indirect and induced linkages (i.e., Type III multiplier) food and kindred manufacturing remains the most tightly linked industry to the County economy followed by chemicals and applied products. Industry-specific Type III multipliers range from 3.01 to 1.63, with an average of 2.22. Again, for the overall manufacturing sector, for every 100 jobs generated there is an additional 122 jobs of indirect and induced employment created. The difference, 86 jobs is the induced effect. It is important to note that with employment multipliers, one must recall that employment is composed of both full- and part-time jobs. Therefore the relative size of the Type III multipliers should not be misinterpreted.

In sum, manufacturing contributes about 4200 jobs directly to St. Croix County employment (about 17 percent of the County's jobs), an additional 1520 jobs through indirect of indirect and induced employment created. The difference, 86 jobs is the induced effect. It is important to note that with employment multipliers, one must recall that employment is composed of both full- and part-time jobs. Therefore the relative size of the Type III multipliers should not be misinterpreted.⁴

Discussion

The growth and importance of manufacturing in the St. Croix County economy is amazing. The specular growth rate begs the question why is St. Croix County bucking strong national and state trends. We can gain insight into part of the answer for this trend by examining the relative comparative advantage of the County with respect to the manufacturing industry. At the beginning of this report we noted the importance of St. Croix County's close proximity to a major metropolitan area, specifically the Twin Cities. Fundamentally, as part of the fringe of that metropolitan area, as it grows the fringe experiences increased growth pressure. In terms of manufacturing, as the core of the metropolitan area grows, manufacturing firms looking to remain in the area but seeking lower priced land and labor turn to the fringe area.

In addition to St. Croix County filling the needs of lower relative land and labor costs we are also faced with the reality that differences between Wisconsin and Minnesota taxation policies, among others, makes St. Croix County all the more attractive to manufactures. Coupled with the

⁴ Please note that the distinction between full-time equivalent and jobs make a direct comparison between the historical and multiplier employment analysis difficult.

direct interstate link (i.e., I-94) to the core of the metropolitan area nearly guarantees the opportunity for growth in the manufacturing sector. It is extremely important to note that the comparative advantages just noted are not uniformly distributed across the County as a whole.

As the County grows several questions must be raised concerning the future prospects of continued growth. Specifically, we must ask ourselves what is the County's capacity to accept the growth flowing from the Twin Cities. Specific concerns include availability of appropriately skilled labor, affordable housing, capacity of selected public services (e.g., schools, waste water treatment facilities, protective services, transportation infrastructure, etc.), to name a few, to accommodate growth.

Recently, serious concern has been raised over the compatibility of the types of growth the County has been experiencing with the available pool of labor. Labor shortages reported by businesses in the County prompted a labor market survey in 1995. Data from the survey have important implications for the manufacturing sector the County. Two-thirds of employers reported that they are having difficulty recruiting qualified workers. The most difficult types of jobs to fill are unskilled manufacturing production and service positions. A survey of the available labor pool indicated that most job seekers have technical service occupations. Thus, there is a mismatch between available labor and the needs of local manufacturing employers which may impact the ability of the County to experience continuing rapid growth in manufacturing economic opportunities.

The availability of affordable housing for employees may also be emerging as a potential issue to influence the continued growth of economic opportunities. Fourteen percent of the respondents in the labor market survey indicated that they knew of somebody having trouble finding affordable housing. This may be an indicator of additional labor shortages in the unskilled production occupations.

Compounding these concerns about the County's capacity to accept continuing manufacturing growth are concerns about national economic trends affecting manufacturing and the level of dependence of the County economy on manufacturing. Over the past 25 years the County's economy has become more dependent on manufacturing than the national average. This makes the County economy increasingly subject to the national and global trends that influence the health of the manufacturing sector. Nationally manufacturing is not a growth sector for the economy, having been replaced by service and information sectors. Thus the County's large growth in manufacturing is running counter to shifts in the structure of the national economy. Continued growth may be

affected by this larger national trend despite the specific local advantages of the County.

Manufacturing tends to be a cyclical economic activity with successive expansions and contractions, and the overall economic health of many manufacturing-dependent counties rises and falls through these cycles. Fortunately, the manufacturing sector of the St. Croix County economy continued to grow throughout the most recent recession. However, as the County becomes increasingly dependent on manufacturing, the risk of a future recession affecting the county becomes greater..

Finally, we must recall that a major driving factor in bringing much of the manufacturing growth from the core of the metropolitan area is founded on selected state policies, particularly workers compensation insurance rates and taxation policies. These are beyond the control of local residents and can change very rapidly.

Appendix A: Index of Growth and Stability

The Index of Growth, Change and Stability is a cumulative measure of change based on the performance of the regional economy relative to some starting year, in this case 1969. The index is computed for the US, Wisconsin and the county of interest with subscripts identifying region (r), industry (i) and year (t):

$$\text{Index}_{rit} = (Y_{rit}/Y_{ri1969}) * 100.$$

Where

Y	=	Economic variable (employment, earnings, etc.)
r	=	Region (US, Wisconsin, county)
i	=	Industry
t	=	Year
1969	=	Base Year (1969)

This Index compares the absolute level of the economic variable under examination to its level at the beginning of the period. For example, if employment in farming is 500 in 1969 and 600 in year 1990, then the value of the Index in 1990 is $(600/500) \times 100 = 120$. In this example, employment in farming for this region increased by 20 percent (120 - 100).

There are three advantages to using this measure of economic performance. First, placing all regional data on an index basis allows a direct comparison between regions, or in this case, the county of interest to the US and Wisconsin. Second, as noted above change in the value of the Index from one year to the next can be interpreted as a growth rate. Here fast growth, slow growth, stagnant and declining industries can be identified. Finally, by examining the Index over a period of time, one can establish the relative stability of a particular industry.

There are, unfortunately, a few disadvantages to using the Index as constructed. First, the value of the Index is very sensitive to scaling or more specifically initial levels. For example, a small industry that employs 10 persons adds an additional 10 persons for a total of 20 persons. Here the Index will go from a base of 100 to 200 indicating that this is a rapidly growing industry for the region. Now suppose that a larger industry that employs 200 persons adds 10 persons for a total of 210 persons. Here the Index will go from a base of 100 to 105 indicating modest growth. This problem with the Index hints at the second shortcoming in that the Index does not speak to the relative importance of a particular industry to a region's economy.

Appendix B: Population:Employment Ratio

The Population/Employment Ratio is a common measure used to assess the region's performance in capturing local markets as well as assess the level of relative dependence on a particular industry. The index is computed for the US, Wisconsin and the county of interest with subscripts identifying region (r), industry (i) and year (t):

$$P:E_{rit} = POP_{rit}/EMP_{rit}$$

Where

POP	=	Population
EMP	=	Employment
r	=	Region (US, Wisconsin, county)
i	=	Industry
t	=	Year

The P:E Ratio is traditionally used to assess the region's performance in capturing local markets. If population serves as a surrogate for regional demand for a particular industry and employment measures the region's ability to supply the industry's product, then the P:E Ratio represents a simple measure of regional demand and supply. If the P:E Ratio is equal to some critical value, then demand is said to be equal to supply and the region is capturing local markets. If the P:E Ratio is larger than some critical value, then demand is said to be greater than supply and the region is not capturing local markets and expansion potential is said to be present. If the P:E Ratio is less than some critical value, then demand is said to be less than supply and the region is not only capturing local demand but is importing demand for surrounding regions. For the analysis presented here, two critical values of the P:E Ratio are provided for comparison, the US and Wisconsin.

A second interpretation of the P:E Ratio is that it provides a measure of relative dependence on specific industries. A P:E Ratio that is relatively small (i.e., high levels of employment given the region's population) is an indication of higher levels of dependence. Conversely, a P:E Ratio that is relatively large (i.e., low levels of employment given the region's population) is an indication of lower levels of dependents. As an example, consider the farming industry. For the US in 1992, there are slightly more than 80 persons for every farm job for a P:E Ratio of 80. For Wisconsin, the P:E Ratio for farming is about 40. Since the P:E Ratio for Wisconsin farming is smaller than that of the US, this is an indication that Wisconsin economy is more dependent on farming than the US economy.

Table of Contents

Introduction	1
Recent Trends	1
Trends in Population	2
Trends in Per Capita Income	2
Trends in Employment	6
Economic Linkages	12
Economic Contribution	14
Total Place of Work Income	14
Total Value Added	16
Total Employment	16
Discussion	19
Appendix A: Index of Growth and Stability	22
Appendix B: Population:Employment Ratio	23