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April, 2000

No. 429

The Economic Impact of the Wittman Airport on Winnebago County

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Support of this work was provided by the Wittman Airport and the University of Wisconsin-Madison/Extension. The role of the University is not to suggest or make value judgements, but only to inform and educate the public. Consequently, it is up to the community, not the University, to utilize the data and consider possible policy options and determine the most appropriate future for the Airport. The views and opinions expressed here are not the views of the University of Wisconsin. Any errors of omission or commission are the responsibilities of the authors.

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The Economic Impact of the Wittman Airport on Winnebago County

Michael Koles and Steven Deller

I. Introduction

On October 11, 1927 the Oshkosh Airport Inc. was founded on 75 acres. Less than a year later the Airport received its first airmail delivery and by 1940, when the Airport was sold to Winnebago County, it had expanded to 125 acres. Additional expansion in the 1940s increased the size of the Airport to 300 acres equipped with four paved runways. In July, 1970 the Airport hosted the Experimental Aircraft Association (EAA) "Fly-In" for the first time. Today, for an eight day period each summer, the Wittman Airport becomes the busiest Airport in the world.

Wittman Airport is now comprised of over 1,400 acres with four runways. The Airport is able to accommodate the largest of aircraft with its 8,000 foot long and 150 foot wide main runway. In addition, precision equipment allows for all-weather landings and take-offs. Wittman handles over 100,000 annual landings and take-offs and is home to 200 based aircraft. The Airport has 25 multi-purpose hangars, 77 individual aircraft hangars, and several other Airport support facilities including a passenger transit terminal. The Airport derives revenue from hangar, building and land rental.

Despite Wittman Airport's assets and name recognition the Airport has experienced declining commercial activity. According to Kiehl Hendrickson Group, the most notable change is in passenger air traffic, which has been declining since the mid-1980s.¹ A related decline in air cargo volume has also been observed. Reasons for the decline are numerous

and beyond the discussion of this particular report.

Due, in part, to the trends and other factors, Wittman Airport suffers from a public image problem and, consequently, appears to lack significant public support. Many citizens and elected officials have called the economic value of the Airport into question. Specifically, the roughly \$700,000 per year county expenditure needed to fund the Airport has been referred to as a subsidy that garners little if any economic benefit to the county in return.

To determine the economic impact of Wittman Airport on the regional economy, the Winnebago County Board of Supervisors commissioned the University of Wisconsin-Madison/Extension to undertake an economic assessment of the Airport. The purpose of this study is to gain a better understanding of how the Airport impacts the county's economy. Information provided by the analysis will allow for more informed discussions and decision-making related to the future of the Airport.

The ultimate intent of this study is to provide objective information that will assist elected and appointed officials, business leaders and concerned citizens make more informed decisions concerning the future of the Wittman Airport.

This report is divided into seven sections beyond the introduction. In the next section a discussion of the status quo of the local economy will be presented. Next, a brief outline of the methodology used is provided with a more detailed discussion provided in an appendix to this report. Results of the analysis are then provided with a summary discussion of general observations of study results. The report closes with a

¹ Kiehl Hendrickson Group, 1999. "Marketing Plan for the Wittman Regional Airport."

brief review of the study and its major findings.

II. Status Quo

To assess the impact of the Wittman Airport on the local economy, several measures of the economy are analyzed. Four specific aspects of the regional economy considered are: (1) the local labor market and employment levels, (2) housing markets, (3) local retail markets, and (4) fiscal measures of government revenues and expenditures.

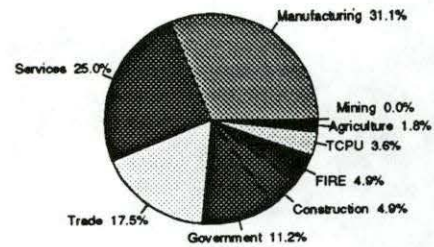
Employment/Labor Market

For 1997, the most current year that comprehensive data is available, there were slightly more than 100,000 jobs in Winnebago County. The major source of employment (Figure 1) is manufacturing, accounting for 31 percent of all jobs in the county. This level of dependence on manufacturing is significantly higher than either Wisconsin (18.8%) or the US overall (12.1%).

The next largest source of employment is the service sector, accounting for about one in four jobs. This is slightly lower than Wisconsin and the US. The retail and wholesale trade sector accounts for 17.5 percent of the county's employment and public sector jobs account for about eleven percent. The latter employment shares are slightly below the state-wide and US averages, in part, due to the county's heavy dependency on manufacturing for sources of employment.

Again in 1997, the county's population was estimated to be 152,671 of which 96,800 persons were in the labor force. This results in a labor force participation rate of about 63 percent. This rate was slightly higher than the Wisconsin (56.7%) and the US labor force participation rate (50.3%). Coupled with an unemployment rate of 2.9 percent, the labor market of Winnebago County could be described as exceptionally tight.

Figure 1: Employment Profile 1997



Source: University of Wisconsin-Madison/Extension

Employees in Winnebago County earn \$30,400 per worker in the form of wages and salaries, making total county-wide earnings over \$3 billion. Per capita income (including not only wages and salaries, but also other forms of income, such as, interest and dividend income and some transfer payments) is \$26,221. For Wisconsin in 1997, per capita income was \$24,048 and in the broader US economy per capita income was \$25,288. The tight labor market appears to be resulting in slightly higher income levels.

Housing Markets

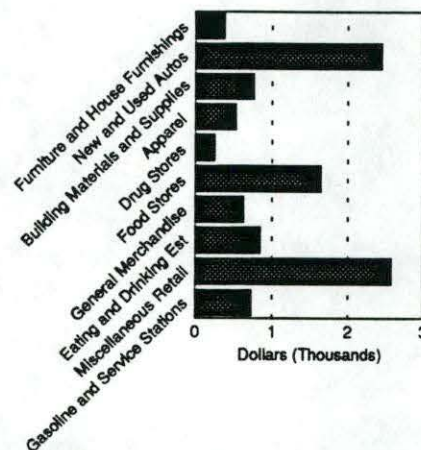
Given the strength of the economy, there is a strong market for new residential development. One common indicator of economic growth is the flow of new persons moving into an area. As people move in, the demand placed on the stock of housing increases, necessitating new housing construction. For Winnebago County there are about 800 new housing starts every year. The average value for each of these new homes is about \$117,000. Most of these new homes, however, tend to be higher priced than the existing housing stock. Looking across the broader housing market, the median price of all homes in Winnebago County is about \$68,000.

Retail Markets

In 1997, there was about \$1.6 billion spent in Winnebago County's

retail sector. This includes all sales ranging from business purchases and local customers to tourism. As noted in Figure 2, the largest retail sectors include Miscellaneous Retail Stores (e.g., sporting goods stores, book stores, jewelry stores and other specialty stores) with more than \$2,500 in expenditures per person, new and used automobile sales (inclusive of recreational vehicles such as boats) with slightly less than \$2500 in per capita sales, and food stores at about \$1,600 in per person sales.

Figure 2: Per Capita Retail Sales



Source: University of Wisconsin-Madison/Extension

Based on a 1996 University of Wisconsin-Madison/Extension study of local retail market performance, the overall market for Winnebago County appears to be just supporting its own population base.² In other words, there does not appear to be significant net "leakages" of retail dollars to surrounding markets. On the other hand, there does not appear to be significant "surpluses" of new retail dollars flowing into the County's retail market.

Particularly strong sectors appear to be in automobile sales and home furnishings. Sectors that appear to be experiencing "leakages" include gasoline and service stations, eating

and drinking establishments and miscellaneous retail stores.

Local Government Fiscal

An important caveat of this study is that all local units of government within the county are combined into one unit of analysis. Specifically, all municipalities within the county are combined and then the county government is added to create one aggregate local government. For example, road maintenance expenditures include all maintenance expenditures by the county, cities, villages and towns lying within the boundaries of Winnebago County.

Because local governments in Wisconsin are tiered and infinitely interconnected, it is difficult to separate individual impacts of a particular economic event. For example, the contracting and sharing of road maintenance services makes the separation of fiscal impacts a difficult and daunting task. Perhaps a clearer example is the mutual backstopping in protective services (i.e., police and fire protection).

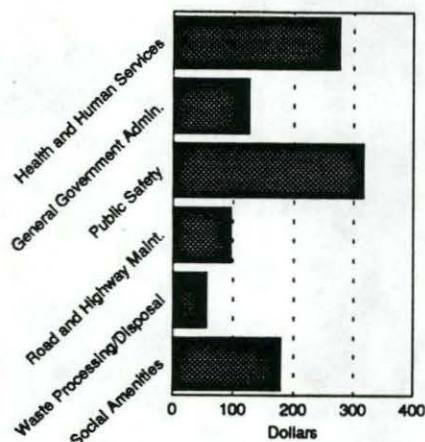
A second important caveat in this study is the treatment of public school districts. In general, this analysis focuses its attention on the fiscal picture of municipal and county governments. School districts, because of the changing nature of state-supported funding, are in a period of transition. While an estimate of school expenditures is included in the appendix, no attempt at estimating the change in school revenues is provided.

For the purposes of this study, local government expenditures are broken into six broad categories (see Figure 3). In 1997, municipal and county governments in Winnebago County spent \$160 million, or about \$1,050 per person. Expenditures on Public Safety Services (police and fire) account for the largest share, about 30 percent, at \$48 million, or \$317 per person (Figure 4). Expenditures on Health and Human Services account for \$42 million, or \$276 per person, but

² Deller, Steven C. 1996. "A Trade Area Analysis of Wisconsin Retail Markets." Department of Agricultural and Applied Economics Staff Paper Series No. 404. University of Wisconsin-Madison. (December). 35p.

it must be recognized that much of these expenditures are "pass-through" from state government. Specifically, many Health and Human Service expenditures are state-level programs that are administered by county governments.

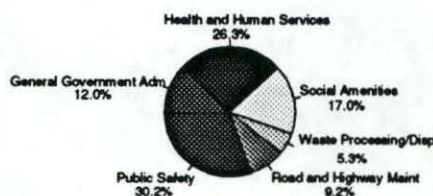
Figure 3: Per Capita Government Expenditures



Source: University of Wisconsin-Madison/Extension

The third largest category of expenditures are deemed "Social Amenities" and include such services as libraries, parks and cultural programs, education (non-public schools) and the Wittman Airport itself, among others. This accounts for about 17 percent of all expenditures within the county with about \$27 million, or \$179 per person (Figure 4).

Figure 4: Government Expenditure Distribution



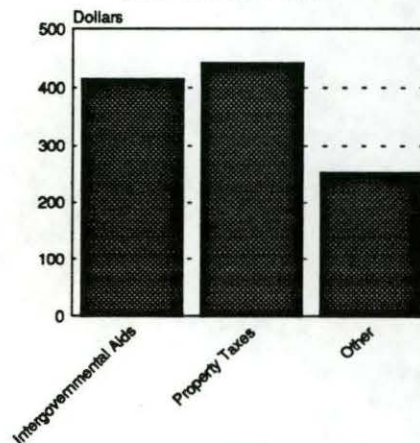
Source: University of Wisconsin-Madison/Extension

In Wisconsin, local governments have three primary sources of revenue: (1) state aids in the form of state shared revenues and formula funds; (2) the property tax; and (3) miscellaneous sources, such as,

user fees and the county sales tax. In 1997, all local revenues generated in Winnebago County were estimated to be about \$169 million (exclusive of public schools). Note that given an overall expenditure level of \$160 million and total revenues of \$169 million, a modest surplus exists. By Wisconsin law, municipalities are not allowed to run deficits and it is considered sound fiscal management to have surplus funds available if deficit situations arise.

Of the three primary sources of revenue, property taxes account for 40 percent of all revenues, about \$442 per person within the county (Figure 5). State aids account for 37 percent or \$414 per person. While many of these aids are "pass through", a significant portion comes in the form of road aids and state shared revenues, to which there are no strings or prior commitments attached. Miscellaneous sources of revenue account for the remaining 23 percent.

Figure 5: Revenue Per Capita



Source: University of Wisconsin-Madison/Extension

Summary

While this analysis does not consider trends over time nor a detailed comparison to other counties, the data suggest that the Winnebago economy is strong. Income levels are above the state and national averages. Unemployment and high labor force participation rates hint at a tight labor market. The retail market data suggests that some sectors are pulling

in retail spending, but the overall market appears to be just supporting itself. The housing market appears to be strong, reflecting the conditions of the labor market. Finally, the positive fiscal surplus for local governments, in aggregate, suggests reasonable fiscal health.

III. Methodology

Increasingly, state and local governments require that an economic impact analysis be undertaken before proposed investments or policy changes can be approved and implemented. These economic studies are comparable to environmental impact studies and are intended to assess all aspects, both positive and negative, of the scenario under consideration. These types of questions also arise when communities are forced to face economic shocks, both positive and negative, such as a firm opening or closing.

When economic change occurs, questions commonly raised include:

- ⇒ who gains and/or loses from the change?
- ⇒ does the change help or hinder local governments?
- ⇒ if jobs are created, who will take those jobs?
- ⇒ how will the local housing market be affected by this change?

Modeling System

To help facilitate the uncovering of answers to some of the questions raised, the University of Wisconsin-Madison and the UW Cooperative Extension have developed a comprehensive research-based economic simulation system entitled the **WISCONSIN ECONOMIC IMPACT MODELING SYSTEM (WEIMS)**.

The modeling system provides insights into changes in:

- ✓ employment by sector,
- ✓ earnings,
- ✓ income levels,
- ✓ commuting patterns,

- ✓ unemployment levels,
- ✓ population,
- ✓ local government spending levels,
- ✓ local government sources of revenue,
- ✓ housing values,
- ✓ new housing starts, and
- ✓ local retail activity, among others.

The Wisconsin Economic Impact Modeling System uses state-of-the-art methods to describe the structural linkages between the various sectors of the local economy in detail. Using the methods of input-output and statistical modeling, a detailed mathematical representation of the county's economy was constructed. The model was then calibrated to reflect current (1997) conditions. By "shocking" any one part of the model, the ripple effect of that shock throughout the economy can be traced and measured. In this case, the shock to the economy is the closing of Wittman Airport. A more detailed description of WEIMS is provided in Technical Appendix B of this report.

Scenario Considered

To assess the impact of the Wittman Airport on the county's economy, a scenario was developed to reflect what might reasonably occur if the Airport were to discontinue operations. The analysis is based on three key assumptions: the Experimental Aircraft Association (EAA) would relocate outside the region; C.R. Meyers and Sons would relocate to another facility within the county; and all other Airport dependent businesses (e.g., Basler Turbo Conversions) would locate to another airport outside the county. It is further assumed that no additional economic activity will replace those activities directly associated with the Airport.

Perhaps the more important assumption is the effect Airport closure would have on the activities of the EAA. Although the EAA has made significant investments in their facilities at Wittman and Winnebago County, it is possible that other cities would approach the EAA to relocate. These proposals would likely offer to replace

the EAA's investment in another locale. Because of the EAA's dependence on access to operating runways, it seems reasonable to assume that the EAA would seek another airport location for operations.

It is important to note that this study does **not** address the impact of the EAA Annual Fly-In. Rather, this study examines the impact of the "day-to-day" operations of the Wittman Airport on the county's economy.

The direct loss of jobs from the day-to-day operations of the Airport would be about 420, meaning about \$9.8 million would be lost in earnings (wages and salaries). This includes direct operation of the EAA, the Airport facility itself and businesses located at the Airport that are dependent on the Airport for operation. Again, it does **not** reflect the impact of the Fly-In.

IV. Results

In this section of the report, a general descriptive summary of the estimated impact of the closure of the Wittman Airport is provided. A complete listing of all estimated impacts is provided in Appendix A.

Employment and Income

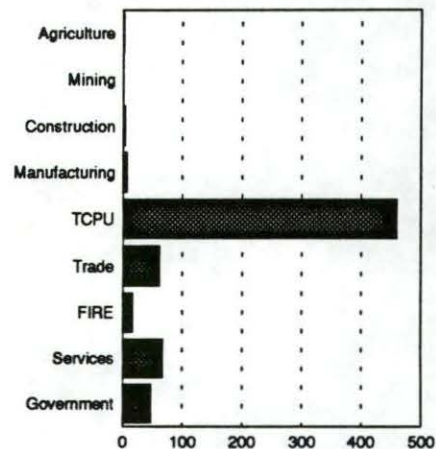
The Wittman Airport and the businesses tied directly to the Airport generate about 660 jobs in Winnebago County (Figure 6) and about \$17.5 million in wages and salaries. This means that for every job at the Airport, there is an additional one-half job supported elsewhere in the county's economy (i.e., employment multiplier = 1.5). If the Airport closed, the bulk of the impact would be in the broad category TCPU (Transportation, Communications, and Public Utilities). This outcome is attributed to the Airport itself and the EAA. Nearly all of the multiplier effect is felt in the Trade (retail and wholesale), Service and Government sectors, consequently, comprising most of the remainder of

decreased employment. This results from the loss of earners (i.e., workers) spending their wages and salaries in the local economy.

For every dollar of wages and salaries generated at the Airport, there is an additional \$.87 of wages and salaries generated elsewhere in the county's economy (i.e., income multiplier = 1.87). While earnings per worker changes by only a few dollars, per capita income would decrease by almost \$30 if the Airport would cease operations.³

The loss of jobs would filter through the county's economy in several ways. First, some persons would elect to move out of the county. Total population is estimated to decline by over 800 persons. There would also

Figure 6: Employment Impacts



Source: University of Wisconsin-Madison/Extension

be a modest change in commuting patterns. The proportion of workers commuting into the county for employment would decline slightly. Conversely, the number of persons living in the county but commuting to surrounding counties would increase slightly. The latter result is due to the decline in relative income within Winnebago County, which would require folks to seek employment

³ Earnings include wages and salaries only, per capita income includes wages and other sources of income including rental income, transfer payments, and interest and dividend income.

elsewhere. It should be noted, however, that these changes in commuting patterns would be less than one percent from current commuting patterns.

Perhaps more important is an increase in the number of unemployed persons. It is estimated that the unemployment rate would increase from about 2.9 percent to 3.0 percent and the number of newly unemployed persons electing to remain in the county would increase by about 90.

Housing Markets

The change in population and income levels would also have a dampening effect on the county's housing market. The estimated flow of new housing units (i.e., new residential building) would decrease from about 770 new housing units to 660 new units. This represents about a 14 percent decline in the flow of new housing units. This slow down in new housing construction would result in a modest decline in the price of a newly constructed house by about \$45 and the median price of all housing would decline by slightly less than \$200 per house. Closure of the Wittman Airport would result in a modest slowdown of the local housing market.

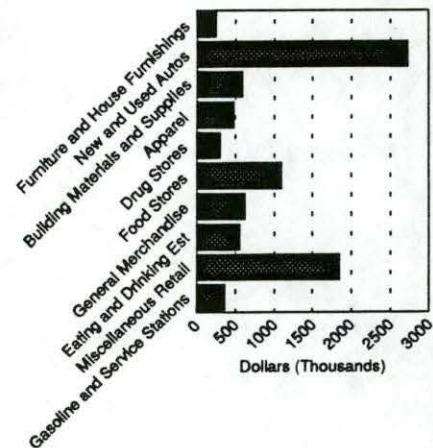
Retail Markets

As noted above, a major part of the employment multiplier effect will be felt in the Trade (retail and wholesale) sector of the county's economy (Figure 7). Given the reduction in population and income, it is estimated that total retail sales in the county would decline by about \$8.8 million dollars. This represents a one-half of one percent decline in total retail sales. The category of sales most negatively effected is new and used automobiles with about a \$2.7 million decline.⁴ Other retail sectors experiencing declines include food

⁴ This category also includes recreational vehicles, such as boats, snowmobiles and ATVs, and motorcycles.

stores with a \$1 million decrease and miscellaneous retail stores with a \$1.8 million decline.⁵

Figure 7: Retail Sales Impact



Source: University of Wisconsin-Madison/Extension

It is important to note that this study does not assess the impact of the EAA Annual Fly-In. Because of the "tourist" nature of that event, the sector of the local economy most effected by the Fly-In would be retail and certain service sectors, such as, lodging and restaurant establishments. A University of Wisconsin-Extension study of the 1993 Fly-In estimated that there was some \$73 million in new spending in the county's economy as a result of the air-show.⁶ Of this \$14 million was in general retail, \$9 million was in restaurants, \$5.6 million in lodging and \$3.6 million in apparel. The UW-Extension study estimated that these expenditures translated into \$83 million in personal income supporting about 2,500 jobs. If the impacts of the air-show are combined with the daily operations of the Airport and businesses directly dependent on the Airport, the overall economic

⁵ This category generally includes specialty stores such as book stores, jewelry stores and sporting goods stores among others.

⁶ Norman, W., S. Hamilton, and D. Marcouiller. 1994. A Profile of Visitors to the 1993 Experimental Aircraft Association Convention. Madison, WI: Tourism Research and Resources Center, University of Wisconsin-Extension.

impact could be described as noteworthy, about three percent of the County's economy.

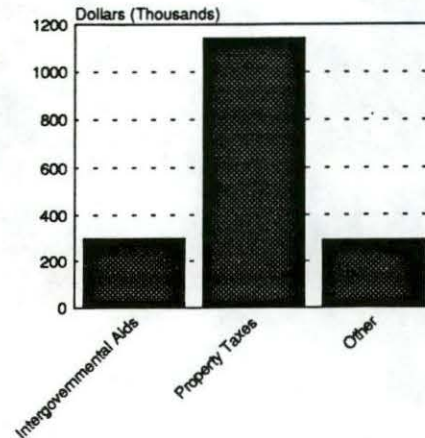
Local Government

When discussing the fiscal impact of the Wittman Airport on local governments in Winnebago County, one must keep in mind that the estimates provided represent a "composite" local government combining all municipalities in the county along with county government itself.

In terms of revenue generated by the Airport and the economic activity associated with the Airport, a total of \$1.7 million flows to local units of government (Figure 8). The largest source is \$1.1 million in property taxes, of which, \$643,000 are in direct payments from the Airport (businesses and private hangars located at the Airport). The other \$499,000 in property taxes is from additional economic activity created through the multiplier effect. State-aids, in the form of state shared revenues, road aids and other miscellaneous state aids amount to slightly more than \$300,000 (direct Federal aids to the Airport are not included). These are state aids that are likely to be lost if the Airport were to cease operations. Other sources of revenues, such as fees and charges, amount to about \$290,000. Again, these revenues would likely be lost if the Airport were to close. It is important to note, however, that the flow of these revenues is a mix between the county government and local municipalities.

In addition to revenues generated by the Airport itself and increased economic activities generated through the multiplier effect, there are demands placed on local units of government. For example, the Winnebago County government spends about \$710,000 providing direct support services to the Airport. Total local government expenditures are estimated to be about \$1.5 million, with the single largest category of expenditure other than the Airport itself

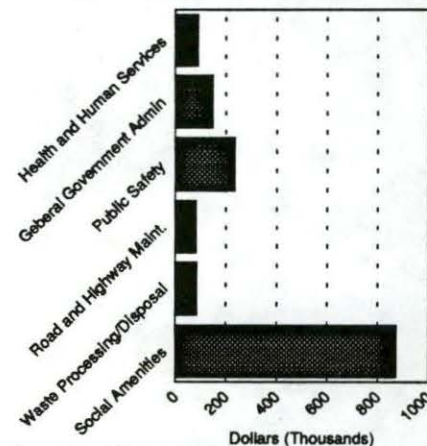
Figure 8: Impacted Local Government Revenues



Source: University of Wisconsin-Madison/Extension

in public safety (i.e., police and fire protection) at about \$235,000 (Figure 9). This latter figure represents about one-half of one percent of all expenditures within the county on protective services. Other major expenditures are related to general government administration at about \$148,000, waste collection and disposal at \$84,000, highway expenditures at \$81,000 and health and human services with \$90,000 in expenditures.⁷

Figure 9: Impacted Local Government Expenditures



Source: University of Wisconsin-Madison/Extension
Note: the Airport is included in "Social Amenities."

⁷ Public education expenditures associated with the population supported by the Airport is about \$1 million. But because of the changing administrative rules related to state funding of K-12 education, it is difficult to assess the revenue side of the equation.

On face value, it appears as though the operation of the Airport is a positive net gainer from a local government perspective (\$1.7 million in revenue versus \$1.5 million in expenditures). But care must be taken in making direct comparisons. There are two sources of potential error that warrant discussion, beyond the obvious limitations of WEIMS itself.

First, the revenue and expenditure categories examined here are not exhaustive. For example, expenditures associated with debt financing (e.g., principal and interest payments) are not considered. Further, interest income from surplus funds is not considered. While in aggregate these dollar amounts may be small, for individual units of government they can be significant.

A second potential limitation is the day-to-day focus of the analysis. One-time capital expenditures, such as the purchase of new fire fighting equipment or road construction projects, are not considered. For many local units of government these types of capital expenditures can be significant.

Given these caveats, however, it appears that the fiscal impact of the Wittman Airport on local governments in Winnebago County is a net positive and at worse a net wash.⁸

V. Observations

Throughout much of the twentieth century, Wittman Regional Airport thrived as a passenger and cargo transit facility. The Airport has served as the home of the world renown EAA and its annual "Fly-In" for over 30 years. The Airport infrastructure can accommodate the largest aircraft and all weather landings. Despite the quality facility

⁸ It could be a net wash because of the revenue and expenditure categories that weren't examined (i.e., debt service and interest income) and the day-to-day analysis.

and name recognition, many factors, including competition from other airports and lack of reliable air service, have caused a dramatic downswing in passenger and air cargo traffic. The subsequent public image problem and apparent lack of support was recently intensified when Great Lakes Aviation, the sole scheduled air carrier, announced plans to suspend service to Oshkosh. All in all, these occurrences have translated into the public questioning of the need for and role of the Airport.

It is widely accepted that the Airport is at a crossroads. Before choosing any particular route for the Airport, policy-makers must consider the implications of those choices. While the management of the Airport itself is complex, the broader issues determining the future of the Airport are even more complex. Three central issues, however, need to be considered as paramount in any policy discussion.

First, as we advance into the technology age, airports are becoming increasingly important in local and regional economic development. The globalization of the world economy combined with just-in-time inventory strategies make airports an integral link in the transportation system. The critical nature of transportation to business, industry, and most other commerce makes communities with viable airports more attractive than those lacking easy access to air transportation, all else being equal. Communities realizing the importance of air transportation should likely be better equipped to retain and attract business, industry, and employees.

Second, Wittman Airport is an essential component of the EAA. The day-to-day operations contribute to the local economy, as documented above, and the "Fly-In" alone accounts for over \$80 million in county-wide personal income. Without the services offered by the Airport, the EAA would surely relocate and the economic boon and social intangibles associated with the EAA would be lost.

Finally, the Airport directly and indirectly benefits the county economy. Over 400 jobs and \$9 million in earnings result from the Airport and businesses located there. Adding in the multiplier effect makes over 600 jobs and almost \$18 million in earnings attributable to the Airport. These primary economic benefits ripple through the entire economy and positively impact housing, retail, and government sectors. Closing the Airport would translate into the loss of the primary and, therefore, secondary economic benefits.

The three aforementioned variables should undoubtedly weigh heavily in plotting a direction for the Airport. Determining the future of the Airport and implementing strategies to achieve that desired future will be difficult. Four possible future options have been the most widely discussed.⁹

First, the Airport can continue to attempt to successfully operate much like it is today. Despite the significant economic impact of the Airport, it is, however, apparent from past trends that current short- and long-term strategies have failed to propel the Airport to the status of other area airports and of that desired by many citizens and community leaders.

Second, the Airport can begin the journey of reestablishing its passenger and air cargo traffic. Additionally, entering into new areas, such as, charter might be considered. These tasks will, however, require significant resources and become

⁹ The four options listed are not meant to be suggestive or editorial in any manner. They are merely the four options voiced most frequently and are only a few among a plethora of avenues the Airport can choose to travel. The role of the University is not to suggest or make value judgements about these options, but only to make the public aware of the options available. Consequently, it is up to the community, and not the University, to determine which, of all the options inclusive of these four, are most appropriate for the future of the Airport.

increasingly difficult to achieve as time passes.

Third, policy-makers can choose a route that would essentially find the Airport servicing one or all of the following: EAA, private businesses, other private interests (i.e., becoming a general aviation airport). Considering the tremendous impact of the EAA alone, this strategy could be a viable one. Other considerations would undoubtedly have to be taken into account.

Fourth, the Airport could actively pursue aviation dependent businesses and become a leading airport industrial park. Airport industrial parks have been successful across the country and Wittman already has a significant industry base to build upon. Marketing and developing the industry potential could be considered.

VI. Conclusion

Wittman Regional Airport is in a period of transition. Declining passenger and air cargo traffic coupled with deficient service and possible lack of a carrier in the near future have caused the role and economic benefit of the Airport to be questioned. It is this atmosphere that prompted the Winnebago County Board of Supervisors to commission the University of Wisconsin-Madison/Extension to conduct an economic impact assessment of the Airport.

Using the Wisconsin Economic Impact Modeling System, the hypothetical closure of the Airport was considered. The analysis is not intended to be prescriptive or editorial, but to document the potential effect of not having the Airport on the County's economy.

Although this study is not a cost-benefit analysis, the economic assessment provided here does reveal that a number of positive impacts resulting from the Airport would be lost if the facility would close. Over 600 jobs and almost \$18 million in wage

and salary earnings would be forfeited. The resulting positive impacts of the income and jobs on the housing and retail market would also be lost. Specifically, the median cost of housing would decrease by \$200 and the retail market would suffer an \$8.8 million decline.

The issue that often comes to the fore is the fiscal situation of local governments related to the Airport. Keeping the Airport operating appears fiscally healthy and at worse is not hurting the government fiscal situation.

Technical Appendix A Economic Impact Results

Appendix Table 1A: Employment Impacts (Base Year 1997)

Winnebago County	With Airport	Without Airport	Airport Impact	Percent Change
EMPLOYMENT				
Agriculture	1,815	1,814	1	0.04%
Mining	14	14	0	0.00%
Construction	4,945	4,942	3	0.06%
Manufacturing	31,303	31,297	6	0.02%
TCPU	3,635	3,175	460	12.65%
Trade	17,685	17,623	62	0.35%
FIRE	4,935	4,919	16	0.32%
Services	25,201	25,134	67	0.27%
Government	11,268	11,220	48	0.42%
TOTAL	100,801	100,138	663	0.66%

Source: University of Wisconsin-Madison/Extension, April 2000

Appendix Table 2A: Earnings and Labor Market Impacts (Base Year 1997)

Winnebago County	With Airport	Without Airport	Airport Impact	Percent Change
WAGES				
Total Earnings	\$ 3,064,008,000	\$ 3,046,513,252	\$ 17,494,748	0.57%
Earnings Per Worker	\$ 30,397	\$ 30,395	\$ 1.91	0.01%
Per Capita Income	\$ 26,221	\$ 26,189	\$ 31.60	0.12%
LABOR SUPPLY				
Unemployment Rate	2.94	\$ 3.04	-0.10	-3.37%
Proportion In-Commute	10.50	\$ 10.48	0.02	0.15%
Proportion Out-Commute	18.95	\$ 18.89	0.06	0.30%
Unemployed Level	2,850	\$ 2,940	-90	-3.17%
Total In-Commuters	22,133	\$ 22,099	34	0.15%
Total Out-Commuters	17,262	\$ 17,123	139	0.80%
Jobs to In-Migrants		\$ (367)	367	
Population	152,671	\$ 151,832	839	0.55%
Local Labor Force	96,800	\$ 96,315	485	0.50%

Source: University of Wisconsin-Madison/Extension, April 2000

Appendix Table 4A: Housing Market Impacts (Base Year 1997)

Winnebago County	With Airport	Without Airport	Airport Impact	Percent Change
HOUSING				
Annual Housing Starts	771	\$ 663	108	13.99%
Average Permit Value	\$ 117,101	\$ 117,056	\$ 44.82	0.04%
Median House Value	\$ 68,000	\$ 67,807	\$ 193.12	0.28%

Source: University of Wisconsin-Madison/Extension, April 2000

Appendix Table 5A: Government Expenditure Impacts (Base Year 1997)

Winnebago County	With Airport	Without Airport	Airport Impact	Percent Change
Per Capita Govt Expenditures				
Health and Human Services	\$ 276.27	\$ 277.19	\$ (0.92)	-0.33%
General Government Admin	\$ 126.00	\$ 125.71	\$ 0.29	0.23%
Public Safety	\$ 317.48	\$ 317.68	\$ (0.20)	-0.06%
Road and Highway Maint.	\$ 97.08	\$ 97.08	\$ 0.00	0.00%
Waste Processing/Disposal	\$ 56.13	\$ 55.88	\$ 0.25	0.44%
Social Amenities	\$ 179.27	\$ 179.18	\$ 0.09	0.05%
Total Per Capita Govt	\$ 1,052.23	\$ 1,052.72	\$ (0.49)	-0.05%
Total Govt Expenditures				
Health and Human Services	\$ 42,178,417	\$ 42,087,856	\$ 90,561	0.21%
General Government Admin	\$ 19,236,546	\$ 19,087,849	\$ 148,697	0.77%
Public Safety	\$ 48,469,989	\$ 48,234,325	\$ 235,664	0.49%
Road and Highway Maint.	\$ 14,821,301	\$ 14,739,851	\$ 81,450	0.55%
Waste Processing/Disposal	\$ 8,569,423	\$ 8,485,488	\$ 83,935	0.98%
Social Amenities	\$ 27,369,330	\$ 26,496,569	\$ 872,761	3.19%
Total Government Expenditure	\$ 160,645,006	\$ 159,131,938	\$ 1,513,069	0.94%
Per Capita Exp. (Education)	\$ 1,103.88	\$ 1,103.65	\$ 0.24	0.02%
Total Expenditures (Education)	\$ 168,530,463	\$ 167,567,466	\$ 962,997	0.57%

Source: University of Wisconsin-Madison/Extension, April 2000

Appendix Table 6A: Government Revenue Impacts (Base Year 1997)

Winnebago County	With Airport	Without Airport	Airport Impact	Percent Change
Government Revenues Per Capita				
Intergovernmental Aids	\$ 414.49	\$ 415	\$ (0.30)	-0.07%
Property Taxes	\$ 442.49	\$ 442	\$ 0.83	0.19%
Other	\$ 253.69	\$ 253	\$ 0.53	0.21%
Total Per Capita Revenues	\$ 1,110.67	\$ 1,110	\$ 1.05	0.09%
Total Government Revenues				
Intergovernmental Aids	\$ 63,280,603	\$ 62,980,434	\$ 300,169	0.47%
Property Taxes	\$ 67,555,391	\$ 66,413,690	\$ 1,141,700	1.69%
Other	\$ 38,731,106	\$ 38,438,435	\$ 292,671	0.76%
Total Government Revenues	\$ 169,567,100	\$ 167,832,559	\$ 1,734,541	1.02%

Source: University of Wisconsin-Madison/Extension, April 2000

Appendix Table 7A: Retail Sales (Base Year 1997)

Winnebago County	With Airport	Without Airport	Airport Impact	Percent Change
Per Capita Retail Sales				
Furniture and House Furnishings	\$ 384.15	\$ 384.60	\$ (0.45)	-0.12%
New and Used Autos	\$ 2,451.50	\$ 2,447.12	\$ 4.38	0.18%
Building Materials and Supplies	\$ 767.79	\$ 768.13	\$ (0.34)	-0.04%
Apparel	\$ 536.84	\$ 536.63	\$ 0.21	0.04%
Drug Stores	\$ 255.46	\$ 254.82	\$ 0.64	0.25%
Food Stores	\$ 1,645.97	\$ 1,647.85	\$ (1.88)	-0.11%
General Merchandize	\$ 632.82	\$ 632.20	\$ 0.62	0.10%
Eating and Drinking Est	\$ 855.78	\$ 856.82	\$ (1.04)	-0.12%
Miscellaneous Retail	\$ 2,579.50	\$ 2,581.53	\$ (2.03)	-0.08%
Gasoline and Service Stations	\$ 732.43	\$ 734.06	\$ (1.63)	-0.22%
Total Per Capita Retail Sales	\$ 10,842.24	\$ 10,843.76	\$ (1.53)	-0.01%
Total Retail Sales				
Furniture and House Furnishings	\$ 58,648,044	\$ 58,395,836	\$ 252,208	0.43%
New and Used Autos	\$ 374,272,957	\$ 371,545,309	\$ 2,727,647	0.73%
Building Materials and Supplies	\$ 117,219,267	\$ 116,627,285	\$ 591,982	0.51%
Apparel	\$ 81,959,900	\$ 81,476,640	\$ 483,260	0.59%
Drug Stores	\$ 39,001,334	\$ 38,690,291	\$ 311,042	0.80%
Food Stores	\$ 251,291,886	\$ 250,199,516	\$ 1,092,370	0.43%
General Merchandize	\$ 96,613,262	\$ 95,987,150	\$ 626,112	0.65%
Eating and Drinking Est	\$ 130,652,788	\$ 130,095,974	\$ 556,814	0.43%
Miscellaneous Retail	\$ 393,814,845	\$ 391,962,269	\$ 1,852,575	0.47%
Gasoline and Service Stations	\$ 111,820,821	\$ 111,458,068	\$ 362,752	0.32%
Total Retail Sales	\$ 1,655,295,102	\$ 1,646,432,813	\$ 8,862,290	0.54%

Source: University of Wisconsin-Madison/Extension, April 2000

Technical Appendix B

Wisconsin Economic Impact Modeling System

The model used in this analysis, the Wisconsin Economic Impact Modeling System, is a conjoined input/output-econometric model. This model is one of a family of integrated input/output and econometric models that began with a national model in 1975 (Preston). The integration allows the strengths of both to be used while compensating for their weaknesses. Since then, integrated models have been used to analyze regions of various sizes: Kort and Cartwright (1981) for U.S. states; Conway (1990) for Washington State; Coomes, Olson and Merchant (1991) for the Louisville SMSA. In addition, researchers, such as Swallow and Johnson (1987), began adding fiscal modules to the economic models for counties and cities in Virginia. Shields and Deller (1997) provide a concise description and Shields (1998) provides a complete description of the Wisconsin model (<http://www.aers.psu.edu/d/fac/shields.htm>).

A graphical overview of the conjoined model is presented in Figure B1. Key components of the model include the input/output (I/O) model, and labor, housing, fiscal and retail modules, which are estimated econometrically. The input/output model used is derived from IMPLAN. To avoid double counting, only Type I multipliers--the direct and indirect effects--from the I/O model are used (Rey, 1994). The induced effects due to changes in household income are estimated econometrically.

The I/O model provides a very detailed production function, based on the standard I/O assumptions, and details the intermediate production relationships in the local economy. The simulation begins by introducing a change in final demand due to, in this case, the expenditures of 500 in-migrating elderly households. The I/O core is used to estimate changes in output by industry due to the change in final demand from the expenditures of elderly households. The I/O model assumes that all changes in the local economy occur instantaneously. Thus, the model estimates total impacts from a one-time change in final demand. The model is comparative statics, not dynamic, and there is no implication about the time frame for the total impacts. For the comparative purposes of this paper, only the total impacts are of interest. For more detail on I/O models see Wagner, Deller, and Alward (1992) and Leistritz (1997).

In the labor market module, direct and indirect changes in total industrial output, computed via IMPLAN, were fed into a series of econometric equations of industry labor demand to determine changes in industry employment and wages. These changes were in turn used to econometrically estimate changes in local unemployment, commuting patterns, population and per capita income. Finally, changes in population, employment and per capita income were fed into the housing, fiscal and retail modules (each a series of econometric equations) to simulate "induced" impacts, that is impacts due to increased household income. The current version of the model provides a "without" (i.e., baseline) and "with" picture, and the difference is attributed to the scenario under consideration. The following sections emphasize government revenues and expenditures in the induced impact modules because of concerns that the burden on local government will increase as the elderly age.

Demographic and Labor Market Module

The labor and demographic module is linked to the production sector via industry output as determined by the I/O component (Figure 1). Because the I/O model is a model for a single year and time series data for industry output are not available at the county level, the

demographic and labor market module also is estimated using one year of Wisconsin county, cross-sectional data. The changes in output of each industry are used to simultaneously estimate employment and wages by industry. The new employment opportunities affect the locally unemployed, commuters, and migrants (who change population). In addition, total personal income and income distribution responds to the changes in economic activity. The demographics part of this module, unemployment, population, labor force, students, in-commuting, out-commuting, income and poverty, is estimated as a system of simultaneous equations using three-stage least squares. Three outputs of the demographic and labor market module: income, commuting, and population, feed into the induced effects that are estimated later in the model (Figure B1).

Induced effects

The induced effects estimated by the model are the impacts of changes in household income on housing, retail and local government. The induced effects are estimated using pooled time-series, cross-sectional data. Because the error term of such data is not randomly distributed, this must be considered in the estimation technique. Baltagi (1979) suggests a fixed model is appropriate when the sample is exhaustive (e.g. all Wisconsin counties). Instead of using a dummy variable for each county, a taxonomy of economic regions was developed and regional dummy variables were used (Shields and Deller, 1998; Shields, 1998).

Housing Housing starts are estimated using per capita income, which was derived in the labor market module. Other variables include user housing cost, the property tax rate, inflation, age of housing, local government expenditures, and growth in the number of households. This equation was estimated using ordinary least squares. The value of new housing permits was estimated by per capita income and the lagged permit value. The equation was estimated using generalized least squares to correct for heteroskedasticity.

Local government revenues and expenditures are dependent on property values. Equalized assessed value of all property, and median housing value are estimated using ordinary least square regressions. The equalized assessed value of all property, residential and commercial, is estimated using per capita income, per student expenditures, per capita safety and road expenditures, the property tax rate, and population density. Median housing value is estimated using the same variables in addition to crimes per 1000 population and percentage of homes built after 1970. Many of the variables in these equations were estimated in, and hence explicitly linked to, the demographics and labor market module and the local government module.

Fiscal Model Modeling local fiscal behavior is a complex and daunting task. While there is a clear market mechanism for the interaction of supply and demand forces for private goods, such a market does not exist for public goods and services (Samuelson, 1954). The non-excludability and non-rivalness that characterize public goods and services prevent the market from operating effectively (i.e., market failure).

Inman (1978) offers a modification of the demand-supply model for public goods and services delivery to capture the two-step process of decision-making and production. *Provision* of the good or service refers to the collective choice (i.e., demand) that determines what goods and services to provide, at what level, how to raise the necessary revenue, and how to arrange for the *production* of the good or service. The second step of the process is the actual production (supply) of the public good or service. *Production* of the good or service refers specifically to the technical process of transforming inputs into outputs (i.e., the public good or service). It is vitally important to note that it is in the latter stage that actual costs are incurred. The importance of the distinction between *provision* and *production* can not be overstated (Cigler, 1987; Oakerson, 1987; ACIR, 1987; Deller and Halstead, 1994; Brooks, 1996). Given this simple theoretical framework, one can more easily dissect and analyze the problem of modeling local fiscal behavior.

Government Expenditures Government expenditures on health and welfare, administration, roads, police and fire, water and sewer, amenities, schools, and total expenditures are estimated using population and income, which were estimated in the demographic and labor market module. Because government expenditures in one area are not independent of expenditures in other areas, the equations are estimated using seemingly unrelated regression (Baltagi, 1979).

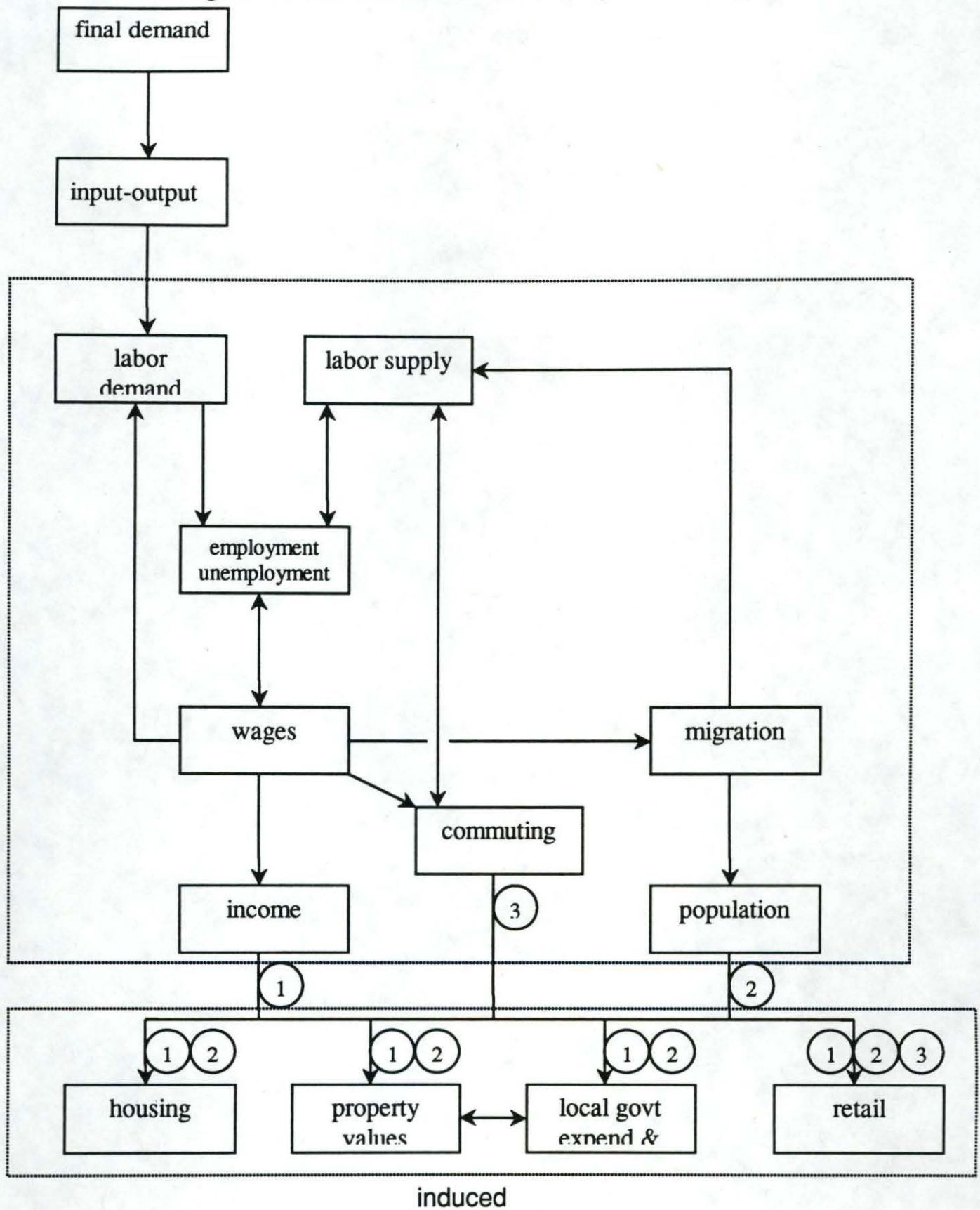
Expenditures are a function of real per capita income, equalized assessed value of property, the property tax rate and the number of households. In addition, each equation includes other socio-economic factors unique to the particular public services. For example, the highway maintenance expenditure equation includes the miles of roads and the school expenditure equation includes the percentage of the population below poverty. In addition to the poverty rate, the health, administration, and total expenditures equations include the unemployment rate.

Government Revenues Revenue equations are more difficult to model in a theoretical sense because revenue sources are often structured in accounting terms. For example, state aid to local units of government is commonly formula driven and dependent on such items as population, property tax rates, income, or miles of road. Property tax revenues are a second important source of local revenues and depend primarily on the assessed value of local property and the local property tax rate. The property tax rate is exogenous because it has been frozen for several years.

Three government revenue equations are estimated using ordinary least squares. Property tax revenues per capita are estimated as a function of equalized assessed value and the property tax rate. State aid is estimated as a function of equalized assessed value and government expenditures per capita. Total local government revenues per capita are a function of equalized assessed value, property tax rates, and government per capita expenditures. To ensure consistency in the analysis, all revenues and expenditures are aggregated to the county-level. Because local public services in Wisconsin are provided within a tiered system between county and municipal governments, this is a reasonable approach.

Retail Sales Retail sales are estimated for the retail sub-sectors of furniture, automobiles, building supplies, apparel, drug stores, food, general merchandise, eating establishments, miscellaneous, and gas stations. Retail sales are estimated as a function of real per capita income, unemployment rate, percentage of elderly in the population, population density, in and out commuters, distance to a city of 25,000, establishments per 1000 population, and the region of the state. In addition the equations for furniture and building supplies include housing starts.

Figure B1. The Wisconsin Economic Impact Modeling System



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