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THE ROLE OF TRANSPORT IN DETERMINING THE DEMAND FOR INDUSTRIAL LAND

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This paper examines the role of transport in determining the demand for industrial land. The research was originally carried out for The City of Winnipeg, as a thesis in the Economics Department at the University of Manitoba. An update was completed at the request of Mr. Robert Gabor, Chairman of The City of Winnipeg's long range transportation planning process, in order to provide TRANSPLAN with direction regarding strategic transportation infrastructure required to promote industrial growth in The City of Winnipeg. The author is solely responsible for any opinions expressed in this paper.

The Winnipeg Industrial Land Model was developed in 1988 in order to identify the determinants of industrial location decisions in the City of Winnipeg (Loreth, 1988). Because such determinants may have important policy implications for government at both the municipal and provincial levels, an understanding of what underlies location decisions is essential for policy makers. Analysis of land price determinants combined with the annual absorption and existing supply of vacant industrial land will enable civic policy makers to determine how Winnipeg can effectively meet industry's present and future needs.

An adequate supply of vacant land in appropriate locations is essential to promote industrial growth. However, effective development policy needs to consider factors that affect demand as well as the available supply of industrial land. Industry will not be enticed to develop in locations that are unable to provide the essential elements for sustained industrial growth. A thorough understanding of what these elements are in the Winnipeg marketplace will enable government to determine why industry chooses one specific site relative to another. The model developed within this study analyses price determinants of industrial land and clearly identifies the influence of transportation, location, municipal infrastructure and zoning on the demand for such land in Winnipeg.

Overview

In order to identify factors that determine industrial location decisions in Winnipeg a partial equilibrium function was originally developed, for the study period from 1971 to 1981. This model has been updated to 1995 and revised to reflect a structural change in the economy that occurred as a result of the 1982 recession. The model is a reduced form equation encompassing both demand and supply

considerations regarding the price determinants of vacant industrial land in the City of Winnipeg. As price is a function of both the demand for and the supply of industrial land, it is essential to incorporate both variables within the model as opposed to merely determining the effect of one or the other upon intra-urban industrial location decisions. Determining why industry has chosen to develop at specific locations in Winnipeg will enable the City to capitalize on existing industrial strengths.

The transportation industry has experienced extraordinary change over the past decade and will continue to experience change in the future. Air cargo/courier transportation has become a much more significant factor in Winnipeg's economy and holds great promise for the future. On the other hand, rail has undergone an overwhelming structural change/downsizing and will continue to do so into the twenty-first century. With change comes opportunity. Winnipeg must react to the changing industrial landscape in order to take advantage of the opportunities that exist within the transportation sector of our city. The **Winnipeg Industrial Land Model** provides direction regarding industrial growth opportunities identifying where as well as why the demand for industrial development will occur in the future. The 1988 study identified that the City's industrial development strategy be reviewed to accommodate growth in the north-west quadrant, adjacent to the airport. This confirms that recommendation.

The demand/supply relationship of industrial land in Winnipeg has remained virtually identical in the post '82 recessionary era, relative to what it was throughout the 1970's. That is, where the demand exists, the supply is extremely limited and vice versa. Although the absorption of industrial land dropped from 191 to 33 acres per year in the post '82 recessionary time period (1982-1995), land sales and development still occurred primarily in the north-west. Demand is the driver in a free market economy. Therefore, appropriate supply side policies are required to effectively promote industrial growth in Winnipeg. That is, strategically located land and infrastructure.

The City has responded with an amendment to Plan Winnipeg that establishes an Airport Vicinity Protection Area as well as a secondary plan entitled the "Winnipeg Airport Vicinity Development Plan". These plans are designed to protect the long term 24-hour operation of the airport and to promote compatible economic development within the AVDP zone. A Provincially mandated Airport Area Planning Committee is responsible for producing a north-west side airport industrial land use plan by the spring of 1996. The City of Winnipeg's industrial development strategy must be redesigned to accommodate the changing requirements of the transportation industry. The Winnipeg Industrial Land Model identifies location factors, proximity to transport and strategically located infrastructure as the variables that drive the demand for industrial land in this city. Direction regarding

policy designed to accommodate existing and future industrial requirements becomes evident upon reviewing the model's results. However, the cost of restructuring Winnipeg's industrial landscape is high. The city must now direct limited resources into those areas where it has the greatest likelihood of success. We must focus on priorities.

SUPPLY OF VACANT INDUSTRIAL LAND

Civic policy makers have attempted to provide sufficient land for a wide range of industrial and related uses in suitable locations throughout Winnipeg. However, based upon the changing industrial landscape, the distribution of available vacant industrial land does not adequately satisfy the City's industrial demands.

An inventory of vacant industrial land is an essential component required in developing an industrial development policy for the City of Winnipeg. The location, amount and type of vacant land available for development are supply side elements that the City needs in order to determine whether demand requirements may be adequately met in the present as well as the future.

Analysis

Land in Table 1 includes only industrial zoned land, either serviced, partially serviced or serviceable within two to five years. Regardless of ownership, public or private, servicing is available to industrial land contained within any one of the City's industrial neighbourhoods. Sewer, water and electrical trunk lines exist within immediate proximity to these locations and may be tapped into, within a reasonable time frame, if a serious development is identified. The time element associated with the short term would be considered six months to one and one-half years as long as the land had been subdivided and contained the appropriate zoning.

In December, 1989, the majority or 52% of vacant industrial land identified in Table 1 was located east of the Red River. Of this 738 acres, 74% was situated in the St. Boniface industrial area. The area north of the Assiniboine River and west of the Red River contained 21% of the total 1989 supply, of which only 95 acres or 7% was located in St. James/Assiniboia. The older inner city area, also located in this north-west sector and home of the C.P.R. marshalling years had a mere 6% of the 1989 supply. The balance or 374 acres was located in the south-west quadrant of the City. By April, 1995, the total supply had declined to 1,244 acres, with a similar distribution of what had existed six years earlier.

Possibly the most notable observation relating to Winnipeg's industrial land supply at this time was the fact that St. James/Assiniboia, the location of the International Airport and a substantial industrial base, contained but 73 acres or 6% of Winnipeg's serviced/partially serviced vacant industrial land supply. In 1989, St. James had virtually no designated industrial reserve.

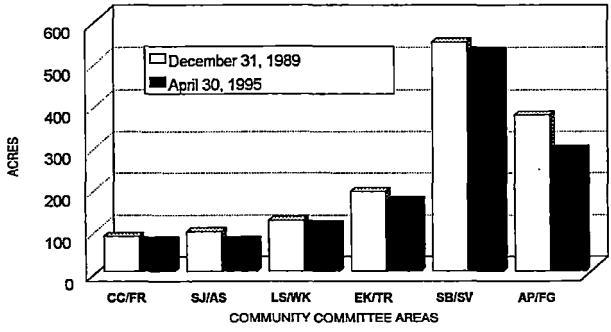
TABLE 1
INVENTORY OF SERVICED/PARTIALLY SERVICED VACANT INDUSTRIAL ZONED LAND CITY OF WINNIPEG*

December 31, 1989					April 30, 1995
83.06	(5.9%)	-	CC/FR	(5.9%)	73.59
94.61	(6.7%)	-	SJ/AS	(5.9%)	73.03
121.34	(8.6%)	-	LS/WK	(9.0%)	111.42
190.75	(13.5%)	-	EK/TR	(13.6%)	168.76
546.87	(38.8%)	-	SB/SV	(42.3%)	526.32
374.32	(26.5%)	-	AP/FG	(23.4%)	290.61
1,410.95	(100%)	-	Winnipeg	(100%)	1,243.73

Source: City of Winnipeg, Land and Development Services Department

Figure 1

Inventory of Serviced/Partially Serviced Vacant Industrial Zoned Land - City of Winnipeg



* Excludes all "unserviced reserve" industrial land that has been designated by the Development Plan Review.

Industrial reserve is not identified in Table 1. Such reserve consists of land either zoned or designated for industrial use by Plan Winnipeg. This land is considered long term reserve which ordinarily would not have access to servicing and transportation infrastructure until 20 to 25 years in the future. Although this land has an industrial policy designation within Plan Winnipeg, almost all of it is presently zoned for agricultural use. The vast majority of industrial reserve previously existed in Assiniboine Park/Ft. Garry and St. Boniface/St. Vital. However, the 1992 Plan Winnipeg Review redesignated 300 acres west of the airport to industrial, and on November 29, 1995 an additional 1400 acres was redesignated in order to accommodate the Winnport multi-model transportation initiative (I.D. Group, 1995).

PRICE DETERMINANTS OF VACANT INDUSTRIAL LAND

Winnipeg Industrial Land Model

This analysis was designed in order to determine what factors influence industrial location decisions in Winnipeg. The answer to this question will enable industry to capitalize on future industrial growth initiatives, determining where such development should be pursued as well as the type of industrial growth to be encouraged.

By analysing the determinants of industrial land prices in Winnipeg, the model is able to identify specific industrial land markets and the reasons why industry chose to develop in these locations. Once the essential elements for sustained growth have been determined the uncertainty involved in promoting new development ventures will be minimized thereby encouraging growth to take place.

The model contained within this study is a partial equilibrium function that focuses on the relationship between the price of vacant industrial land in Winnipeg and independent variables that affect the demand for and supply of such land. The demand for sites may be viewed as the price for location, that depends on individual site characteristics such as the year of sale, site area, zoning and density of industrial development. Neighbourhood characteristics such as population density, transportation variables, location factors, commercial influence and the effective tax rate also have a statistically significant impact on the demand for vacant industrial land in Winnipeg. The model was designed to ensure that all observations represented a place on the demand function. Zoning was identified for each observation, to ensure they were bona fide industrial sales. That is, representative of the demand for industrial development. However, each observation represents both demand and supply considerations in that zoning, the City's primary tool for restricting or promoting a specific form of development, has been incorporated into the model as an independent variable representing supply or municipal government interests.

The original model designed for this study analysed all vacant industrial land sales that occurred during the period from 1971 to 1981 inclusive (Loreth, 1988). This time frame was chosen because of the substantial amount of new industrial development that occurred in Winnipeg during the eleven year period. The '70s represented a period of time in which the economy was rapidly expanding, the business community was doing well, jobs were abundant and the average annual rate of absorption for vacant industrial land was 191 acres a year. The 1982 recession brought this period of expansion to a sudden halt. Industrial development in Winnipeg never recovered from the severity of the '82 recession. From 1982 to 1995 the average annual absorption rate of vacant industrial land declined substantially to 33 acres a year. Hence, a twenty-five year time series, which incorporates a period of expansion throughout the '70s as well as the post 1982 recessionary era, has been analysed in this analysis of vacant industrial land sales within the City of Winnipeg.

The model was developed in three basic stages. Originally, the suburban areas of the City were analysed, identifying specific variables upon which the price of vacant industrial land was dependant. Secondly, the older, established Inner City of Winnipeg was analysed and a model identifying the industrial characteristics of this part of Winnipeg was developed. Upon completion of the suburban as well as the Inner City equations, these two components were combined into one model, that identified the price determinants of vacant industrial land within the entire City of Winnipeg. The level of refinement achieved within the final version of this composite model would never have been capable without initially identifying the individual characteristics that exist within the suburban and Inner City markets, and how they independently affected industrial land prices in Winnipeg. The composite model encompasses individual characteristics representative of each of the industrial land markets in the City.

Industrial Land Analysis Revisited: Incorporate post 1982 recessionary era

In updating the model, which now incorporates all bona fide vacant industrial land sales in Winnipeg from 1971 - 1995, the overall model as well as the independent variables have remained stable and reliable. Although the original model was stable and considered statistically sound for purposes of establishing economic policy related to industrial growth, the updated version has incorporated changes to the independent variables which have simplified the regression equation. A proxy for "density of industrial development" has been incorporated into the model as well as an independent variable which isolates the commercial influence of Polo Park. The model was analysed using a group dummy variable for the post '82 recessionary era as well as the annual dummy variables in the final OLS. Although both versions of model were statistically significant, the use of annual dummy variables produced superior results. The changes have improved the model's forecasting reliability. Overall, the basis for policy direction of the updated version of the **Winnipeg**

Industrial Land Model remains unchanged. The north-west quadrant of the city is the foundation to industrial growth in Winnipeg. Proximity to all three modes of transport has firmly established industrial development in this part of the City. Access to transportation facilities with immediate proximity to the airport, the CP and CN rail lines and Route 90 drive the demand for vacant industrial land in this part of Winnipeg.

The Model: Statistical Results

The model has been extensively tested to ensure its statistical validity and in all cases, the coefficient values were unbiased and efficient. There is no systematic relationship that exists within this model between the residuals and any of the independent variables that would negatively affect the reliability and accuracy of the respective coefficient values of the model in general. There is also no correlation between any of the independent variables with each other.

The dependent variable, price, is a positive function of:

1. Time (1972 - 1995 land sales relative to 1971 sales).
2. Area - size of the lot. (Variables log Area and log Area HDUM)
3. Dwelling Units (proxy for population density-log Dwelling Unit).
4. Transportation variable which represents privately owned industrial land adjacent to the Winnipeg International Airport, which has immediate access to all 3 modes of transportation (Air/Rail/Highway). Only 2 neighbourhoods in Winnipeg have equal access to all 3 modes of transportation — St. James Industrial and Omand's Creek Industrial.
5. Commercial influence of Polo Park Shopping Centre.
6. Interactive Dummy Variable: Distance to the city centre from Inner City Wards 2 and 3. The inverse of this variable represents a proxy for density of industrial development (1/log distance to City Centre .W23).

Price is a negative function of:

1. M2·M3 zoning (relative to M1/MP zoning)
2. Effective Tax Rate (log eff. Tax Rate).
3. Locational variables identifying the industrial land markets of W2·3, the northwest quadrant, and east Winnipeg relative to the intercept variable shown as the southwest quadrant (W23, NW·Wpg, East Wpg).
4. Interactive Dummy Variable: M1·SW·Wpg (relative to all other industrial land sales in Winnipeg from 1971 to 1995).

An effective use of interactive dummy variables, has enabled the model to more appropriately reflect reality in the market place. In so doing, this industrial land model presents an accurate and reliable reflection of industrial land determinants in the City of Winnipeg. Within all versions of the model, the coefficient signs remained the same and their values remained very stable.

PRICE DETERMINANTS OF VACANT INDUSTRIAL LAND CITY OF WINNIPEG

Log Price = -3.444 + 0.201 (1972) + 0.225 (1973) + 0.373 (1974)
(1.94) (2.71) (4.28)

+ 0.493 (1975) + 0.584 (1976) + 0.824 (1977) + 0.946 (1978)
(5.25) (6.20) (7.97) (9.07)

+ 0.950 (1979) + 0.934 (1980) + 0.842 (1981) + 1.096 (1983)
(9.63) (8.43) (8.00) (2.92)

+ 1.256 (1984) + 1.309 (1985) + 1.264 (1986) + 1.579 (1987)
(9.23) (9.27) (9.916) (15.47)

+ 1.690 (1988) + 1.697 (1989) + 1.904 (1990) + 1.855 (1991)
(15.73) (15.58) (15.00) (12.86)

+ 1.895 (1992) + 1.641 (1993) + 1.731 (1994) + 1.866 (1995)
(13.64) (11.81) (10.58) (5.717)

+ 0.560 (log Dwelling Unit) + 0.557 (log Area)
(16.53) (39.55)

+ 0.068 (log Area·HDUM) - 0.488 (log Eff.Tax Rate)
(14.09) (-19.39)

- 0.109 (M2·M3) - 0.559 (M1·SW·Wpg) - 0.638 (W23)
(-2.75) (-6.07) (-7.07)

- 0.363 (NW·Wpg) - 0.265 (East·Wpg)
(-4.286) (-4.114)

+ 0.160 (1/log Distance to City Centre.W23) +0.328 (Air/Rail/Hwy)
(-6.888) (3.926)

+ 1.081 (Polo Park/Commercial Influence) + e_i
(4.694)

(Numbers in parentheses indicate the t values of the respective coefficients).

N = 1394	R^2 = 0.792	F = 147.295
Sum of Absolute Errors = 670.92		Standard Error = 0.634
Residual Sum = .43481 E -10		DW = 1.74

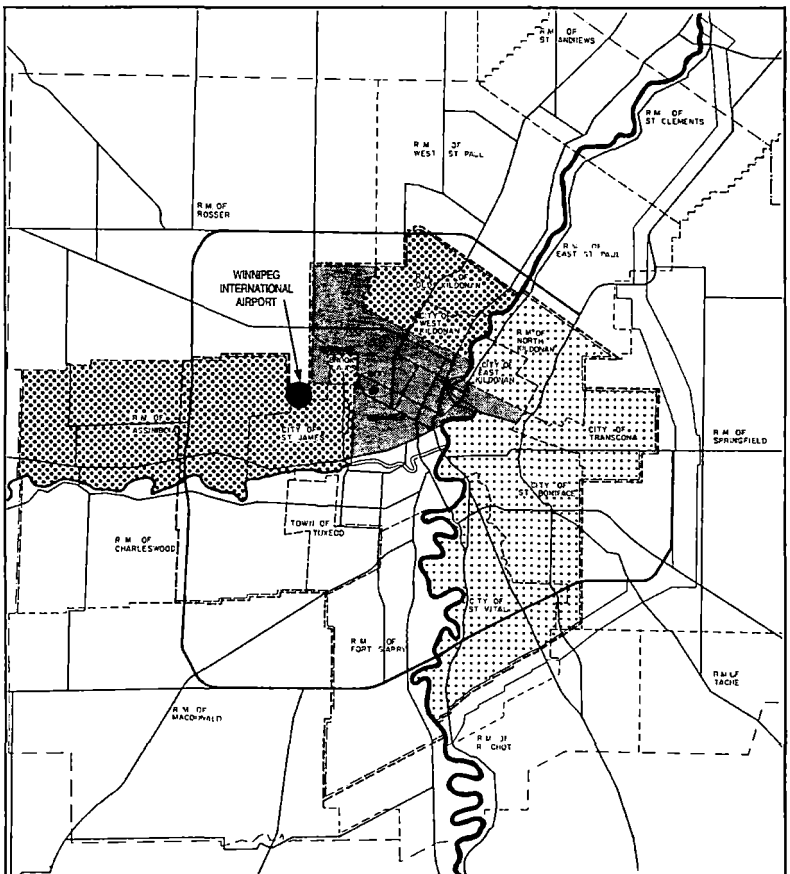


FIGURE 2 **CITY OF WINNIPEG**
INDUSTRIAL LAND MARKETS

NORTH-WEST WINNIPEG
EAST WINNIPEG
SOUTH-WEST WINNIPEG
INNER CITY - WARDS 2 & 3
N

WINNIPEG INDUSTRIAL LAND ANALYSIS: OBSERVATIONS

North West Quadrant

Although there are numerous variables which influence industrial development, the model contained herein, clearly identifies location and proximity to transport as the prime determinants of industrial growth in Winnipeg. Due to the influence of prominent transportation facilities located in the north-west quadrant, the foundation to Winnipeg's industrial base has evolved in this sector of the City. For example, major trucking markets that exist north and west of the city play a significant role in the demand for industrial land in this part of Winnipeg. The C.P.R. marshalling yards are also situated in this quadrant and provide industry with an effective means to transport cargo to markets across Canada and into the United States. By itself, proximity to the airport is clearly more significant than either trucking and/or rail combined (Loreth, 1988). However, as of the 1995 update, immediate proximity to all three modes of transport produced a variable (air/rail/highway) that had a more significant impact on the dependant variable, price. Such major air, rail and trucking facilities generate spin off growth in the surrounding area, in order to service the needs of the transportation industry in this part of Winnipeg. Consequently, a critical mass of manufacturing and warehousing activities has developed in relation to the transportation industry in the north-west quadrant. This economic base now serves to attract additional industrial growth to this part of Winnipeg.

Growth in St. James-Assiniboia commenced in the 1950's due to a municipal incentive program that was designed to attract industry to the St. James area. Very inexpensive industrial land associated with extremely low property taxes combined with proximity to transport, to attract industrial growth to this part of Winnipeg. Financial incentives combined with exceptional proximity to transport and markets, resulted in a strong demand for industrial land in the north-west quadrant. However, since 1981, the supply of vacant industrial land in St. James has been limited, especially in proximity to the airport. 10.6% of Winnipeg's vacant industrial land sales occurred in St. James-Assiniboia from 1971-1981 and this percentage increased to 11.6% over the next decade. However, the supply of vacant industrial land in this part of Winnipeg declined from 6.6% (185.8 acres) in 1981 to 4.7% (103.5 acres) of the city total in 1990. As of mid-1995, this demand/supply relationship has remained virtually unchanged.

The strong demand relative to the limited supply of industrial land in proximity to the airport has had a positive influence on the value of industrial land in St. James and the surrounding area. Proximity to the airport has been identified in the **Winnipeg Industrial Land Model** as one of the most significant factors in determining the value of vacant industrial land in the City of Winnipeg.

Together St. James and the Inner City contained the vast majority of vacant

industrial land sales in Winnipeg over the last twenty-five years even though they held a limited supply of such land. The commercial influence of Polo Park, transportation infrastructure such as the airport, regional highway facilities like Route 90 and the CPR Marshalling Yards have combined with the strong demand for and limited supply of industrial land in this sector of Winnipeg, to make industrial land extremely valuable in the northwest quadrant. Over the last twenty-five years, 51% of the vacant industrial land sales occurred in St. James/Assiniboia, and Inner City Wards 2 and 3 (N/W Quadrant), although only 8% of the serviced/partially serviced land existed in this area. Whereas St. Boniface/St. Vital had only 17% of sales over the past quarter century it contained 48% of the serviced/partially serviced land in Winnipeg, 37% of land serviced/serviceable within 2 - 5 years, and 31% of the designated reserve vacant industrial land in Winnipeg. Where the demand for industrial land was located, the supply was quite limited and vice versa. The November 1995 designation of 1,400 acres of industrial land west of the airport to accommodate the Winnport multi modal transportation initiative (Winnport, 1995) will redistribute this supply.

St. Boniface/Transcona Industrial Sector

Another important industrial sector is located on the east side of Winnipeg. However, over the past twenty-five years, the prominence of this area has diminished relative to the north-west quadrant. The foundation to the St. Boniface/Transcona industrial area was based on Winnipeg's meat packing and transportation industries. CN Rail had located its Symington Yards and Transcona Shops immediately east of the "St. Boniface Stock Yards". Proximity to transport was of primary significance to the meat packing industry, which had immediate access to both CP and CN Railways, as well as regional trucking routes such as Lagimodiere Boulevard and the TransCanada Highway. When Canada Packers, Swift's and the Shell Oil Refinery closed their Winnipeg operations, development in the St. Boniface Industrial Area slowed down substantially. Over the last twenty-five years, regardless of how the economy was doing, the majority of industrial growth in the city occurred in the north-west quadrant. This was the case, in spite of the fact that available vacant industrial land was very limited in this part of Winnipeg. These circumstances clearly indicate that the demand side of the market place drives industrial growth. Regardless of where the supply of available industrial land may be located, development will not occur unless that supply satisfies industry's requirements.

Focus on Priorities

A policy designed to encourage development and job creation, by focusing on key private/public sector initiatives, is required to effectively promote industrial growth. **The city must now direct limited resources into those areas where it has the greatest likelihood of success.** Major capital expenditures should be considered an "investment" in Winnipeg's future economic well-being.

An application by the West Side Land Owners Association to amend Plan Winnipeg by redesignating some 1,400 acres of land west of the airport within the City of Winnipeg, from a rural to an industrial designation, has received final reading by City Council on November 29, 1995. The South Interlake Planning District has recently given third reading to a Winnpark application to designate 4,036 acres of land in Rosser, north-west of the airport to industrial. The Provincial Land Use Committee of Cabinet has established the "Airport Area Plan Planning Committee (APPC) which is required to complete an industrial land use plan for the area north-west of the airport in the City of Winnipeg and the R.M. of Rosser. This land use plan is to be finalized in the spring of 1996.

POLICY IMPLICATIONS: Land Use Management

Proximity to intersecting modes of transport, particularly the airport, has been identified as a critical element in promoting the demand for industrial land in Winnipeg. The single most important factor in determining the long term economic viability of an airport is based upon compatible land use management. Municipal government must ensure an abundant supply of serviced land in proximity to airports, which is zoned to accommodate airport-related development. Residential development in proximity to flight approach zones invariably generates noise complaints that could effectively limit aircraft movement to daylight hours. As has occurred elsewhere, Winnipeg's economic development opportunities would be capped by such restrictions. This is particularly true for air courier traffic, which relies on night service, to accomodate time-sensitive deliveries (Prentice, Loly, and Morrissey, 1995).

To assure the long term viability of this extremely important asset, Winnipeg's development plan was revised to ensure the maximum degree of compatibility and protection in flight approach zones with existing or proposed developments in close proximity to the airport. Plan Winnipeg's Airport Vicinity Protection Area policies have been combined with an "Airport Vicinity Development Plan", as well as zoning and acoustic insulation by-laws to accomodate compatible land use management in the vicinity of the airport. Without its twenty-four hour operation, Winnipeg International Airport (YWG) would lose the foundation to its economic advantage over competitors.

Proximity to Transport and Strategic Infrastructure Development

The **Winnipeg Industrial Land Model** identifies that access to all three modes of transport, air, rail and truck, in a common industrial neighbourhood, will drive the demand for industrial land in that sector of the City. Consequently, the availability of vacant industrial land **in proximity to intersecting modes of transport** is critical to effectively promote industrial development. If municipalities are unable to provide industry with serviced land at such crossroads economic development will

be limited in scope. The model provides clear direction regarding where industrial development should be promoted in Winnipeg. An overview of the results identifies that the north-west quadrant of Winnipeg is the foundation to industrial development, primarily as a result of immediate proximity to highway, rail and air transportation. However, due to very expensive infrastructure requirements, the supply of serviced vacant industrial land in proximity to the airport is extremely limited. Policy implications relating to how the City may effectively encourage specific types of industry to develop in Winnipeg are based upon establishing municipal infrastructure at strategic locations. Financing is the issue. Based upon limited municipal resources, a joint venture, public/private sector initiative is essential to finance infrastructure and transportation requirements west of the airport. Although the **Winnipeg Industrial Land Model** provides direction to accommodate west side YWG industrial development, the Winnport Multimodal Transportation Plan (I.D. Group, 1995) has provided the initiative to consider expensive infrastructure development at this location. Without the substantial return on investment that the Winnport plan promises to generate, a west side YWG industrial park would be based on user pay and very limited in scope at this time. The Airport Vicinity Landowners Association have developed a plan, known as "Winnpark" (Airport Vicinity Landowners Association, 1995) which seeks flexibility to accommodate airport compatible industrial development on the periphery of the multimodal footprint. The combined interests of the Winnport/Winnpark west side industrial initiative correlate very strongly with the industrial land model results.

To effectively promote higher wage job creation and tax base expansion, municipal economic development policy must co-ordinate land use management and strategic infrastructure development at locations that maximize the opportunities created by intermodal transportation activity . . . particularly in proximity to airports.

POLICY IMPLICATIONS: Economic Development

Property Tax Differentials

Property tax reductions have been used in the past by municipalities in an attempt to attract industry to their city. Although a municipal property tax reduction would reduce industry's cost of production, the inelastic response of the dependent variable (price) in this model, to a change in property taxes, clearly identifies that property tax reductions would have only a marginal effect on price.

The results of the Winnipeg Industrial Land Model identify that property tax reductions designed to influence the location of industrial development inside Winnipeg would be an ineffective economic development policy for the City to pursue. Municipal policy designed to promote higher wage job creation and tax base expansion clearly relates to establishing municipal infrastructure in strategic

locations throughout the city - such as the north-west quadrant in immediate proximity to the Winnipeg International Airport. An investment in strategically placed infrastructure would be the most effective policy for the City of Winnipeg to promote industrial development.

It should be noted that although property tax differentials are usually unsuccessful in relocating industry on an intra-municipal basis, a substantial gap in taxes between the City and Rosser could attract Winnipeg industry to the rural municipality, particularly if services were comparable to those inside the City. Immediate proximity to the airport, comparable transportation, sewer and water facilities to those contained within City limits, lower land prices combined with lower property and business taxes could result in an exodus of industry to Rosser ..... particularly industry presently located in north-west Winnipeg that might be interested in expanding operations. Policy designed to ensure comparable taxes in either jurisdiction is important to the City. Such policy may be accomplished in a number of ways.

Inland Ports and the Global Market Place

Winnipeg evolved as a transportation centre and eventually came to be known as the "Gateway to the West". The City became the strategic location for an inland port based upon two primary factors: location relative to markets and proximity to transport. Access to both CP and CN Rail combined with Winnipeg's central location between the resource based Provinces of Saskatchewan, Alberta and British Columbia to the west and the manufacturing base of Eastern Canada, resulted in substantial growth in the City during the first half of the 20th century. Almost fifty years later, the transportation industry, once again provides Winnipeg with renewed optimism for economic development. Air cargo/courier transportation has expanded the development opportunities that Winnipeg has access to. While just-in-time manufacturing has reduced the demand for warehousing activity, it requires a reliable, efficient, time sensitive movement of cargo to market. Air transport combined with truck and rail, is the critical element necessary to accommodate this need. What rail did for Winnipeg in the 20th century, air transportation can surpass in the 21st century.

Global rather than national markets have become an opportunity for strategic inland ports such as Winnipeg. In the latter part of the 20th century, air transportation has become a significant factor in moving products to market. Less restrictive international trade barriers and in some instances free trade agreements, combined with the cost-effective intermodal shipment of cargo will provide Europe and Asia with access to American markets through strategic Canadian ports of entry. Winnipeg is poised to take advantage of these global markets.

In the future inland ports may become equally as important to trade as ocean ports have been for centuries. Future research might focus on the impact air cargo shipments have had on inland ports by comparing the economic significance of the transportation industry located in cities like Winnipeg relative to those of traditional ocean ports.

Winnipeg is strategically located in proximity to international air cargo movement and has an abundant supply of designated industrial land adjacent to its airport. The political process has recognized this valuable combination and has established land use management tools to protect the long term economic viability of the Winnipeg International Airport. A west side Airport Area Plan is being designed to address inter-jurisdictional issues relating to legal structure, municipal servicing, taxation and trucking route policy, in order to capitalize on this extremely valuable economic resource. Other jurisdictions may be well advised to re-examine their own land use policies in light of the importance of transportation infrastructure and land use management to economic development.

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