



**STRATEGIES FOR DEVELOPING A BROADLY BASED
REGIONAL KNOWLEDGE ECONOMY IN
NORTHWESTERN ONTARIO**

By
Dr. Livio Di Matteo
Department of Economics
Lakehead University

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Executive Summary

This report provides an overview and analysis of the current economic situation in Northwestern Ontario and outlines possible strategies that may assist the region in pursuing opportunities in the knowledge economy. This report represents an innovative extension of the activities of the North Superior Training Board, which has commissioned this study to look at the transitioning of the economy. It is designed to contribute new ideas and analysis about dealing with future challenges rather than any comment or evaluation of existing or past economic conditions. Local training boards have been champions of labour market solutions in Ontario for over a decade by combining diverse community membership and local partnerships with the flexibility to test new approaches and obtain new perspectives.

Northwestern Ontario is in the midst of economic change, crisis and transition. The issues affecting its performance include the presence of a declining sector linked to older industry, aging populations, the attraction of younger population to high growth regions and the absence of champions and coherent strategies to drive growth. The development of a broad based knowledge economy is the best tool for a sustainable economic future. Knowledge is an intangible asset whose manipulation into value-added via the innovation process can be a powerful source of economic growth. Much of the emphasis in the current applications and implementation of the knowledge economy is on the development of scientific and technical knowledge and translating that knowledge via innovation into economic activity creating employment for technicians, engineers, scientists and software programmers. However, there are opportunities in two other areas that require policies and incentives in order to promote broad based economic growth: human and cultural knowledge, artistic knowledge.

Knowledge sector activities will create nodes and clusters of high value added activity that will serve as sources of both demand and supply side economic growth and attract additional development. While knowledge creation and knowledge industries are important, they must be placed alongside traditional “old-economy” economic determinants such as costs, location, tax policy, interest rates, resource availability and labour-force skills. The knowledge economy and strategies to foster it should be seen as a complement to the region’s current mix of economic activities rather than some type of panacea. Indeed, it would not be so bold to suggest that in Northwestern Ontario, what is needed is a dose of creativity and knowledge applied to doing better with current activities rather than focusing on a paradigm designed to reinvent the entire economy.

While Thunder Bay and by extension Northwestern Ontario have lagged the rest of the province in terms of knowledge economy indicators and employment, the fact remains that knowledge sector employment in this region has been growing over the last decade. Measures of knowledge sector employment for Northwestern Ontario suggest substantial growth in knowledge sector employment in the region that has been accompanied by declines in traditional resource and transportation based industries. The growth of our knowledge sector to date has not been sufficient to overcome job losses in our traditional sectors.

Creating a knowledge economy in northwestern Ontario should focus on policies that create and train knowledge workers, create new knowledge and apply it to the regional economy rather than focus on policies designed to make the region “cool” in order to attract knowledge workers. As well, fostering the knowledge economy requires new institutions and organizations. The essence of this strategy is to increase the supply of highly educated workers, create new institutions and networks to lead a coherent entrepreneurial regional strategy, boost regional knowledge creation and retain the region’s supply of smart, well-educated people through labour force and workplace policies that are sensitive to knowledge economy workers.

The proposed strategies for consideration are as follows:

1. ***Ensuring that students in the education system are trained to a high degree of literacy and learn problem-solving skills. Curricula should develop programs in and emphasize “problem based learning.”***

The knowledge economy requires participants with a high degree of literacy, an ability to read, understand and transmit complex ideas and concepts as well as incorporate quantitative analysis in problem solving. School curriculums should make more use of “problem based learning” and students in this region could be given an edge by incorporating aspects of problem based learning directly into their curriculum. Problem based learning is an educational approach pioneered in medical schools that is centered around the discussion of a problem.

2. ***Embark on strategies designed to create a “networked regional economy” by capitalizing on our locational strengths in research, labour force and lifestyle. Part of capitalizing on our strengths may involve the creation of new structures, organizations or institutions as well as the augmentation of existing ones.***

Rather than locating all research and development activities in one region, firms are relocating separate operations such as research, development and production to different locations based on their cost advantages but linked via high tech and communications technology to function as a single entity as a “networked region”. Therefore, regions that are sufficiently networked into global opportunities will have the ability to reap the benefits of employment and output activity. An agency to inventory our assets and then search out and market local research expertise to external bodies could be an important catalyst. Such a *Northwestern Ontario Research, Investment and Development Corporation* would provide a coordinated entry point into the knowledge economy by marketing the region as a node for partnerships and immigration. A *Northwestern Ontario Policy Research Institute* could analyze business, scientific, economic and social issues and generate information and advice that could be applied to the region’s economy. Developing a knowledge-based economy also requires partnerships and coordination between the post-secondary sector, school boards, health authorities, arts, sports and cultural groups and government. Existing coordination frameworks for continuous

participation and communication such as the North Superior and Northwest Training Boards could be enhanced to meet new roles. Moreover, these organizations could also expand their research mandate to acquire a policy institute dimension.

3. Encourage more participation in post-secondary education and training.

According to the Institute for Competitiveness and Prosperity, Ontarians “invest less in post-secondary education, are less likely to have university degrees, particularly graduate degrees and are more likely to choose a college diploma program than a university program upon high school graduation”.¹ This situation is likely aggravated in Northwestern Ontario where rates of university education tend to fall below the provincial average and this may be hampering our participation in the knowledge economy. Business and management in northwestern Ontario should be educated on the benefits of university education and the demands of the knowledge economy for workers with advanced degrees. Moreover, given the critical importance of lifelong learning to our regional success, the university and college should consider a focus on facilitating the “downsized worker” and providing new learning and training opportunities.

4. Incentives to Attract and Retain Knowledge Workers

The market for knowledge workers is extremely competitive and thought must be given to the provision of incentives to attract and retain scientists, physicians, professors and other creative professionals to the region to serve as the leaders of the region’s knowledge economy. These incentives fall into two categories –direct and indirect. Direct incentives include innovative and exciting job opportunities, good working conditions, competitive salaries and benefits and low taxes. Indirect incentives fall into the quality of life and lifestyle environment categories so often espoused by the followers of Richard Florida.

5. Provide Economic Incentives for Knowledge Sector Development

The Northwestern Ontario knowledge economy needs the jump-start of a broad-based tax incentive zone and the provincial government should take a leadership role in this process. That is, designate the Districts of Kenora-Rainy River and Thunder Bay as a Special Tax Region (STR) within the province of Ontario. The STR would have lower provincial tax rates apply for the PST, the provincial PIT and the CIT that would provide a real and broad-based incentive for a depressed economic region. The rates for provincial sales taxes, income taxes and corporate taxes for the northwest should be set 20 percent lower than those for the province as a whole to reflect the income differences between the North and South. Attractive

¹ Institute for Competitiveness and Prosperity, Working Paper No. 4, “Striking Similarities: Attitudes and Ontario’s Prosperity Gap,” p. 8.

tax rates could be especially useful in providing incentives and assistance to the developing health research industry in the region.

6. Innovative Municipal Policies for Providing Knowledge Sector Industry Location Incentives

The economic slowdown in the region's economy has resulted in bankruptcies and surrenders of buildings and properties to municipal governments for non-payment of taxes. Municipalities may want to consider donating such properties to groups in the arts, culture, recreation and sports sector in order to return them to tax-paying status and as an incentive to attract knowledge sector activities into core areas of communities. Municipal governments need to think of themselves not just as service providers for their citizens but as "hosts" of economic activities which requires a focus on providing incentives for economic activities.

7. Resource and Transportation Sector Knowledge Creation via a Northwestern Ontario Resources and Transportation Research Institute

A crucial aspect of the development of the regional knowledge economy is to foster knowledge industries in the region's traditional resource and transportation sectors. How can new knowledge be created and applied in the region's forestry, mining and transportation sectors? Consideration should be given to creating a *Northwestern Ontario Resources and Transportation Research Institute* whose primary objective is to fund and generate scientific research in the regional resource and transportation sectors with the objective of developing innovations that can be applied to these sectors.

8. Attraction of Additional Tele-Service Industries to Northwestern Ontario

Efforts should continue to attract these private knowledge transaction sector workers. Moreover, since many Federal and Provincial government services are also now provided as tele-services, efforts should be made to attract more government tele-service functions to the region.

1. INTRODUCTION

Northwestern Ontario is in the midst of an economic crisis. Whereas in 2003, total average monthly employment in the region was 116,525, by 2005, that number had dropped by nearly 8 percent to reach 107,575. Manufacturing employment during the same period dropped from 15,183 jobs to reach 12,458 – a drop of nearly 18 percent. Coming in the wake of a difficult economic decade, the recent crisis, which is being driven by a loss of forestry sector employment, has clouded the region's economic future and spawned the search for alternatives. Indeed, dissatisfaction has even spilled over into the occasional call for new political arrangements that have been voiced with sufficient vigor to attract the attention of the international media.²

The knowledge economy is seen as a tool for diversifying the economy and it offers the best hope for the future given that transition to the knowledge economy has been underway for some time. Indeed, the transition to a knowledge economy follows on the heels of the 19th century transition from agriculture to industry and the 20th century transition from manufacturing to services. It is the purpose of this study to outline the nature of this transition, explain the role of the knowledge economy in economic change and transition and provide some suggestions for future steps to further enhance the knowledge economy.

In many respects, the knowledge economy is not really “new” because all economies in the past have required knowledge to develop and knowledge intensity has been growing since the advent of the Industrial Revolution. What is unique about the current process of knowledge being applied to economic activity is the explosive nature of the application of computer and information technologies and their global spread. The new knowledge economy differs from the older industrial economy in terms of the spread of the information and computer revolution, the advent of more flexible work and corporate organizations and the importance of knowledge and innovation networks which diffuse technological change and information around the world.³ Moreover, the global spread of communication and information technology has made knowledge industries much more mobile. Whereas the industrial revolution created a factory system for material goods, the knowledge economy is creating a more standardized “factory system” approach to many types of service industries formerly reliant on specialized human skills such as accounting, data processing and even medical diagnostics.

Knowledge can be defined as an intangible asset whose manipulation into value-added via the innovation process can be a powerful source of economic growth. Much of the emphasis in the current applications and implementation of the knowledge economy is on the development of scientific and technical knowledge and translating that knowledge via innovation into economic activity creating employment for

² For example, see the recent article in the Economist titled “The Lumberjacks are not Okay,” The Economist, March 9, 2006.

³ For an overview of the knowledge economy, see Houghton and Sheehan (2000).

technicians, engineers, scientists and software programmers. However, there are opportunities in two other areas that require policies and incentives in order to promote broad based economic growth: human and cultural knowledge, artistic knowledge. Human and cultural knowledge can partly take the form of institutions and policy and practices. In other words, the structure of government and corporations and their relationship to the economy is also a part of the knowledge economy. Then there is artistic knowledge as in the work of writers, musicians and artists. What is often overlooked is that painters, musicians, teachers, lawyers, civil servants, and accountants are also all part of the knowledge economy.

The knowledge economy is enhanced by diversity and education of the work force and there are simple ways of measuring these factors that can include:

- the proportion of population that is foreign born
- the proportion of population employed in cultural industries
- the proportion of population with post-secondary education
- the proportion of population working in technical, professional and scientific industries

Urban centres that rank highly in these measures will be centres of the knowledge economy and home to what Richard Florida has referred to as the “creative class”.

What can we do to foster these features of the labour force and promote the knowledge economy in Northwestern Ontario? The Tiebout model in economic analysis models a world in which mobile consumer-voters migrate from jurisdiction to jurisdiction in response to economic characteristics and fiscal incentives. How do we structure those incentives to attract those footloose consumer-voters and firms? Incentives include physical location, amenities, activities and opportunities, costs and incomes. You also need to make your locale “cool” though this aspect has been likely overemphasized in recent development literature. You need selective investment in areas to attract needed skills.

This strategy project will provide a framework for understanding and developing a broad based knowledge economy in Northwestern Ontario. The work will consist of four parts.

- 1) A Brief Economic History of Northwestern Ontario: The Background to Crisis
- 2) Growth and the Knowledge Economy: Principles and Examples
- 3) The Knowledge Economy in Northwestern Ontario: Current Dimensions
- 4) Into the 21st Century: Strategies for Fostering A Knowledge Economy in Northwestern Ontario

2. A BRIEF ECONOMIC HISTORY OF NORTHWESTERN ONTARIO: BACKGROUND TO CRISIS

With the onset of Confederation in 1867 and the completion of the Canadian Pacific Railway in 1885, Ontario came to see Northern Ontario as well as the Canadian west as potential hinterlands. Between 1891 and 1901, the previously “barren north” became “New Ontario” and the emphasis was on northern resource extraction to provide inputs into southern industry as well as government revenue in the form of timber bonuses and fees. Ontario implemented a northern development scheme that could be termed a “Northern Ontario Policy” that paralleled the Federal government’s National Policy.

The Federal government’s National Policy consisted of railway construction, tariff protection for industry and western settlement. Ontario’s Northern Policy provided a parallel regional program of land grants to promote agricultural settlement, the building of the Temiskaming and Northern Ontario Railway and colonization roads, and the passage of the “Manufacturing Condition” which required that timber cut on crown land be processed within the province. This development strategy was not based on altruism but on the economic needs of an industrializing province and a growing provincial public sector, which saw at its peak nearly one quarter of its revenue obtained from northern resources. Indeed, northern resource rents were a primary contribution to the economy of Ontario and the failure to retain those rents regionally may have reduced the amount of extensive economic growth necessary in the region to attain a long-run critical mass to become self-sustaining as an economy.⁴

Tables 2.1 and 2.2 reveal that from the period 1871 to 1951, the population of Northwestern Ontario grew faster than Ontario as a whole. As a share of Ontario’s population, the Northwest’s population peaked at about 3.6 percent of the Ontario total shortly after World War II and has since gradually declined. During the 1990s, slower population growth rates in the Northwest tipped over into negative growth and we have reached the lowest share of Ontario’s population in 100 years. We now account for barely 2 percent of Ontario’s population. This process has been paralleled in Thunder Bay, the region’s largest city. As Figure 2.1 illustrates, population growth slowed dramatically in the 1970s and since 1996 has declined.

The Northwest’s fastest rates of population growth occurred prior to World War Two when the labour intensive opportunities afforded by the construction of railways, resource development and agricultural settlement fueled an economic boom and substantial in-migration. Since the 1950s, the failure of the Northwest and indeed all of northern Ontario, to develop a more diversified economy as well as technological change which reduced the demand for labour in the resource and transportation sectors, has resulted in slower population growth and out-migration. As private sector job

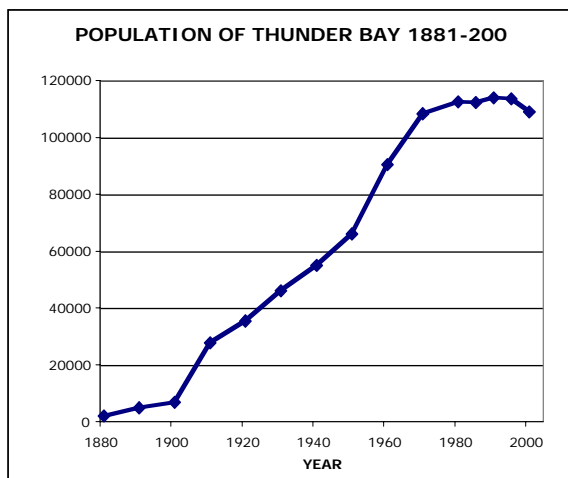
⁴ For a discussion of the impact of resource rents on the economic development of northern Ontario relative to the south see Di Matteo (1999).

creation slowed in the post-war era, government stepped in and stabilized the north's economy with public sector employment growth but even that crutch was eventually removed with the deficit fighting cuts of the 1990s.

The Northwest enters the first decade of the 21st century facing a pronounced economic decline that in turn has helped fuel a population decline which is anticipated to continue in the absence of any compensating variables such as increases in the birth rate or immigration.⁵ The forest sector crisis in particular has dealt a severe blow to the region's manufacturing sector. Whereas in 2003, total average monthly employment in the region was 116,525, by 2005, that number had dropped by nearly 8 percent to reach 107,575. Manufacturing employment during the same period dropped from 15,183 jobs to reach 12,458 – a drop of nearly 18 percent. This decline has been especially crippling to small single-industry towns in the region.

It should be noted that this type of decline is not unique to Northwestern Ontario and indeed has affected many rural-resource regions in North America. For example, the U.S. state of Montana in the mid 20th century boasted one of the highest per capita incomes among U.S. states. However, the decline of its resource extraction sector (logging, coal, oil and gas) has resulted in the loss of high paying union jobs and the decline of its per capita income to one where it is among the lowest in the United States.⁶ Population decline is also affecting many parts of the United States outside of major metropolitan centres. For example, upstate New York including counties with cities such as Buffalo has seen the population of young adults fall by more than 30 percent since 1990 due to job declines in the region and out migration.⁷ The development of globalization and the new knowledge economy has operated to concentrate employment opportunity in larger centres.

FIGURE 2.1 POPULATION OF THUNDER BAY 1881-2001



⁵ For a discussion of population decline and how it might affect Thunder Bay see Matthews (2006).

⁶ See Diamond (2004: 67).

⁷ Roberts (2006).

TABLE 2.1: POPULATION OF NORTHWESTERN ONTARIO AND ONTARIO

	NW ONTARIO	ONTARIO	% SHARE
1871	1480	1605123	0.1
1891	15194	2032930	0.7
1911	69432	2527292	2.7
1931	108396	3432683	3.2
1951	166711	4597542	3.6
1971	224370	7703106	2.9
1991	240335	10084885	2.4
2001	234771	11410046	2.1

Source: Census of Canada

TABLE 2.2: ANNUAL POPULATION GROWTH RATES (%)

	NW ONTARIO	ONTARIO
1871-1891	11.6	1.2
1891-1911	7.6	1.1
1911-1931	2.2	1.5
1931-1951	2.2	1.5
1951-1971	1.5	2.6
1971-1991	0.3	1.3
1991-2001	-0.2	1.2

3. ECONOMIC GROWTH, REGIONS AND THE KNOWLEDGE ECONOMY: PRINCIPLES AND EXAMPLES

Preparing a framework for understanding economic growth and the potential impact of the knowledge economy requires some knowledge of basic economic theory relating to economic growth and development and spatial allocation of resources. Three such approaches are 1) Export-led growth 2) Neoclassical growth and 3) the Tiebout Model. Diagrams summarizing these models are found in Figures 3.1-3.3,

Export-Led Growth

The economic development of resource abundant, sparsely populated regions has been explained by what has become known as the staples approach or models of export-led development. The staples approach sees the natural resource base as the most important determinant of the pace and pattern of economic growth. The classic exposition of staple theory was by H. A. Innis. Following earlier work by G.S. Callender (1902, 1965[1909]) and W.A. Mackintosh (1923), Innis described a general process of Canadian economic, institutional and social development rooted in the interaction between the European industrial heartland and the North American natural resource producing hinterland. The heartland exports manufactured products to the hinterland while the hinterland exports resources to the heartland.

Modern versions of staple theory see economic development as a process of diversification around an export base. The production of the export staple is represented by a production function, that is, a relationship between inputs of technology (X), natural resources (N), capital (K), and labour (L) and the output of goods and services (Q_r – resource products, Q_m -manufactured products). The production function gives rise to economic linkages between the staple exporting industry and the economy, such as the demand for production inputs and income generation (Y) which creates a domestic market for consumer goods and broadens economic development. The more linkages a staple has, the greater the subsequent growth and development.

In Thunder Bay and Northwestern Ontario, the wheat transportation and resource sector boom led to the development of a booming sector in the region's economic development. The increase in demand for labor in this sector raised incomes, which then stimulated expenditures in the non-grain transportation/resource sector. Because of transport costs associated with the import of goods as well as the relative isolation of the Lakehead, these imported goods were imperfect substitutes for local goods. Expenditures in the non-grain sector therefore stimulated the development of local manufacturing and service industries and led to greater economic development. The booming sector also attracted migration of labour and capital and investment (I) to the region leading to the expansion of the region's economy and population (POP) and technological change (ΔX). Ultimately, a successful export-led development would lead to sufficient increases in population and internal market size to create self-sustaining economic growth and

diversification via increases in per capita capital stock. This type of growth is also known as neoclassical growth.

Neoclassical Growth

Models of export-led growth are primarily demand side models as they rely on the demand for a region's export products in determining the level of growth and employment. Another approach focuses on the supply side of the economy – the interaction between saving, investment, capital formation and output growth. Such an approach can be summarized by the Neoclassical Model of Growth developed by Robert Solow and Trevor Swan.⁸

The basic mechanism focuses on individuals who save, which provides a pool of funds for investment projects. Increases in saving rates lead to an increase in investment funds, which interacts with society's demand for investment to generate an equilibrium per capita stock of capital. This per capita stock of capital or k then enters a production function for the economy where per capita output y is a function of k and determines the level of output y^* . As Figure 3.2 illustrates, the demand for investment is given by the rate of population growth n multiplied by per capita capital stock desired or nk while saving is given by the rate of saving (s) multiplied by the output function $f(k)$ or $sf(k)$. This determines the equilibrium capital labour ratio k^* which in turn plugs into the production function to determine the equilibrium per capita output y^* .

The neoclassical growth model is a convenient summary of supply side growth. Policies which boost the supply of capital per capita, technological change and increases in the savings rate via tax incentives or other policies can all help boost the per capita output level y . A key advantage of this model is that it allows for how the supply side of the economy influences per capita output which is not done by export-led models that focus entirely on the demand for exports and their impact on the overall size of the economy. Per capita output is also considered a better indicator of potential individual welfare.

The Tiebout Model

The Tiebout Model is actually a model of the determination of the decentralized provision of public goods via a migration mechanism but is applicable to the understanding of economic growth and the knowledge economy because of the tendency of knowledge sector activities to cluster in competitive nodes. According to the model originally developed by Charles Tiebout (1956), a large number of mobile and footloose consumer-voters are dispersed across a large number of communities and have to decide whether to remain where they are or migrate to a new location. In this sense, it really is simply a model of resource allocation across geographic space. Consumer voters evaluate jurisdictions based on the amenities and opportunities available and except when

⁸ For a more detailed discussion of their model, see Abel, Bernanke and Smith (1995: 194-209).

the model's system is in equilibrium, there will be a subset of consumer voters who are unhappy with the patterns of public goods provision in their community while others are satisfied. Those who are dissatisfied will move or "vote with their feet".

In an economic growth context, those communities with economic opportunities will attract citizens while those with inferior opportunities will lose them. While it is possible to have a Tiebout equilibrium with multiple jurisdictions of similar size, as Figure 3.3 shows, another outcome is that over time, more successful jurisdictions will grow while others shrink. Communities with their endowments of capital (K), labour (L), government spending (G) and tax environments (T) will engage in competition with each other for economic activity. Given the competitive nature of firms in the new global knowledge economy, one can apply the node-like framework of the Tiebout model to understanding how some communities attract knowledge sector based firms and opportunities and growth clusters and expand in size while others do not.

The Knowledge Economy and Economic Growth Models

The preceding theories of economic growth can all to a certain extent be applied to analyzing and understanding the "knowledge economy". Knowledge sector economies generate products and services in a region that can be exported which relates to models of export-led growth. Knowledge is a form of "human capital" which can be analyzed in the framework of a neoclassical growth economy. Knowledge sector employment creates concentrations of activity in geographic nodes that attract labour and capital in a Tiebout like mechanism and result in some centres growing and flourishing and others shrinking or remaining static. Thus it is possible to view the knowledge economy as regional nodes of economic activity characterized by export-led and neoclassical growth processes.

One of the most popular public representations of the knowledge economy is the work of Richard Florida who in his book *The Rise of the Creative Class* lays out the key to economic growth as the ability to attract knowledge workers or what he refers to as the "creative class". The social structure of creativity includes new systems for technological creativity and entrepreneurship (such as venture capital financing), new and more effective models for producing goods and services (e.g. Outsourcing and modular manufacturing) and a broad social, cultural and geographic milieu conducive to creativity (e.g. urban lifestyles and cultural environments).⁹

Florida has drawn the connection between the location of high-tech and knowledge based industries and the attractiveness or "coolness" of the cities housing these industries. He constructed indices of the qualities of these cities and regions based on items such as the number of artists, writers and performers in a city or "Bohemians" as well as the concentration of scientists, engineers, professors and think-tank employees. In general, Florida found that these indices were correlated with each other as well as economic growth and population diversity measures. Florida took this information and concluded that there was a causal link between all these indicators of the "Creative

⁹ Florida, p. 48.

Class.” He then took the next step and linked economic growth not to economic fundamentals such as resource availability, market location, input costs and taxes but to the creative workers living in cities that they liked and the companies and businesses they created. What attracted these footloose creative workers was cities and regions that were tolerant, very diverse and open to the employment flexibility preferred by the knowledge workers of the “creative class.” The result has been a prescription for economic development that has focused on making cities cool by touting themselves as culturally diverse, investing in cultural and recreation facilities such as music festivals and bike paths.

Moreover, Richard Florida emphasizes the different workplace styles that the new economy has brought about and that new economy employers utilize in order to keep their employees happy and productive. Dealing with creative and individualistic new economy employees has been referred to as “herding squirrels” and key elements of motivating and retaining workers include constant challenge and responsibility, flexible work schedules and environments, good compensation, professional development opportunities, peer recognition and finally, the amenities of good locations and communities.¹⁰

In the wake of the internet meltdown of the early 21st century, however, some critics have argued that a focus on old-economy ideas such as profits and taxes has re-emerged while some of Florida’s most favoured cities in terms of his diversity and creativity indicators have actually not performed that well economically when job growth stats are examined. Indeed, over the period 1983-2003, Richard Florida’s most creative cities (his top 10) saw employment growth of 39 percent while the least creative cities (bottom 10) saw growth of 62 percent.¹¹ It leads one to wonder whether the tax increases and fees levied in some cities in an interventionist attempt to create new stadium complexes and quirky art scenes do not eliminate as many jobs as they create.

However, the crash of the internet bubble century may have affected the centre of the knowledge economy harder than other centres in the short run. Moreover, it has been suggested that the contribution of the knowledge economy is often underestimated. For example, Audretsch, Aldridge and Oettl (2006) write that in the case of commercialization of university research, current measures do not cover the full spectrum of commercializing activities and that the contribution of universities to innovation and growth may be greater than had been previously realized.

What this suggests is that while knowledge creation and knowledge industries are important and policies to foster them are important, they must be placed alongside traditional “old-economy” economic determinants such as tax policy, interest rates, resource availability and labour force skills. The knowledge economy and policies to foster it should be seen as a complement to the region’s current mix of economic activities rather than some type of panacea. Indeed, it would not be so bold to suggest

¹⁰ Florida (2002: 99).

¹¹ See Malanga (2004) for a critique.

that in Northwestern Ontario, what is needed is a dose of creativity and knowledge applied to doing better with current activities rather than focusing on a paradigm designed to reinvent the entire economy. What has perhaps been lacking in Northwestern Ontario is more creative ways of generating new knowledge to apply to our current economic base in transportation and resources. For example, what new products can we develop to better utilize and add value to our wood resources? What innovations can we implement to add more value to our role as a center for the trucking industry or the rail, port and air travel industries?

In Canada, the Waterloo, Ontario region is often offered as the quintessential example of a model for the new economy economic future.¹² As a result of innovation rooted in the dissemination and creation of knowledge from its university sector, while jobs are being shed in traditional manufacturing, they are being created in education, finance, insurance, retail and information and cultural activities. Between 2000 and 2005, total employment in the region rose from 195,200 to 218,500 jobs while employment in manufacturing shrank from 67,800 to 61,100 jobs. The key lessons of success from this region have been distilled down to the following: 1) using the post-secondary sector to churn out a pool of technical expertise and innovation, 2) building networks of business and government leaders who collaborate on projects focused on the region's strengths in industry and education thereby creating a regional brand. 3) attract and retain smart people. In a recent CIBC report on metropolitan economic activity for 2005, the Kitchener-Waterloo area led all of Canada in the index of economic growth.¹³ Cities at the bottom of the index include Kingston, Sherbrooke, Regina and Thunder Bay. The issues affecting the performance of the underachievers include the presence of a declining sector linked to older industry, aging populations, the attraction of younger population to high growth regions and absence of champions and coherent strategies to drive growth.

A recent working paper of Ontario's Institute for Competitiveness and Prosperity¹⁴ has argued that much of Ontario's productivity performance is rooted in the economic, fiscal and political barriers handicapping our cities and that closing the "urban prosperity gap" is the key to closing Ontario's prosperity gap. The report argues that the capacity for innovation is built on attitudes towards competitiveness and growth, investment in human and physical capital, motivations and incentives such as taxes, and the fiscal and governance structures or institutions. The report is very much in the tradition of Richard Florida's work on creativity and provides measures ranking Ontario cities according to their appeal to attracting the "creative class". The Northern

¹² Keenan, G., G. Pitts and H. Scofield (2006) "A Place that doesn't hold back its best" The Globe and Mail. April 26, p. B10.

¹³ CIBC World Markets Metropolitan Activity Index (2005 3Q moving average). See H. Scofield, (2006) "Pitfalls line the road to a new prosperity," The Globe and Mail. April 26, B6.

¹⁴ Institute for Competitiveness and Prosperity (2003), Working Paper No. 4, "Striking Similarities: Attitudes and Ontario's Prosperity Gap,"

FIGURE 3.1: MODEL OF EXPORT-LED DEVELOPMENT

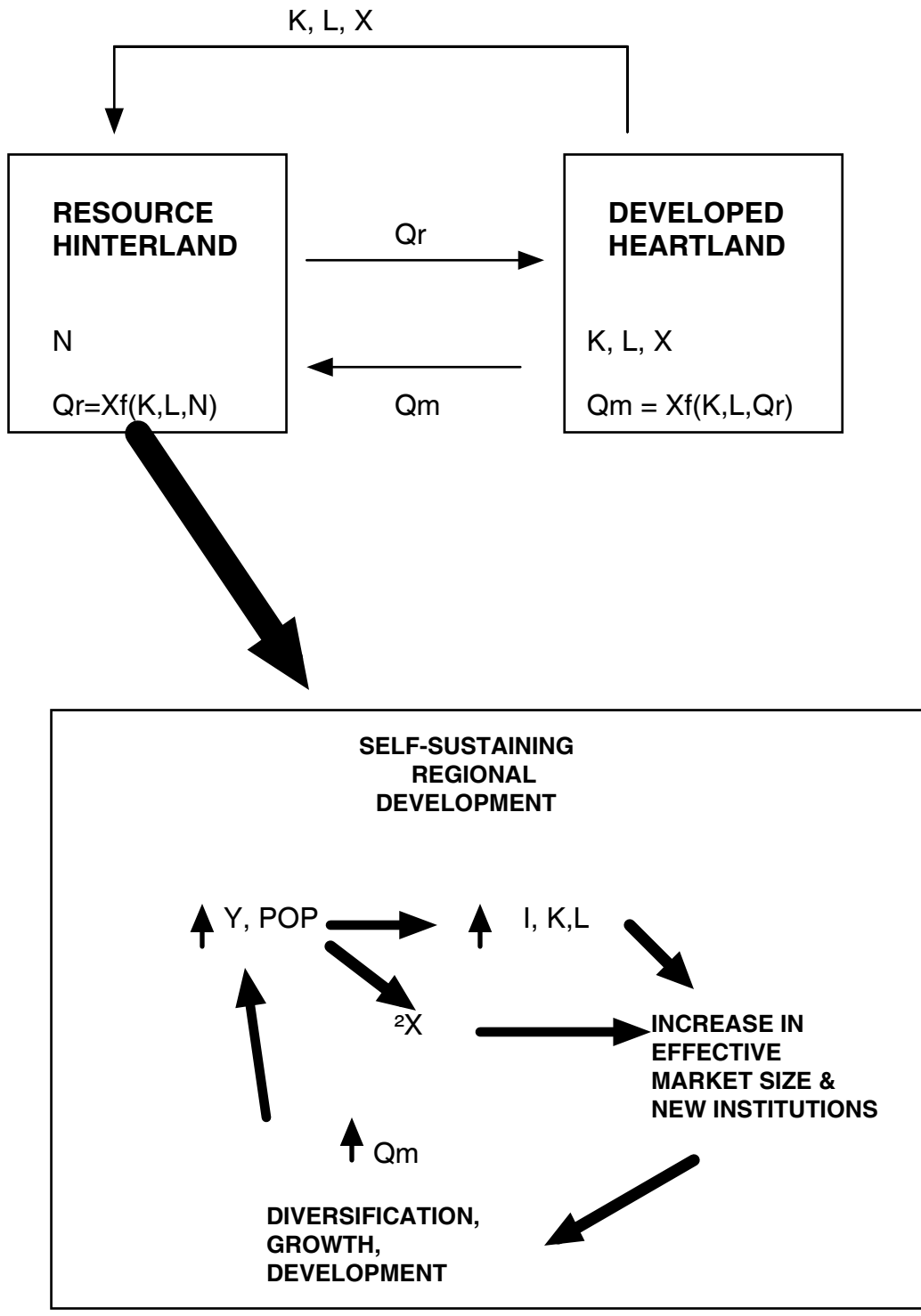


FIGURE 3.2: NEOCLASSICAL MODEL OF GROWTH AND DEVELOPMENT

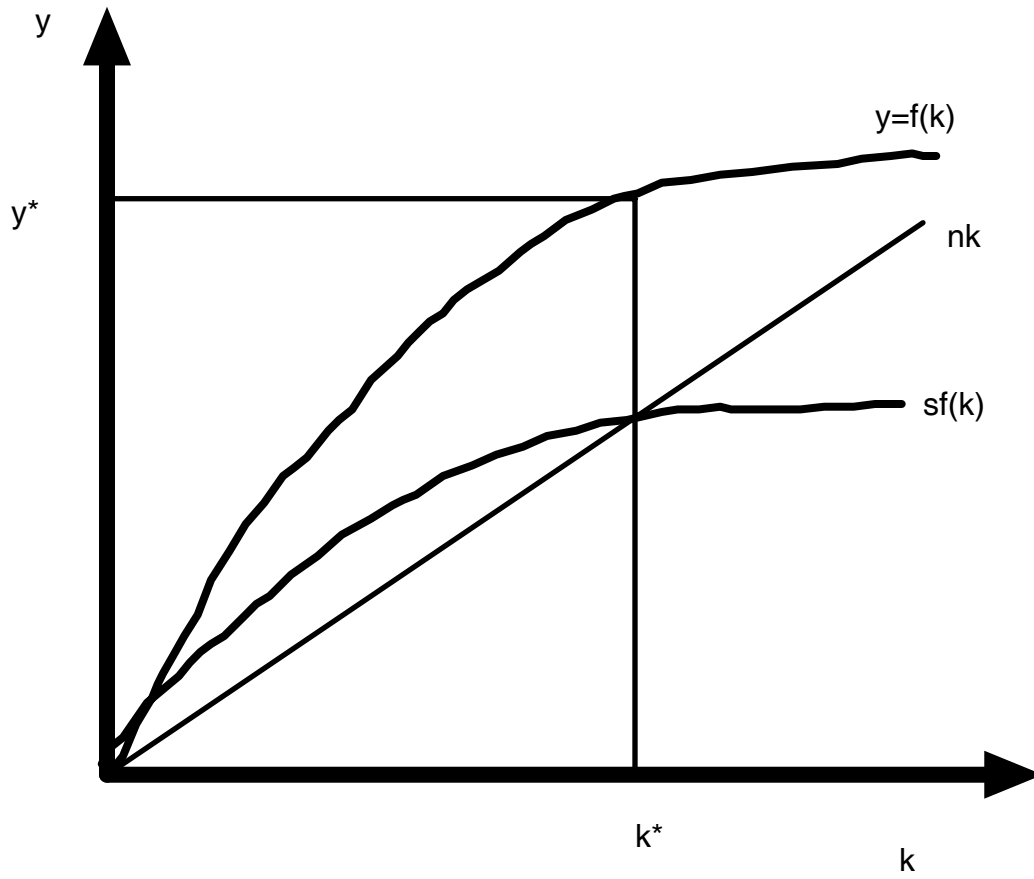
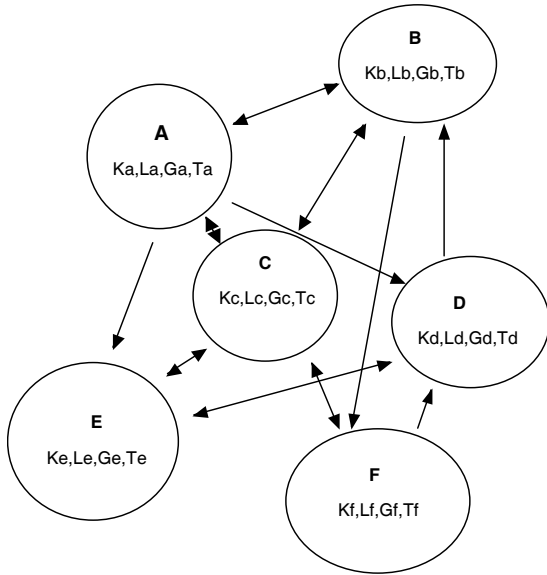
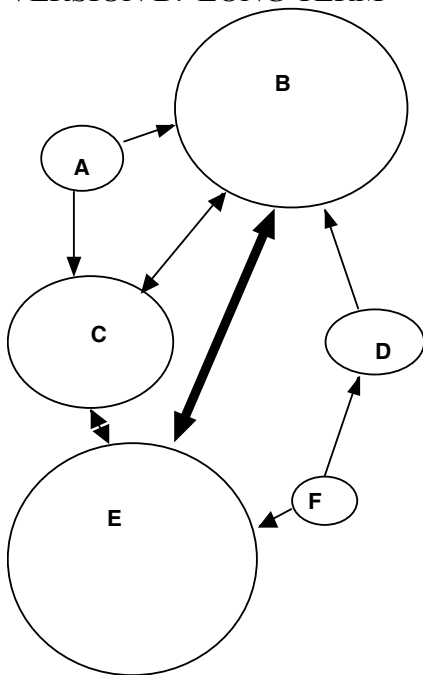


FIGURE 3.3: TIEBOUT MODEL OF SPATIAL RESOURCE ALLOCATION AND GROWTH IMPLICATIONS

VERSION A: "SHORT TERM"



VERSION B: "LONG TERM"



LEGEND

K-Capital; L-Labour; G-Government Spending; T-Tax Environment

Ontario cities of Thunder Bay and Sudbury score poorly relative to the other cities in terms of measures such as the proportion of artistically creative people (the Bohemian Index), measures of human capital (the Talent Index) and the relative size of the high tech work force (Tech Pole Index).

Internationally, there has been substantial interest and activity in promoting the knowledge economy at both national and regional levels. An Australian research study has argued that the emerging knowledge economy has a number of policy implications, key of which is the changing role of government in the globalized knowledge economy. The role of government in a globalized economy is transformed from “that of governance to that of ‘host’ of economic activities”¹⁵ and therefore governments need to focus on providing conditions and incentives through appropriate financial, competition and information policies.

Recently, the Irish government established an action plan to build its knowledge economy which focuses on promoting investment in research and development so that by 2010 Ireland “will be internationally renowned for the excellence of its research and be at the forefront in generating and using new knowledge for economic and social progress...”¹⁶ The Irish plan has set targets for level of business investment in R&D that aim to increase the proportion of private R&D as a proportion of GDP from 0.9% to 1.7% and to accompany this with an increase in public R&D from 0.4% of GDP to 0.8% of GDP. One of the targets also aims to nearly double the number of researchers per capita from 5.1 per 1,000 in 2001 to 9.3 per 1000 by 2010. In order to achieve these targets, the Irish vision proposes developing a culture of invention, risk-taking and entrepreneurship, develop a less bureaucratic approach to R&D support, develop the seed capital market for early stage ventures, building an international reputation for research excellence and making Ireland an attractive environment for high quality researchers and research careers.

A study for Helsinki, Finland outlines factors that can make a city-region stronger in the knowledge economy. The four key factors according to this study are A) Attracting and retaining knowledge workers B) creating new knowledge both scientific and non-scientific C) Applying knowledge by transferring it from knowledge generating to business uses and D) developing growth clusters.¹⁷ The report argues that the degree of success in setting up and implementing knowledge related activities to stimulate economic clusters “depends on the quality of the organizing capacity in the city: vision, strategy formation, leadership and strategic co-operation.”

The role of universities in developing regional knowledge economies is seen as crucial and “has gone beyond the study of technology transfer and direct employment effects of spin-off companies”.¹⁸ According to Peters and May (2004) universities are

¹⁵ Houghton and Sheehand (2000: 19).

¹⁶ Building Ireland’s Knowledge Economy (2004: 2).

¹⁷ Van den Berg, Pol, Winden and Woets (2004: 23).

¹⁸ Peters and May (2004: 270).

now also viewed as part of the human and social capital structure of a region and provide student recruitment and placement policies, research networks and professional development programs for managers and staff. Around the world, governments are now devolving some aspects of regional strategies to sub-regional bodies which are more grass-roots and better able to co-ordinate local partners such as health authority's universities, local education groups, charities and municipal governments in development partnerships.

4. THE KNOWLEDGE ECONOMY IN NORTHWESTERN ONTARIO: CURRENT DIMENSIONS

Regional Measures of the Knowledge Economy

According to Richard Florida, the knowledge economy is enhanced by diversity and education of the work force and there are simple ways of measuring it that can include:

- the proportion of population that is foreign born
- the proportion of population employed in cultural industries
- the proportion of population with post-secondary education
- the proportion of population working in technical, professional and scientific industries

A number of quantitative estimates and measures are presented in this section in an effort to measure the extent of and recent trends in the development of Northwestern Ontario's knowledge economy. Some of these measures are for the Thunder Bay CMA region only while others cover the entire Northwestern Ontario region. As the regional centre for the region and the largest urban centre, Thunder Bay is expected to be a growth engine for the region with respect to many of the new economy industries especially given its concentration of health and post-secondary education infrastructure. As a result, it should be expected that how Thunder Bay stacks up in the world of the knowledge economy is quite important.

The most recent Census provides interesting comparisons between Thunder Bay and Ontario as a whole. Figure 4.1 suggests that the Thunder Bay Census Metropolitan area has a population that is not as diverse as that of Ontario as a whole. According to the 2001 Census, nearly 27 percent of Ontario's population can be classified as immigrants whereas only about 11 percent of Thunder Bay's population is in the same category. Moreover, while about 19 percent of Ontario's population can be classified as a visible minority, only 2 percent of Thunder Bay's population is in this category. However, nearly 7 percent of Thunder Bay's population is aboriginal compared to just under 2 percent for Ontario as a whole. Therefore, it can be inferred that Thunder Bay and by extension northwestern Ontario do not contain the diverse populations that usually characterize new economy/knowledge economy regions.

When it comes to measures of education, Thunder Bay performs well in terms of college education measures but not as well in terms of the university education

population when compared to Ontario as a whole. Figure 4.2 shows that in both the 20-34 and the 35-44 age categories, Thunder Bay has a lower proportion of its population with a completed university degree than Ontario. However, it has a slightly larger proportion of its population in those age categories with a college certificate or diploma. According to the 2001 Census, the proportion of the population aged 20-34 in the Thunder Bay CMA with a college certificate or diploma was 21.8 percent compared to 19.5 percent for Ontario as a whole. However, the proportion of the population aged 20-34 with a university certificate; diploma or degree was 19.2 percent in the Thunder Bay CMA compared to 25.7 percent in Ontario as a whole. For the population aged 35-44, the proportion with a college certificate or diploma was 22.5 percent in Thunder Bay and 21.2 in Ontario, while the proportion with a university degree, certificate or diploma was 17.4 percent in Thunder Bay and 24.3 in Ontario.

Figure 4.3 compares employment shares in key new economy sectors for Thunder Bay and Ontario. In the key knowledge economy sectors of science and culture related employment, Thunder Bay lags Ontario as a whole. Ontario has larger shares of its employment in the sectors of management, business, finance and administration, natural and applied sciences and as well as arts, recreation and culture. On the other hand, Thunder Bay has larger shares of employment in the health sectors and the social science, education, government and religion sectors.

While Thunder Bay and by extension northwestern Ontario have lagged the rest of the province in terms of knowledge economy indicators and employment, the fact remains that knowledge sector employment has been growing over the last decade. Figures 4.4-4.7 present measures of knowledge sector employment over time for all of northwestern Ontario which suggest substantial growth in knowledge sector employment in the region even while there have been declines in traditional resource and transportation based industries.

Three definitions of knowledge sector employment are constructed from available monthly Statistics Canada data. 1) ***Core Knowledge*** sector employment is defined as employment in the occupational categories of professional business and finance, teachers and professors, professional scientific and technical employment, professional health employment, and finally arts, cultural and sports employment. This definition of “Core knowledge sector” employment broadly corresponds to the super creative core concept developed by Richard Florida and includes mainly professional categories.¹⁹ 2) ***Augmented Core Knowledge*** Sector employment takes the core knowledge sector definition and adds public administration employment to it given its importance in the northwestern Ontario economy and the fact that in this region it is more than simply a

¹⁹ Florida’s Creative Class consists of two groups – the Super-Creative Core and the Creative Professionals. The Super-Creative Core includes computer and math occupations, architecture and engineering, life, physical and social sciences, education, arts, design, entertainment, media and sports. Creative Professionals includes managerial occupations, business and financial, legal, health care practitioners and technical occupations and high end sales and management.

service sector. This definition corresponds approximately to Florida's creative class concept. 3) **Broad Knowledge** sector employment is the sum of employment in those employment sectors that are most representative of new economy type activities. They include all of the employment in the Augmented Core concept plus add the remaining employment in the sectors of finance, insurance and real estate, education, health and social services, and information and recreation. This definition of knowledge sector employment is the least useful in that it really is more of a service economy type measure. Moreover, it does not correspond to Florida's definition of the creative class.

Figures 4.4 and 4.5 plot the average monthly core knowledge sector employment for northwestern Ontario and the share of total employment for the period 1988 to 2005. The results for both the absolute number of jobs as well as the share of total employment trend upwards, suggesting that the shift to a knowledge economy is already underway. In 1988, average monthly core knowledge sector employment was 13,300 and by 2005 this had risen an impressive 23.5 percent to reach 16,429. At the same time, as summarized in Table 4.1, non core knowledge sector employment declined from 99,067 to 92,354 jobs – a decline of 6.8 percent or approximately 6713 jobs. This suggests that growth in the knowledge sector has cushioned the overall decline in employment that has occurred primarily in traditional resource based manufacturing in the region. The share of employment that can be attributed to core knowledge sector activities rose from 11.8 percent in 1988 to 15.7 percent in 2005, which places the region near the bottom of the scale ranking of American cities for knowledge intensity of employment as calculated by Richard Florida.

Figures 4.6 and 4.7 plot average monthly augmented core knowledge sector employment for northwestern Ontario and the accompanying share of total employment for the period 1988 to 2005 and the results again reveal an upward trend. Growth in the augmented core knowledge employment rises from 20,780 to 23,129, which represents 11 percent growth. As well, the share of total employment in this augmented core knowledge sector now rises from 18 percent of total employment in 1988 to reach 21.5 percent in 2005 – which is still at the bottom of the rankings for American cities.

Table 4.1 summarizes all these results and also includes figures for broad knowledge sector employment and those figures show growth in all three measures of knowledge sector employment as well as a decline in total employment over the period 1988 to 2005. The conclusion that can be reached from the analysis of these numbers is that transition to a knowledge sector economy is underway in northwestern Ontario and the growth in employment in the knowledge sector has helped mitigate employment declines that have occurred in resource based manufacturing. Moreover, the growth rate has been most impressive in the core knowledge sector employment category with an increase between 1988 and 2005 of nearly 24 percent.

However, in terms of intensity as measured by the share of total employment, Northwestern Ontario lags American regions of similar size, which means that there are substantial gains to be made. Table 4.2 presents the employment shares for the Core Knowledge and Augmented Core Knowledge measures for northwestern Ontario and

also the Super Creative Core and Creative Class employment shares for U.S. city-regions with fewer than 250,000 people. There are 124 U.S. city-regions in the 250,000 and under population category and after they were ranked by the size of their creative class, the top, middle and bottom five were selected for this Table. As Table 4.2 illustrates, when it comes to a comparison based on the size of the super creative core, northwestern Ontario compares favourably with cities in the Top 5 category with a super creative core larger than Bloomington, Santa Fe and Springfield but substantially smaller than Gainesville or Bryan. However, when the broader definition of Creative class is used, northwestern Ontario's employment share is definitely in the bottom half of the ranking given that its employment share is below 25 percent.

North Superior Training Board Survey Results

The North Superior Training Board administered its regular Labour Market Questionnaire, which added several questions designed to obtain insight into the extent of the knowledge economy workplace styles and attributes among firms in Northwestern Ontario. A total of 50 surveys were returned and the distribution of firms was approximately 16 percent in the goods producing sector and 84 percent from the services sector, closely matching the region's actual employment distribution. Average full-time employment among these firms was 51 and ranged from a 0 full-time employees to 1100. In 2006, responding firms anticipate hiring an average of 3.6 employees ranging from a low of 0 to a high of 60. In five years, 48 percent of respondents felt they would have more employees.

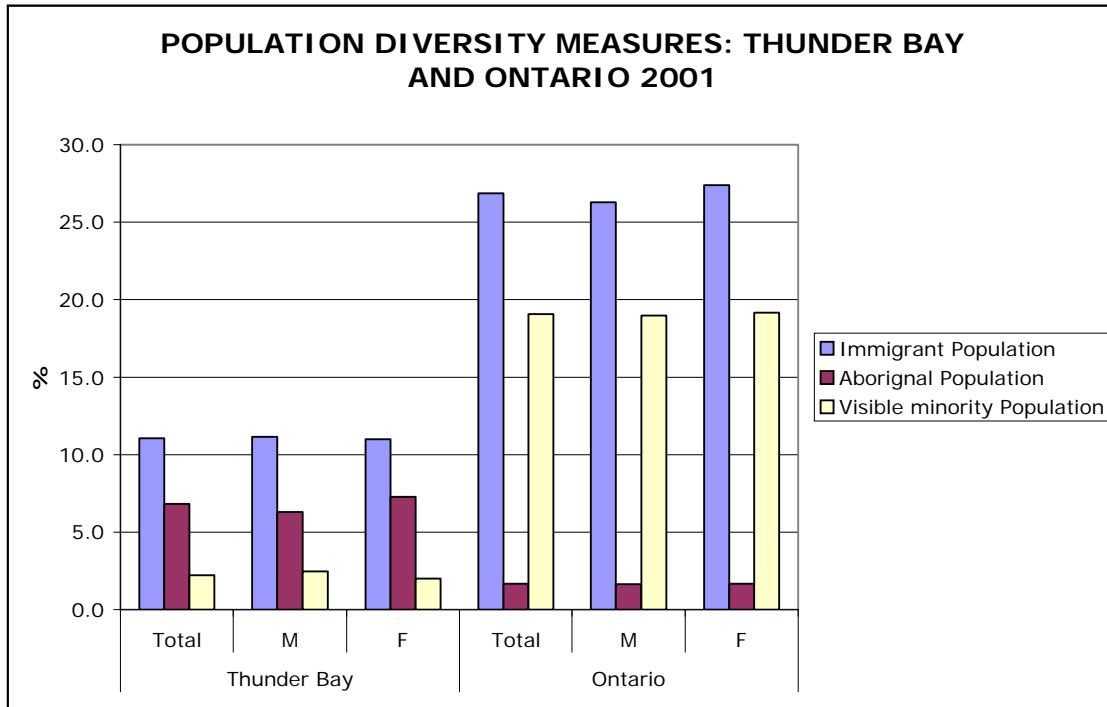
With respect to the educational attainment of the work force, on average, survey firms reported that 21 percent of their workforce had a university degree, 37 percent had a college diploma or certificate and 35 percent had only a high school degree. These results parallel the broader census results for the region and suggest that among employers in the region there is underinvestment in a university-educated workforce.

When it came to questions on features of knowledge economy employment, firms seemed to have a high degree of engagement with the workplace characteristics of firms in the knowledge economy. When asked what percentage of their employees are required to on a regular basis engage in thinking independently on their own, the average response was 91 percent. On the other hand, the average percentage of employees who were expected to respond to and implement employer directives was 88 percent. Meanwhile, an average of 90 percent of employees were expected to engage in problem solving, 79 percent were expected to function according to a standardized template for corporate operations and only 41 percent had to maintain a uniform dress code. These results suggest that many features of the flexible and open new economy workplace have begun to make their way into regional employment practices. On the other hand, given the high percentages that were reported both for "thinking independently" and "implementing employer directives" suggest that there may be a certain amount of conflicting tension in some workplaces.

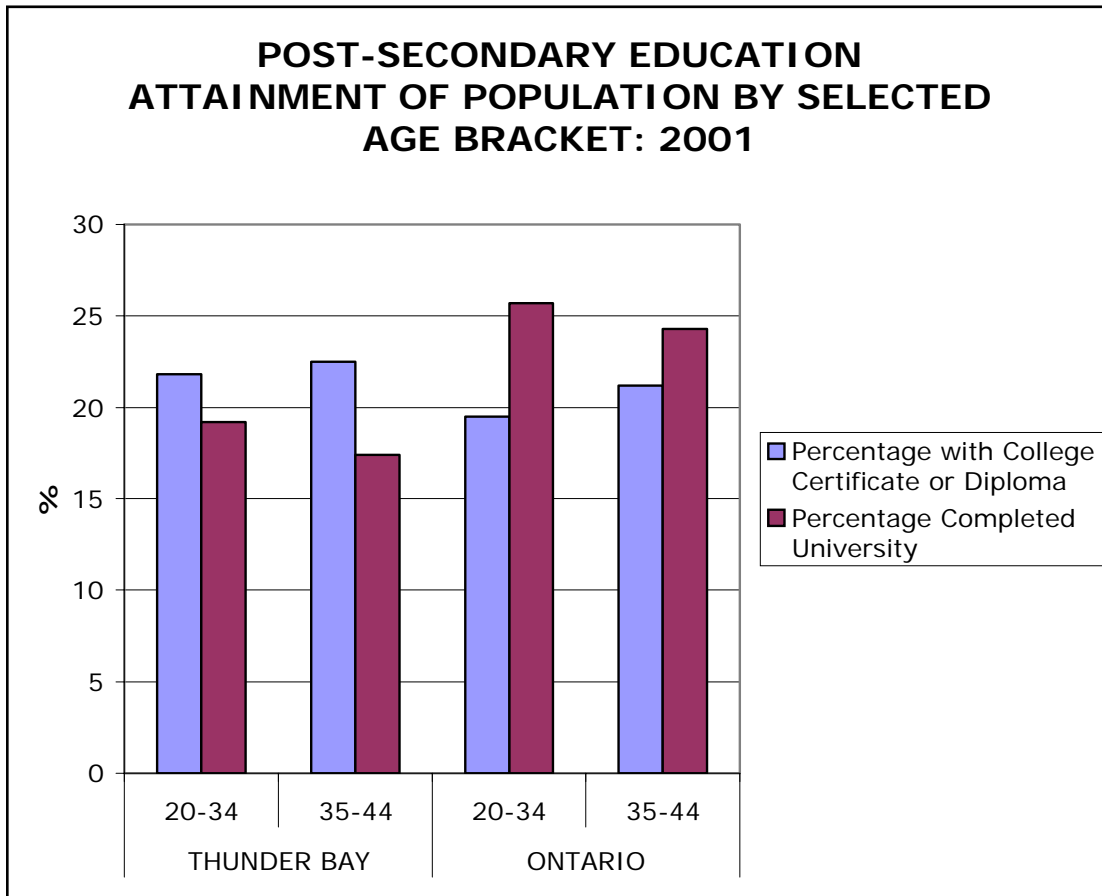
Finally, when asked to rank themselves, most employers self-reported high rankings for workplace environment criteria that characterize knowledge economy firms. On a

scale of 1 to 5 with 1 as high and 5 as low, the average score for providing employees with challenge and responsibility was 1.9, for flexible work schedules and environment it was 2.1, for peer recognition of activity it was 2.3 and for a supportive and inclusive organizational culture it was 2.1.

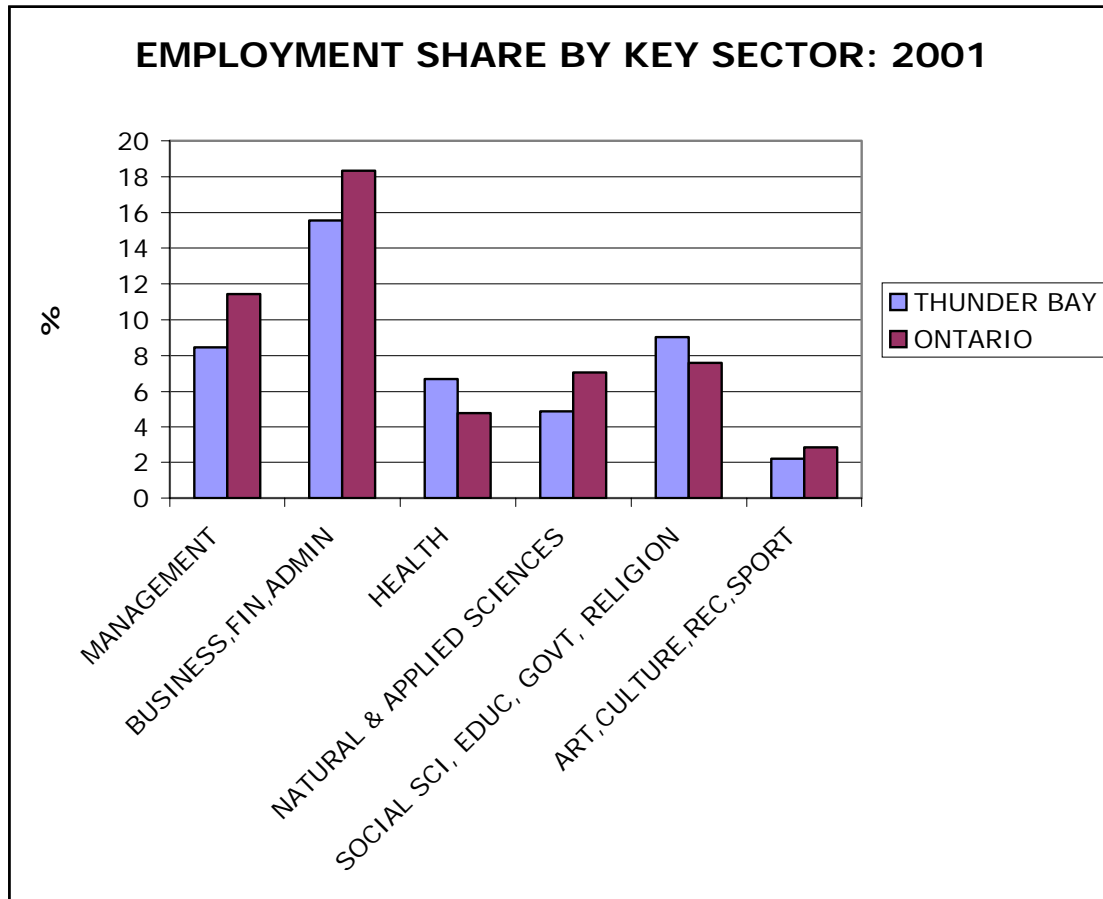
FIGURE 4.1 POPULATION DIVERSITY MEASURES



Source: 2001 Census of Canada

FIGURE 4.2 EDUCATION MEASURES

Source: 2001 Census of Canada

FIGURE 4.3 OCCUPATIONAL SHARE MEASURES

Source: 2001 Census of Canada

FIGURE 4.4 CORE MONTHLY NW ONTARIO KNOWLEDGE SECTOR EMPLOYMENT WITH TREND*:1988-2005

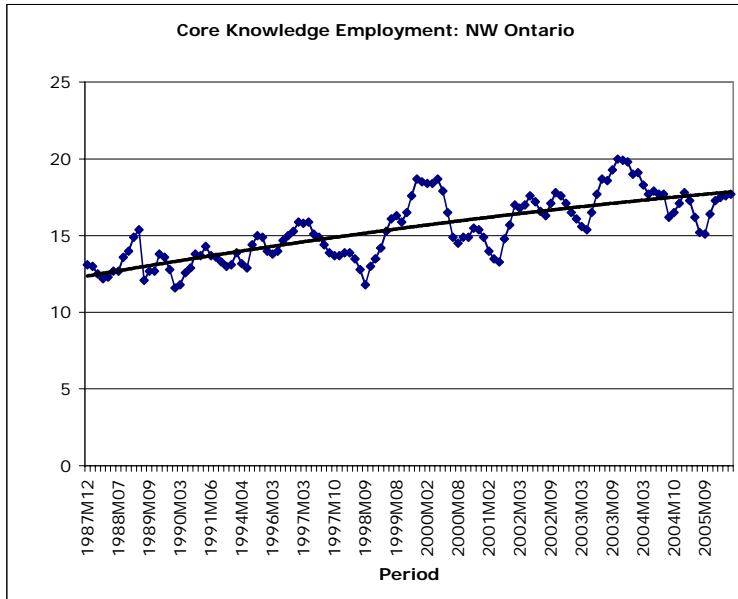
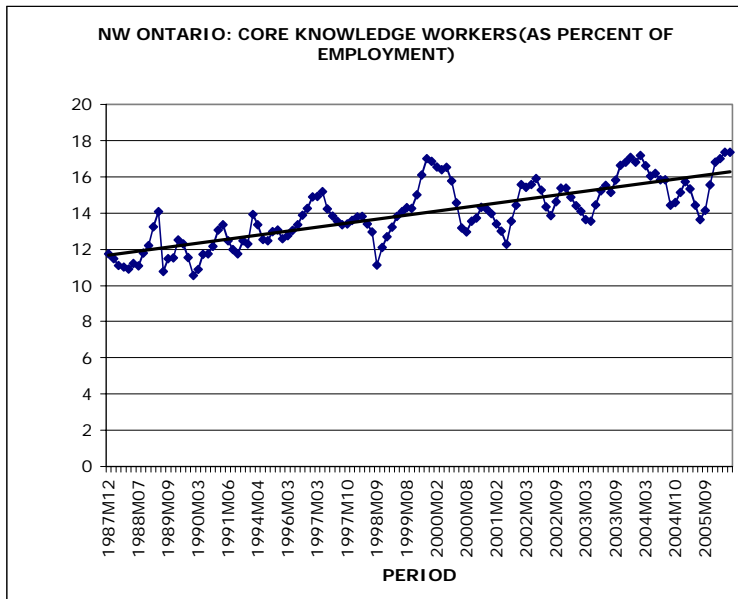


FIGURE 4.5 CORE MONTHLY NW ONTARIO KNOWLEDGE SECTOR EMPLOYMENT SHARE WITH TREND*:1988-2005



* Fitted Trend of the linear form $y=a+mx$.

FIGURE 4.6 AUGMENTED CORE MONTHLY EMPLOYMENT NW ONTARIO WITH TREND*:1988-2005

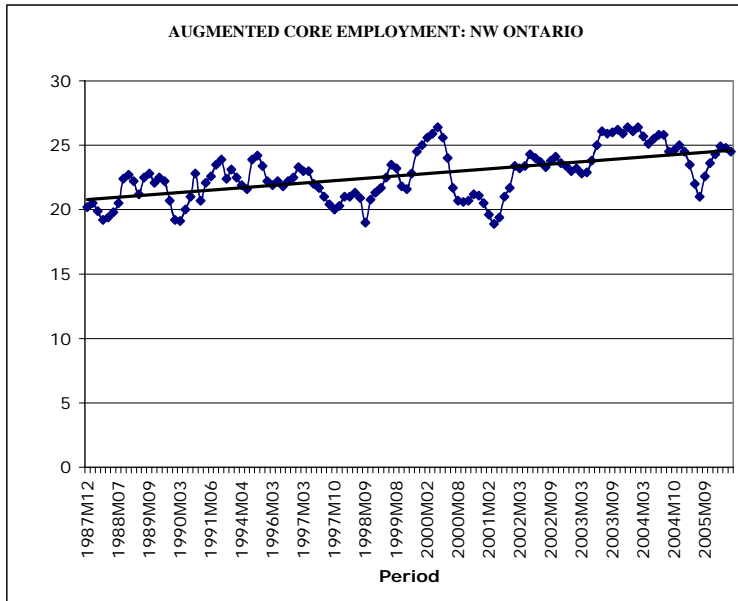
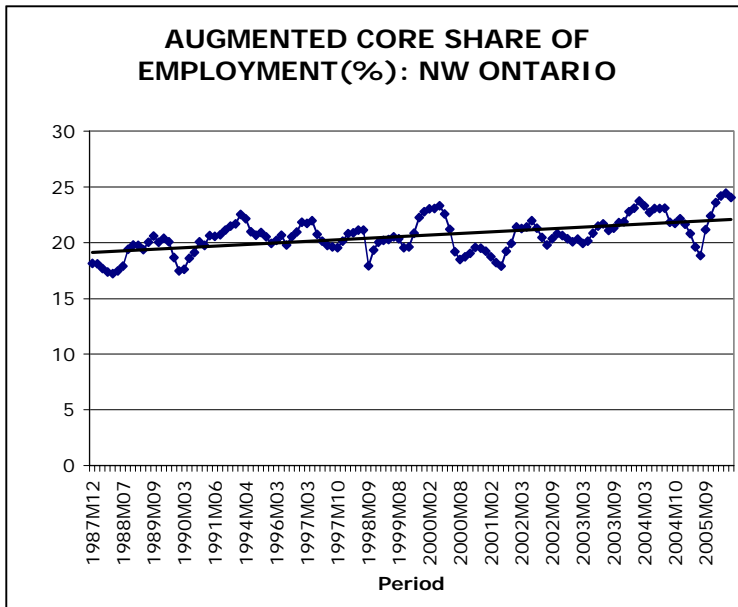


FIGURE 4.7 AUGMENTED CORE SHARE OF MONTHLY EMPLOYMENT NW ONTARIO WITH TREND*:1988-2005



* Fitted Trend of the linear form $y=a+mx$.

Table 4.1
Summary of Employment Changes for Northwestern Ontario:1988-2005

<i>Year</i>	<i>Average Total Employment</i>	<i>Average Core Knowledge Sector Employment</i>	<i>Average Augmented Core Knowledge Sector Employment</i>	<i>Average Broad Knowledge Sector Employment</i>
1988	112,367	13,300	20,780	47,510
2005	108,783	16,429	23,129	56,200
Percent Change	-3.2	23.5	11.3	18.3
Jobs Created	-3584	3129	2349	8690

Table 4.2
Comparing Knowledge Sector Intensity of Northwestern Ontario to other
Cities/Regions using Employment Shares

	<i>Core Knowledge</i>	<i>Augmented Core Knowledge</i>	<i>Total Employment</i>
<i>Northwestern Ontario (2005)</i>	15.1%	21.3%	108,783
<i>U.S. Regions with < 250,000 Population by Employment Share Rank</i> (Source: Florida 2002).			
	<i>Super Creative Core (%)</i>	<i>Creative Class (%)</i>	<i>Total Employment</i>
<i>Top 5</i>			
<i>Bloomington, IL</i>	13.3	39.9	80,850
<i>Gainesville, FL</i>	20.9	39.2	114,750
<i>Bryan, TX</i>	22.1	38.4	67,360
<i>Santa Fe, NM</i>	12.5	35.3	58,960
<i>Springfield, IL</i>	11.9	32.5	93,380
<i>Middle 5</i>			
<i>Champaign, IL</i>	4.3	25.3	70,310
<i>Dubuque, IA</i>	7.4	25.2	46,230
<i>Parkersberg, WV-OH</i>	4.8	25.1	58,410
<i>Johnstown, PA</i>	7.6	25.0	80,170
<i>Dothan, AL</i>	6.9	25.0	63,860
<i>Bottom 5</i>			
<i>Elkart, IN</i>	4.8	17.7	123,470
<i>Yuma, AZ</i>	8.7	16.0	43,190
<i>Houma, LA</i>	1.2	15.0	64,690
<i>Jackson, TN</i>	1.6	14.8	37,720
<i>Victoria, TX</i>	1.6	14.2	25,310

5. INTO THE 21ST CENTURY: STRATEGIES FOR FOSTERING A KNOWLEDGE ECONOMY IN NORTHWESTERN ONTARIO

Creating a knowledge economy in Northwestern Ontario should focus on the “hard” rather than the “soft” end of the knowledge economy. That is to say, strategies should endeavor to create and train knowledge workers, create new knowledge and apply it to the regional economy rather than focus on policies designed to make the region “cool” in order to attract knowledge workers. While the “coolness” factor is not irrelevant, such attributes should follow rather than lead the development of the knowledge sector so as to enhance it rather than create it. In addition, fostering the knowledge economy requires new institutions and organizations. It has been noted that regional and national decline is often a result of organizational and cultural hardening of the arteries or what can be termed “institutional sclerosis”. Put another way regions that are successful in one era find it difficult to adopt new organizational and cultural patterns, regardless of the potential benefits.²⁰ The essence of the proposed new strategies is to boost the supply of highly educated workers, boost regional knowledge creation, create new institutions and networks to lead a coherent entrepreneurial regional strategy and retain the region’s supply of smart, well-educated people through labour force and workplace policies that are sensitive to knowledge economy workers. These proposals help build on current knowledge sector initiatives currently underway in bio-tech, health care research, post-secondary education and tele-services.

Strategies for Consideration

1. *Ensuring that students in the education system are trained to a high degree of literacy and learn problem-solving skills. Curricula should develop programs in and emphasize “problem based learning.”*

Key to participating in the knowledge economy is a high degree of literacy and the evidence suggests that Canadians are not being well prepared for participation in the new economy. According to the 2005 Adult Literacy and Life Skills Survey, 42 percent of Canadians are below the functional level of literacy using a more comprehensive measure of literacy that scores along the four domains of prose, document, numeracy and problem solving (Pound 59). Past interpretations of literacy have focused on a simple binary relationship – one is literate or not. A more accurate interpretation of literacy is along a continuum with low literacy at one end of the scale and high literacy at the other. The knowledge economy requires participants with a high degree of literacy, an ability to read, understand and transmit complex ideas and concepts. They must be able to relate quantitative concepts to qualitative ones and apply their analysis to problem solving. According to Glenn Pound: “Literacy is not a simple issue of reading and writing. It also involves social, cultural and functional codes that help us participate in our society.”²¹

²⁰ Richard Florida (2002); Mancur Olson (1986, 1971).

²¹ Pound 62.

School curriculums should also make more use of “problem based learning” which was pioneered for use in medical school curriculums but could provide benefits at the elementary, secondary and post-secondary levels. Problem based learning (PBL) is:

an educational format that is centred around the discussion and learning that emanates from a clinically-based problem. It is a method that encourages independent learning and gives students practice in tackling puzzling situations and defining their own gaps in understanding in the context of relevant clinical problems, hopefully making it more likely that they will be able to recall the material later in the clinical setting. It is a way of learning which encourages a deeper understanding of the material rather than superficial coverage.²²

Given the requirements of the knowledge economy, students in this region could be given an edge by incorporating aspects of problem based learning directly into their curriculum.

2. ***Embark on strategies designed to create a “networked regional economy” by capitalizing on our locational strengths in research, labour force and lifestyle. Part of capitalizing on our strengths may involve the creation of new structures, organizations or institutions as well as the augmentation of existing ones.***

The notion of clusters of development focused on firms, resources and government sharing support and infrastructure in a region is giving way to a new concept of the “networked region”. Rather than locating all research and development activities in one region, firms are relocating separate operations such as research, development and production to different locations based on their cost advantages but linked via high tech and communications technology to function as a single entity. Therefore, regions that are sufficiently networked into global opportunities will have the ability to reap the benefits of employment and output activity. Research, development and commercialization can be spread across the world via a network of hubs and nodes of activity that do not need to be linked by geographic proximity.²³ In bio-tech, for example, local firms, local researchers and the local medical sector can develop partnerships with international pharmaceutical companies and international research agencies to locate some product development and testing facilities in northwestern Ontario. As Yali and Seline (2005) write:

“the concept that a region must have all the elements to support life sciences research, development and commercialization no longer reflects industry dynamics. This changing paradigm leads us to suggest that regions must decide if their local assets and critical mass compose a hub (the core location providing momentum for development) or a node (a significant contributor to a national or international hub).”

²² Queen’s University MD Program Phase II Problem Based Learning Student Tutor Handbook

²³ See Global Hubs and Global Nodes (2005).

Part of capitalizing on our strengths to create a networked regional economy may involve the creation of new structures, organizations or institutions as well as the augmentation of existing ones. For example, an agency to inventory our assets and then search out and market local research expertise to external bodies could be an important catalyst. Such a *Northwestern Ontario Research, Investment and Development Corporation* would provide a coordinated entry point into the knowledge economy by marketing the region as a node for partnerships and immigration. Major advantages of decentralizing research functions to smaller centers include lifestyle issues as well as the lower cost of establishing labs and facilities as well as the lower cost of living. Such a strategy would look to the region for partners and resources and then look externally for opportunities.

Another example is a *Northwestern Policy Research Institute* serving as an arm's length source of policy advice to regional leaders and a repository of knowledge and data on the region. Northwestern Ontario could use a regional policy institute that can analyze business, technological, scientific, economic and social issues and generate policy advice that can be applied to the region's economy. Such an institute could be affiliated with the region's post-secondary sector or it could be free-standing. An example of such an institute is the Atlantic Institute for Market Studies (<http://www.aims.ca/>) which provides a unique regional voice on public policy for Atlantic Canada.

As well, creation of a broad-based knowledge economy requires partnerships and coordination between the post-secondary sector, school boards, health authorities, arts, cultural and sport groups, municipal and provincial governments, social agencies and private sector interests. A separate agency could be created to fill this role or existing agencies such as the Local Training Boards that have already developed experience in community coordination and partnerships could be tapped into this role. Moreover, Local Training Boards could also fulfill some of the functions of a policy research institute by expanding their research mandate. As Peters and May (2004) have noted, around the world, governments are now devolving some aspects of regional strategies to sub-regional bodies which are more grass-roots and better able to coordinate local partners such as health authorities.

3. Encourage more participation in post-secondary education and training.

Ontarians in general have an attitude towards post-secondary education and training that is harming our competitiveness in the knowledge economy. According to the Institute for Competitiveness and Prosperity, Ontarians "invest less in post-secondary education, are less likely to have university degrees, particularly graduate degrees and are more likely to choose a college diploma program than a university program upon high school graduation".²⁴ This situation is likely aggravated in Northwestern Ontario where rates of university education tend to fall below the provincial average.

²⁴ Institute for Competitiveness and Prosperity, Working Paper No. 4, "Striking Similarities: Attitudes and Ontario's Prosperity Gap," p. 8.

According to the 2001 Census, the proportion of the population aged 20-34 in the Thunder Bay CMA with a college certificate or diploma was 21.8 percent compared to 19.5 percent for Ontario as a whole. However, the proportion of the population aged 20-34 with a university certificate; diploma or degree was 19.2 percent in the Thunder Bay CMA compared to 25.7 percent in Ontario as a whole. For the population aged 35-44, the proportion with a college certificate or diploma was 22.5 percent in Thunder Bay and 21.2 in Ontario while the proportion with a university degree, certificate or diploma was 17.4 percent in Thunder Bay and 24.3 in Ontario. This state of affairs may be hampering our participation in the knowledge economy. While northern Ontarians are more favourably disposed than southern Ontarians in their attitudes towards business and entrepreneurship, members of the northern Ontario business community are “more likely than those in the south of the province or in the peer states to report that they would encourage a young person to achieve a high school or college/technical education and less likely to encourage a young person to complete an advanced degree.”²⁵ It will be important to put in place policies that educate business and management in northwestern Ontario on the benefits of university education and the demands of the knowledge economy for workers with advanced degrees. Moreover, given the critical importance of lifelong learning to our regional success, the university and college should consider a focus on facilitating the “downsized worker” and providing new learning and training opportunities.

4. Incentives to Attract and retain Knowledge Workers

The market for knowledge workers is extremely competitive and thought must be given to providing incentives to attract and retain scientists, physicians, professors and other creative professionals to the region to serve as the leaders of the region’s knowledge economy. These incentives fall into two categories –direct and indirect. Direct incentives include innovative and exciting job opportunities, good working conditions, competitive salaries and benefits and low taxes. Indirect incentives fall into the quality of life and lifestyle environment categories so often espoused by the followers of Richard Florida. It is the opinion of this report that direct incentives should lead the incentives to attract and retain knowledge workers. All employers should be encouraged to review their employment and benefit packages as well as put in policies to create the working conditions that so often appeal to highly educated knowledge workers.

5. Provide Economic Incentives for Knowledge Sector Development

The Northwestern Ontario knowledge economy needs the jump-start of a broad-based tax incentive zone and the provincial government should take a leadership role in this process. That is, designate the Districts of Kenora-Rainy River and Thunder Bay as a Special Tax Region (STR) within the province of Ontario. The STR would have lower provincial tax rates apply for the PST, the provincial PIT and the CIT that would provide a real and broad-based incentive for a depressed economic region. The rates for

²⁵ Institute for Competitiveness and Prosperity, Working Paper No. 4, “Striking Similarities: Attitudes and Ontario’s Prosperity Gap,” p. 22.

provincial sales taxes, income taxes and corporate taxes for the northwest should be set 20 percent lower than those for the province as a whole to reflect the income differences between the North and South. Per capita incomes in northwestern Ontario are about 20 percent below the provincial average and this change will create a regional tax burden commensurate with regional resources. A broad lowering of the provincial tax burden in the northwest will provide incentives for consumers to spend and businesses to expand and invest in knowledge sector activities. Moreover, the more attractive tax rates might offset some of the locational disadvantages of locating in the north that could attract new knowledge sector business to the region. Attractive tax rates could be especially useful in providing incentives and assistance to the development of a health research industry in the region which is expected to grow in the wake of the establishment of the Northern Ontario School of Medicine.

6. Innovative Municipal Strategies for Providing Knowledge Sector Location Incentives

The economic downturn in the region's economy has resulted in bankruptcies and surrenders of buildings and properties to municipal governments for non-payment of taxes. The stock of in arrears properties likely includes properties and buildings that may be attractive to broad knowledge sector activities such as cultural, artistic and recreational groups. Municipalities with such properties may want to consider donating them to such groups in order to return them to tax-paying status but also as an incentive to attract knowledge sector activities into core areas of communities. Such an action could generate long-term benefits by attracting new groups to communities and creating clusters of broad knowledge sector workers in arts and culture. Moreover, clusters of these types of activities in former core areas could spark the creation of "cool and trendy" zones so often favoured by knowledge workers. Municipal governments need to think of themselves not just as service providers for their citizens but as "hosts" of economic activities, which requires a focus on providing incentives for economic activities.

7. Resource and Transportation Sector Knowledge Creation via a Northwestern Ontario Resources and Transportation Research Institute

A crucial aspect of the development of the regional knowledge economy is to foster knowledge industries in the region's traditional resource and transportation sectors. How can new knowledge be created and applied in the region's forestry, mining and transportation sectors? Consideration should be given to creating a *Northwestern Ontario Resources and Transportation Research Institute* whose primary objective is to fund and generate scientific research in the regional resource and transportation sectors with the objective of developing innovations that can be applied to these sectors. Such innovations would boost productivity in our regional resource and transportation sectors, provide employment and value-added to those industries as well as create knowledge sector jobs. Partners in this institute would include private sector resource and transportation companies, the provincial and federal governments and the region's post-

secondary education sector. The institute could be stand-alone or affiliated with a regional post-secondary education institute.

8. Attraction of Additional Tele-Service Industries to Northwestern Ontario

There has been a trend by American tele-service companies to establish operations in Canada because of a number of attractive features that result in lower operating costs and higher profits. The bulk of the costs are labour related given that call centers are a labour intensive industry. The lower value of the Canadian dollar, public health care, well-educated and English speaking employees, excellent telecommunications infrastructure and lower real estate costs have come together to provide definite economic advantages to American companies operating here. Efforts should continue to attract these private knowledge transaction sector workers. Moreover, since many Federal and Provincial government services are also now provided as tele-services, efforts should be made to attract more government tele-service functions to the region. The region's lifestyle, low real estate costs and high quality and well-educated labour force can make it an attractive place for government to decentralize line and service functions that do not require immediate day-to-day personal contact with policy makers.

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