

# **Strengthening Prosperity in Binational Corridors: Public Policy Lessons on Generating Innovation and Entrepreneurship**

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## **Introduction**

One significant aspect of the transformation that is occurring in the global economic system as the twenty-first century unfolds is the exposure of the fragility of national models of economic governance (Asheim, Cooke, and Martin 2006; Porter 1998; Scott 2001). Just over two decades ago, many observers wondered whether the major shifts in industrial structure, the rise of mass production methods, and the emergence of the large integrated firm would result in the demise of localized concentrations of specialized activities. Not so; rather, quite the opposite is happening.

Globalization is shifting economic power upward to transnational forces on the one hand, and downward to subnational or regional spaces on the other (OECD 2007; Storper 2013). These countervailing trends are some of the central paradoxes of globalization. Some observers refer to this paradox as “glocalization.” Globalization and technological change seem to be reinforcing, instead of undermining, the importance of “location” in the organization of economic life. What have emerged are new localized production systems of specialized, geographically delineated industrial agglomeration. These point to the general resurgence of geographic clusters of economic regions as the main spaces of contemporary economic development and governance. This means, therefore, that the global economic system should be best understood as a mosaic of subnational regions of production and exchange (Gertler and Wolfe 2006; Scott 2001). Globalization of economic activity over the past few decades thus has deepened the centrality of territorially delimited subnational regions acting as critical loci of economic governance and reinvention.

The disruptive forces of global economic restructuring also mean, however, that local communities have become increasingly vulnerable (Conteh 2015; Eraydin and Taşan-Kok 2013; Storper 2013). The regions that successfully combat the threats and exploit the opportunities of

the disruptive forces of industrial restructuring are those that can leverage their tangible and intangible economic and social assets to reinvent themselves. In the Niagara-Buffalo region, for instance, the widening diversity of problems among its constituent communities provides evidence that spatial policies, planning, and practices aimed at addressing the specific economic challenges of communities are more viable alternatives to the one-size-fits-all, top-down programs of conventional national policy interventions.

Within this broader context of subnational economic regions, recent reports (Snyder 2014) suggest that cross-border regions are becoming more globally competitive for firms and talent. The idea of “thinking and acting across borders” to enable innovative, competitive and prosperous communities with a highly skilled workforce and well-paying jobs is not new. Economic competitiveness, productivity and innovation have been studied in a variety of contexts including the impact of clusters on the development of novel ideas, products and processes (Luecke and Katz, 2003). Binational regions are increasingly viewed as hubs for facilitating innovation, creativity and prosperity. At the same time, however, borders can be challenging for organizations because of the differences in legislative approaches, exchange rates, labour markets, wages, social security and political systems (Slusarcus, 2016). Of particular interest to binational areas is whether a ‘cliff effect’ – where price or other differences, has a positive or negative effect on the development of a binational cluster.

This paper focuses on investigating the case for economic competitiveness, productivity and innovation in cross-border (or binational) economic clusters. We selected the Counties of Erie, Niagara and Cattaraugus in Western New York and the Regional Municipality of Niagara and the City of Hamilton in Southern Ontario as our point of entry.<sup>2</sup> Notwithstanding the fact

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<sup>2</sup> This paper is part of a large study involving research institutes at Brock University and the University at Buffalo, along with the participation of the private sector, public sector, non-profit sector and NGO interests. The short-term

that the binational region boasts many cross-border assets (explored below), there remains a sense that it has not lived up to its promise. This research is pursued within the broader context of calls by cross-border stakeholders in both the United States and Canada for a deeper dive to assess the binational region's strengths, opportunities, barriers, gaps in understanding, and challenges to collaboration to create a comprehensive understanding and clear-eyed strategy that fully captures cross-border regions' potentials.

The rest of the discussion is structured as follow: The next (second) section lays out an explication of the conceptual framework of binational industrial corridors that serves as the analytical lens for the rest of the discussion. This section will clarify the key elements of "industrial corridors " the key mechanisms of a region`s integration into the global economy. The following section then delves into the case studies, using the conceptual framework to examine the key characteristics, potentials and constraints of economic competitiveness in the cross-border regions of Niagara, Hamilton and Buffalo. The last section concludes with some inferences and policy lessons about the prospects and challenges of fostering binational industrial corridors.

## **Conceptual Framework of Bi-national Industrial Corridor**

A dominant understanding of binational economic regions in the academic and policy literature corresponds to geographic spaces functionally linked together via a shared export base, the flows of interfirm relations, or the flows of labour force activities within a particular sector. For this research, a bi-national economic region is a cross-border geographic space comprising a cluster

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objective is to use the life sciences sector as a starting point , to make the economic case and develop a forward-looking approach for cross-border coordination and collaboration - an approach that uses scenarios to examine benefits, constraints and multiple paths forward. The ultimate goal is to expand the study and deepen the research, analysis, understanding and engagement towards an innovation and prosperity agenda for this cross-border region.

of surrounding communities sharing similar economic assets in a particular sector, such as manufacturing, tourism, life sciences and agriculture.

The concept of binational economic cluster provides a useful framework for understanding economic regions in the Niagara-Buffalo region. Porter defines clusters as “geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, associated institutions...in particular fields that compete but also cooperate” (1998, 197). A core element of this definition is that of *geographical proximity*: clusters are spatially localized concentrations of interlinked firms. Co-location is a central determinant of value creation that arises from networks of direct and indirect interactions among private businesses, and between firms, customers, local public agents (such as economic development officials, for example), post-secondary institutions, and related entities with vested interests in the economic well-being of their community.

Binational economic clusters can consist of a combination of geographically proximate cities and surrounding peripheries of smaller communities from two or more countries bound together by interlocking economic flows of products and skills that create a self-reinforcing interdependency and synergy. Implicit in this definition is the centrality of clusters of shared assets in a particular sector, which provides the basis for surrounding communities to plan economic development investment priorities in leveraging natural resources, human capital, investment capital, and market access to sustain and enhance the binational region’s economic well-being.

A central feature of economic clusters in general is the notion of industrial agglomerations. This concept points to the vital role of external economies of scale (Aoyama,

Murphy, and Hanson 2011).<sup>8</sup> There are two types of agglomeration. The first derives from urbanization economies, the second from localization economies (Friedman 2005). Urbanization economies are benefits that accrue to cities by virtue of their population and market density, which make them economically resilient and often self-sustaining. Localization economies, on the other hand, can be seen in agglomerations that typically manifest specialization in a key industrial sector (Amin and Thrift 1992; Brusco 1982; Russo 1985).

The main implication of understanding agglomeration in terms of urbanization and localization economies is that it directs the construct of binational economic clusters to focus on specific assets within a given geographic location. Such a construct allows for an economic cluster made up of communities with demonstrable strengths in certain sectors — say, life sciences, advanced manufacturing or tourism — to leverage their local resources, mobilize non-local public resources, and attract private investment in scaling up their sectoral strengths and potential for economic development and reinvention. The concept of binational economic clusters thus draws our attention to the reality of economic development as a highly varied and complex territorial process (Asheim, Cooke, and Martin 2006; Martin and Sunley 2008). The significance of this observation is that different types of clusters will manifest different economic and demographic characteristics, and, therefore, possess different capacities to respond to and cope with both external and internal shocks and changes. The section below presents and examines some data exploring the potentials, constraints and challenges of the Hamilton-Niagara-Buffalo region as a binational economic cluster.

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<sup>8</sup> External economies of scale are viewed as largely generated by positive externalities. Externalities, by definition, are costs (negative) or benefits (positive) that accrue to a firm or corporation above and beyond its accounting.

## **The Hamilton-Niagara-Buffalo Region**

The Buffalo-Niagara-Hamilton region is the largest cross-border region along the Canada-US border, and unique in North America for the depth and breadth of its cross-border assets.

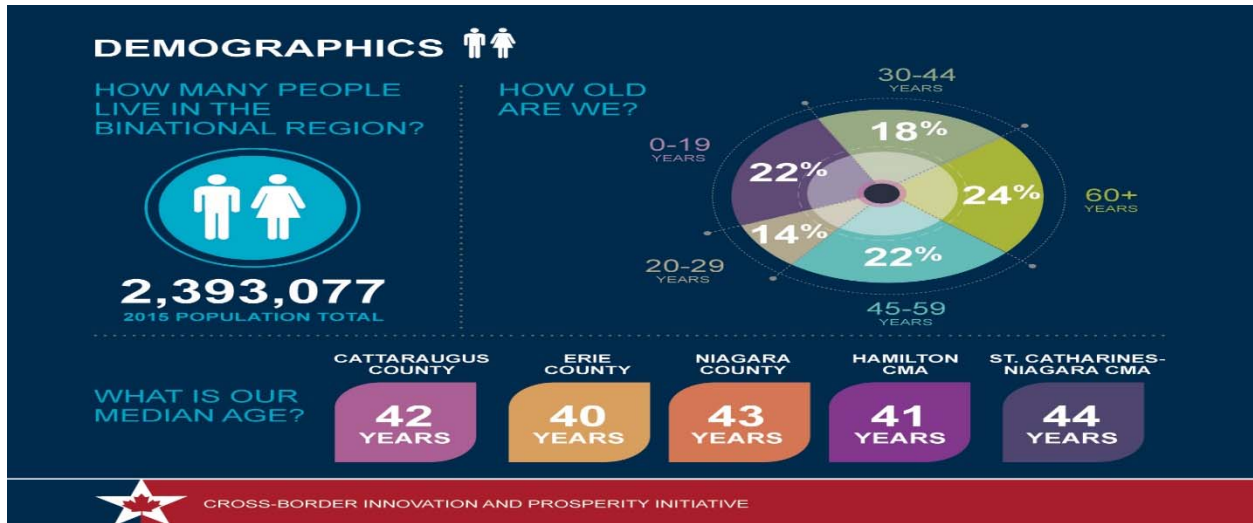
Whether part of a broader “Tor-Buff-Chester” megaregion (Florida, 2008), or as part of a Great Lakes cross-border region,<sup>3</sup> this binational region experiences tremendous flows of technology, people and trade across the international border by sheer virtue of its geography (Snyder, 2014). The challenge, however, is that much of the region’s planning and public policy ignores its cross-border nature and potential assets.

With four international bridges and two airports, the region reigns as a major port of entry along the Canada-US border, facilitating more than 15 percent of commerce between two of the world’s largest trading partners. These complementary cross-border economic development efforts, in turn, generate opportunities for integrated supply chains in innovative industry clusters for export to global markets. Augmented by strong cross-border shopping, heritage, and tourism economies, an advanced logistics industry, and sophisticated “soft” infrastructure – customs brokers, 3PLs, warehousing, attorneys, insurance brokers, bankers, and the like – the region has unmatched potential for strengthening prosperity by strategically leveraging cross-border economic ties.

Figure 1

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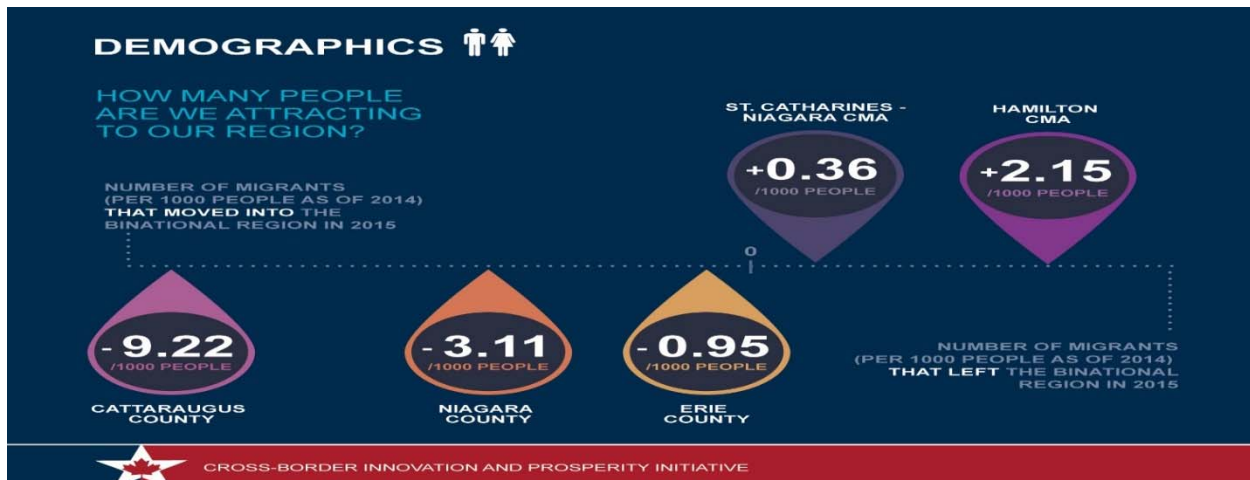
<sup>3</sup> <https://councilgreatlakesregion.org/working-groups/economic-corridors-and-clusters>



The most basic question raised about economic regions is its populations characteristics such as size and age distribution since such data point to the merits of agglomeration advantages and labour market size. As Figure 1 indicates, the combined 2015 population total of the binational region is 2,393,077. The median age of the region is 44 years. The rate of attraction of new residents to the region, as indicated by Figure 2 is as follows: Erie County: - 0.95; Niagara County: -.3.11; Cattaraugus County: -9.22; Hamilton CMA: 2.15; St. Catharines-Niagara CMA: .36., which suggests that the US side of the border is losing people while the Canadian side of the border is gaining people.

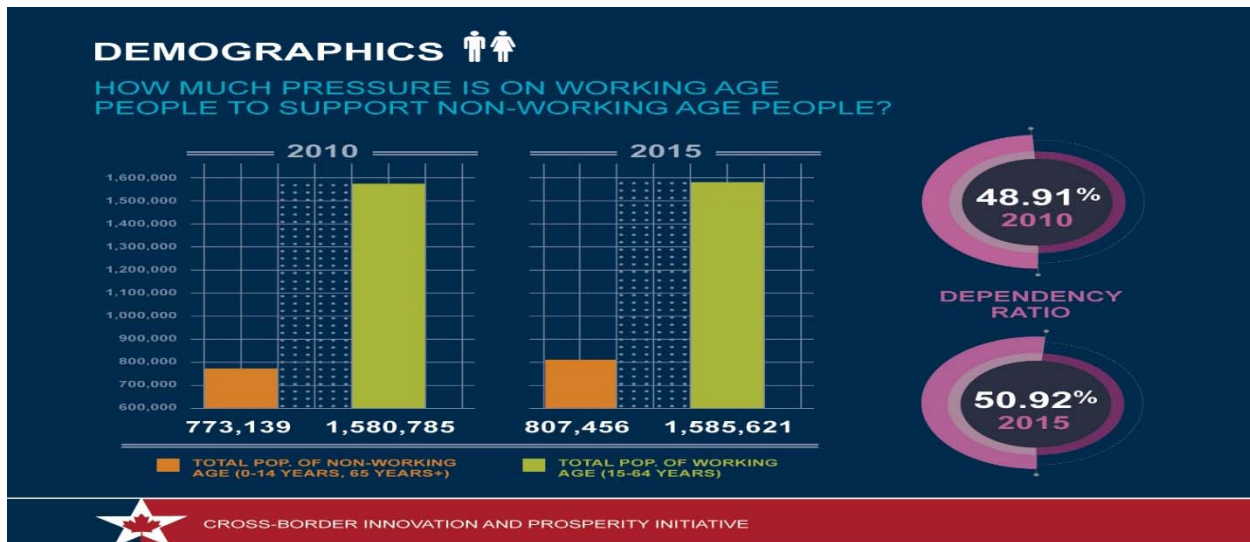
Figure 2





Another critical question often raised about economic clusters is how much pressure is on working age (15-64) residents to support non-working (0-14, 65+) people? (Dependency ratio – ratio of non-working to working people). This gives us a sense as to the pressures on working age people to support non-working people through public assistance programs such as social security. As Figure 3 indicates, in the binational region, on both sides of the border in all counties (in the case of the US) or census metropolitan areas (CMAs – in Canada), this ratio has increased over the last five years, with the St. Catharines-Niagara CMA and Cattaraugus County experiencing the greatest increase in the ratio.

Figure 3



The prosperity and potential competitiveness of a binational region can be measured in terms of GDP per capita and the composition of key sectors. The core industry strengths, as indicated in Figure 4 of the region are in Health Care; Manufacturing; Education; Tourism and Retail Trade

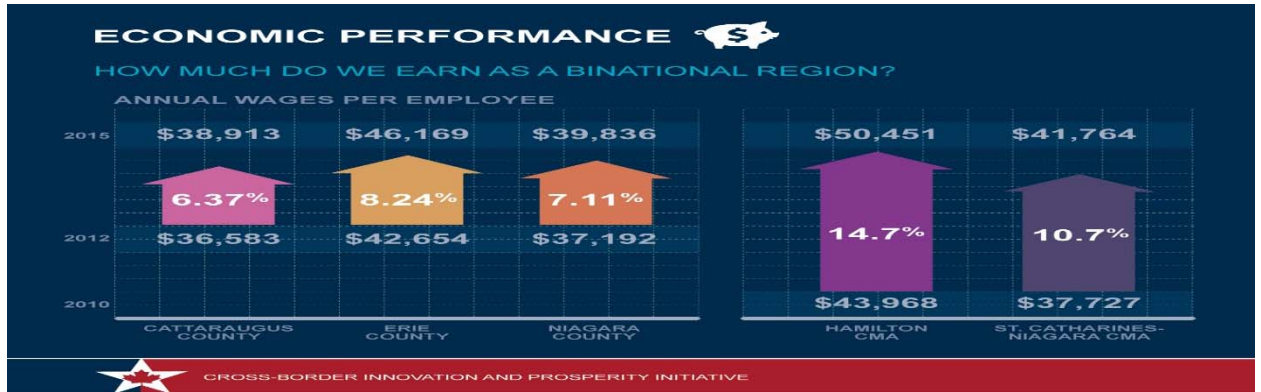
Figure 4



Because of methodological issues it is difficult to come up with binational figure of economic performance. However, the data in Figure 5 indicates that average weekly wage on both sides of the border has grown over the past 5 years (2010-2015) by 11.37 percent in Ontario and 7.65

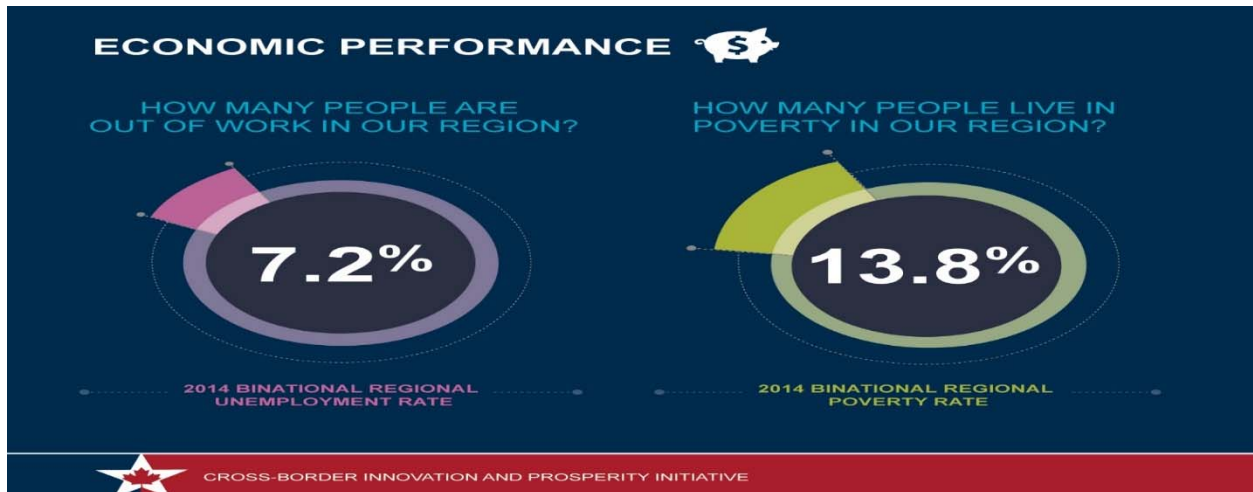
percent in New York. On the US side, this is greater than the US wage growth between 2010-2015 (7.51) but on the Canadian side, less than the Canadian average of 12.94 percent.

Figure 5



The rate of unemployment in the binational region is 7.2 percent, and the rate of poverty is 13.8 percent – this is lower than the US poverty rate but slightly higher than the Canadian poverty rate; and lower than both the New York and Ontario poverty rates.

Figure 6



With respect to levels of education, which can serve as a proxy for a region’s innovation environment, Figure 7 indicates that 90.5 percent have a high school degree or more. 26.75 percent have completed a bachelor’s degree or more. In a knowledge-driven economy, one would hope for higher figures of post-secondary graduates, but at a minimum, a high degree of high school completion rate above seventy-five percent is considered healthy.

Figure 7

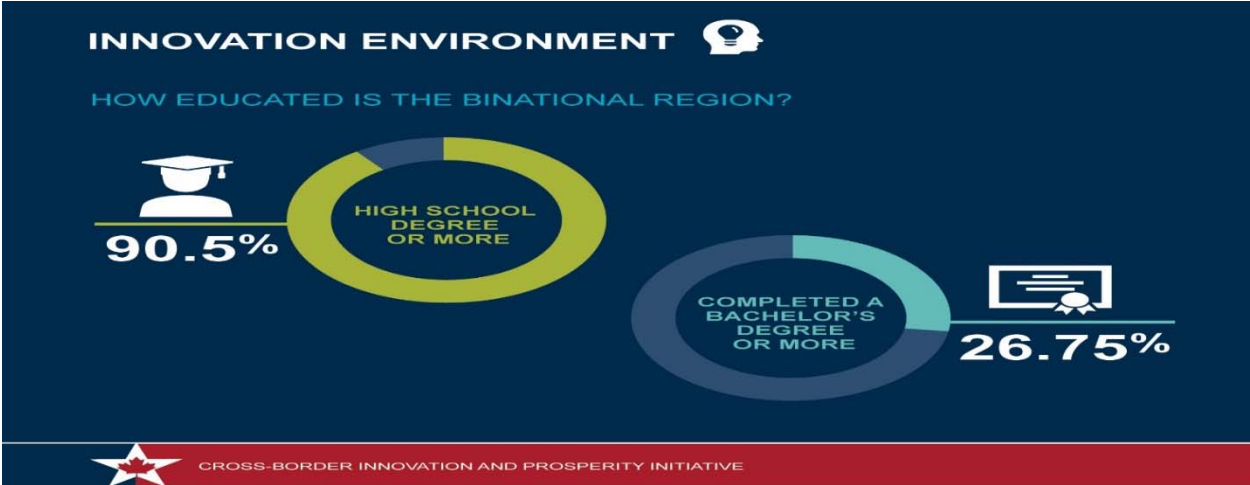
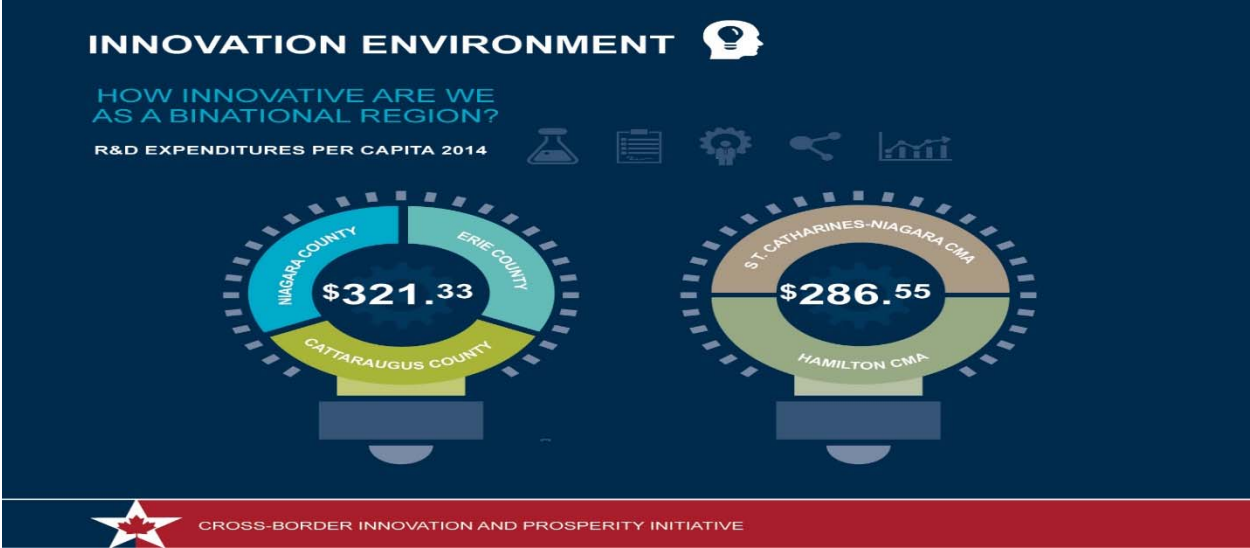


Figure 8



The discussion has thus far provided a portrait of the potentials and constraints of the Buffalo-Niagara-Hamilton binational region. The focus of the rest of the discussion is to investigate the case for economic competitiveness, productivity and innovation in the region. For the discussion in this paper, we focus on the life sciences sector, one of the four leading sectors of the binational region. The next set of figures presents some data that provide a basis for appreciating the potentials and constraints of economic competitiveness resulting from greater economic integration between the regions on both sides of the border. To set the context for this discussion, Figures 9 and 10 provide an overview of the key characteristics of the life sciences sector in the binational region while Figure 11 provides a GIS portrait of their geographical spread and density across the binational region.

Figure 9



Figure 10

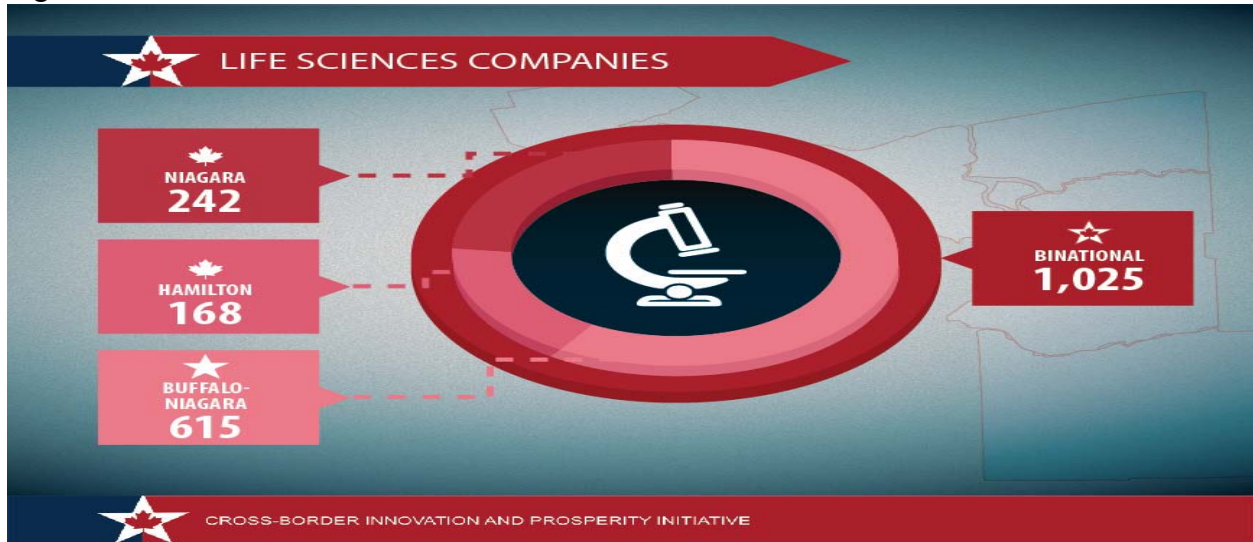
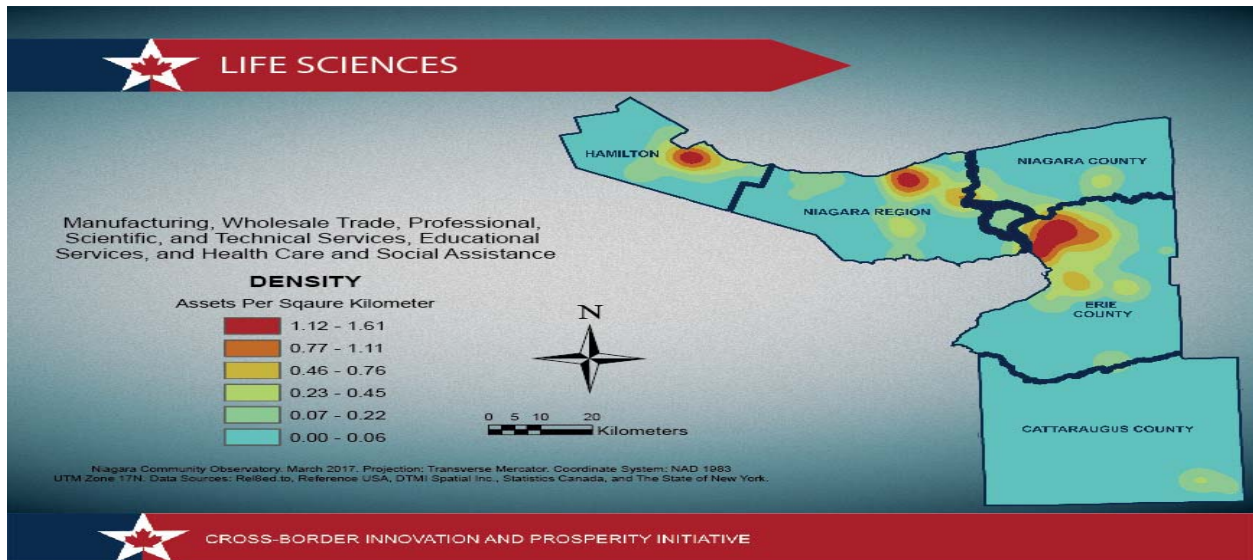


Figure 11



In addition to the overview provided in Figures 9, 10 and 11, we have further broken down the life sciences sector of the binational region into number of employees in each region, using the North American Industrial Classification Systems (NAICS) coding, as seen in Table 1. The investment figures in each sector is proportional to number of employees in each region.

**Table 1: Proportion of Number of Employees in Life Science-Related Businesses<sup>4</sup>**

NAICS	Description	BN		SO		Total	
31	Manufacturing	58,102	25.52%	50,131	25.66%	108,233	25.58%
42	Wholesale trade	25,735	11.30%	22,674	11.60%	48,409	11.44%
54	Professional, scientific and technical services	41,058	18.03%	19,440	9.95%	60,498	14.30%
61	Educational services	19,302	8.48%	42,906	21.96%	62,208	14.70%
62	Health care and social assistance	83,516	36.68%	60,247	30.83%	143,763	33.98%
Total		227,713	100.00%	195,398	100.00%	423,111	100.00%

Against the backdrop of the above context of the life sciences in the binational region, the remaining slides presents an econometric model that simulates scenarios of \$100 million investment into an integrated industry relationship in the binational. The Buffalo region in the US is coded as BN and the Hamilton-Niagara region in Southern Ontario is coded as (SO). It is worth noting that while there may be several factors determining the outcome of this relationship, for the purpose this paper, “travel time” is used as a proxy for greater integration between businesses in different industry sectors across the border. This simplicity and focus

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<sup>4</sup> Unit: number of employees

Source: Bureau of Economic Analysis (CA25N Total Full-Time and Part-Time Employment by NAICS Industry 1/) EMSI Analyst, St. Catharines-Niagara CMA and Hamilton CMA

allows for a clearer demonstration of the competitiveness of economically integrated binational regions. The 2-digit NAICS was used to measure strength of industry relationship. The key hypothesis of the model, as indicated in Figure 12, is that industry relationship between the two regions will be stronger if average travel time between businesses in different industries within the binational region is smaller.

Figure 12



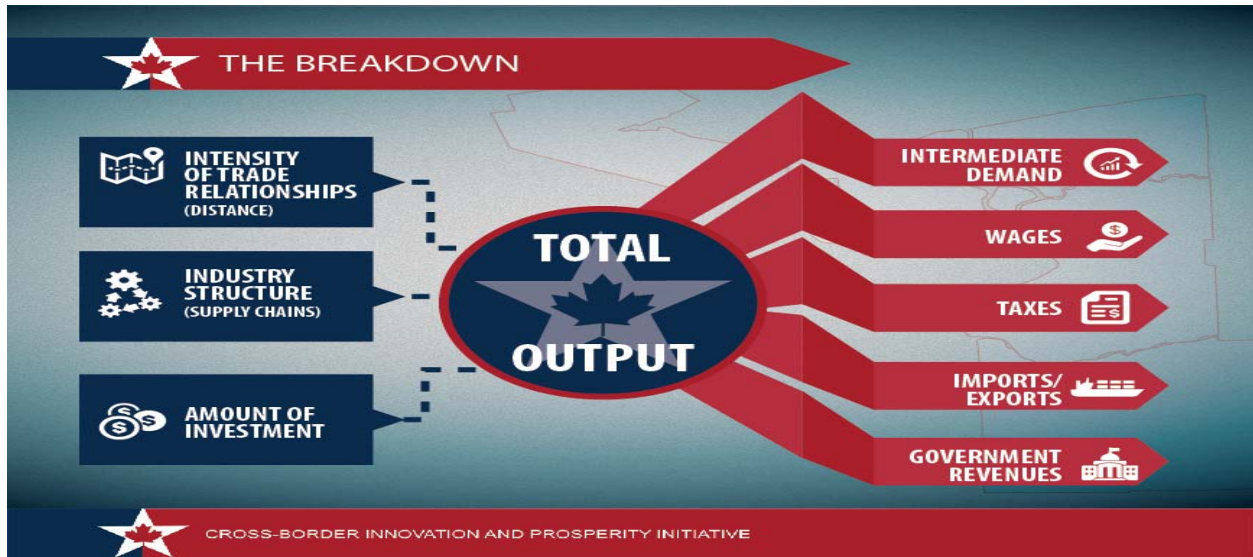
A Multi-Regional Input-Output Model (MRIO) for the binational regions of BN and SO is generated by the formula based on Miller and Blair (2009).<sup>5</sup> Figure 13 provides a visual of the underlying logic of the formula.

Figure 13

<sup>5</sup> $x = (I - C * A)^{-1} * f$

x = total output; f = final demand (investment scenarios); I = identity matrix; and C = defines magnitude of industry relationship between and within regions. In this model, it is defined by average travel time between businesses in different industry sectors between and within regions. A = IO/total output





## Simulation Scenarios

With the aforementioned formula based on the binational economic model (BSEM), we plot several simulation scenarios consisting of an investment of \$100 M to life-science related industries. Below is a list of four scenarios, plotted and illustrated on Tables 2, 3 and 4.

### Single Region Investment Scenarios (\$100 Million for one region):

- S1. Buffalo-Niagara region (no trade effects considered)
- S2. Hamilton Niagara region (no trade effects considered)

### Coordinated Regional Investment Scenarios (\$50 Million for each region):

- S3. Binational Investment to BN & HN region (trade effects considered)
- S4. Investment to BN and HN, respectively (no trade effects considered)

Table 2

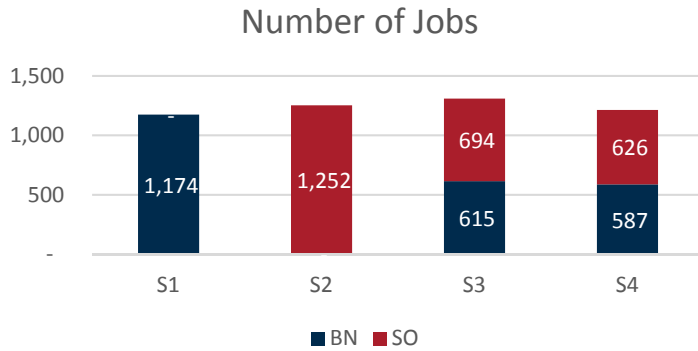
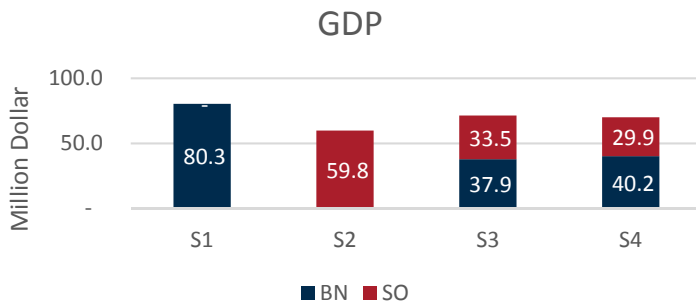


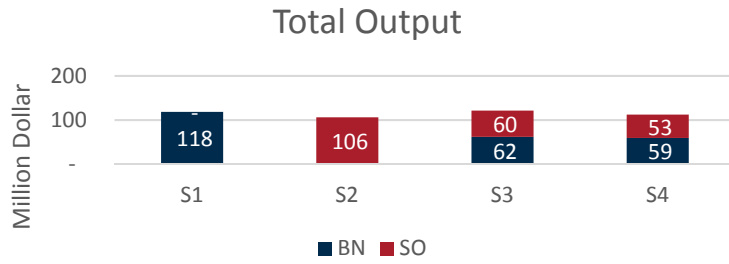
Table 3



### Overall Effects

Scenario 3 created the highest number of jobs (in considering trade effects). This shows binational investment strategy is superior to single region investment strategy in creating more jobs. Scenario 1 shows highest value in GDP. This may be due to a higher tax rate and lower salary of HN region compare to BN region. Total output shows Scenario 3 is superior to the other scenarios

Table 4



### Direct Effects

Scenario 2 shows sizeable number of created jobs in industry sectors 61 and 62, as illustrated in Table 5. Recall that NAICS coded 61 is Educational services and 62 is Health care and social assistance. Scenarios 3 and 4 create more jobs than other scenarios in general. Scenario 1 shows sizeable number of created jobs in general. Table 6 illustrates the direct effects by GDP yields.

Table 5

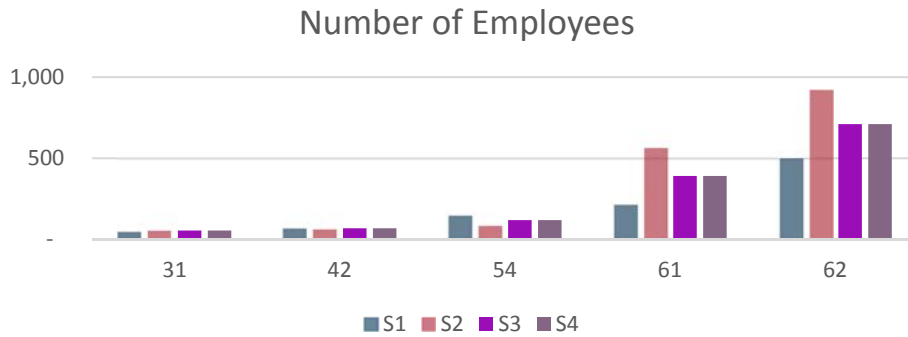
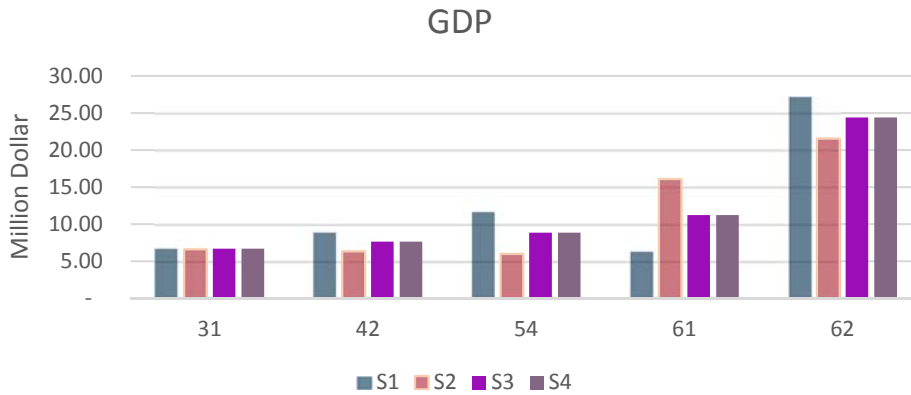


Table 6



### Indirect Effects

There are also indirect effects (throughout the whole economy) from the \$100 million investment. Tables 7, 8 and 9 shows in terms of number of jobs, GDP and total output. Notice the stark difference between Scenario 1 and 2, meaning that BN region generates more indirect effects throughout the regional economy when invested. However, indirect effects of HN dramatically increase when trade effects are considered. Indirect effects of HN in Scenario 4 increases more than three times in Scenario 3. Trade effects provide positive effects to BN region as well. Indirect effects of BN in Scenario 4 increases about 1.2 to 1.5 times in Scenario 3

Table 7

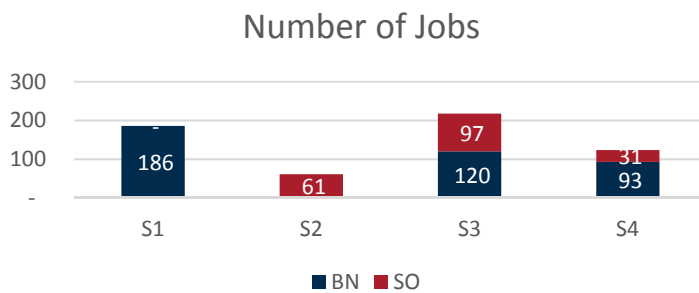


Table 8

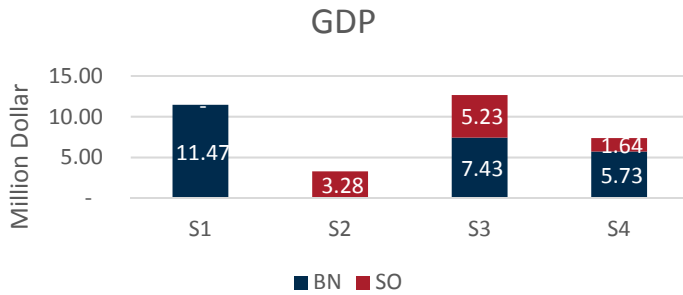
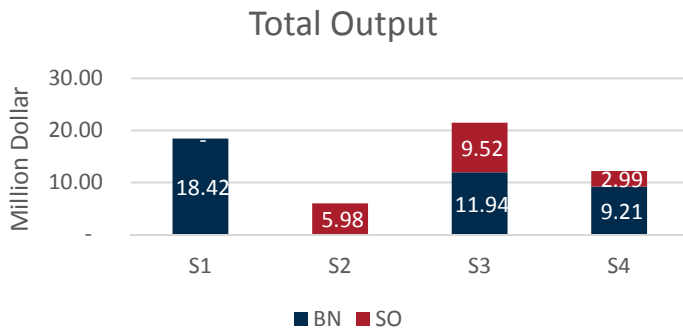


Table 9

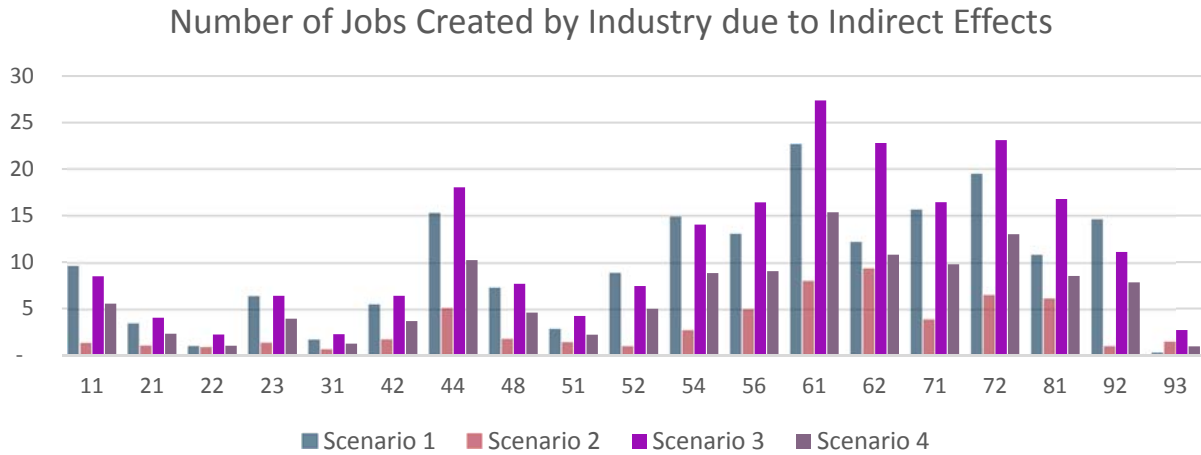


The tables above are based on the following scenarios: S1: \$100 M to BN (no trade effects); S2: \$100 M to HN (no trade effects); S3: \$50 M to BN and \$50 M to HN (trade effects); S4: \$50 M to BN and \$50 M to HN (no trade effects).

**Indirect Effects (Number of Employees)**

Tables 10 and 11 show the indirect effects of \$100 million investment in terms of number of employees and size of GDP created, respectively. Scenario 3 shows the highest indirect effects in job creation throughout overall industry sectors. Scenario 3 and 4 show significant differences in indirect effects whereas direct effects were similar (this may be caused by trade effects).

Table 10

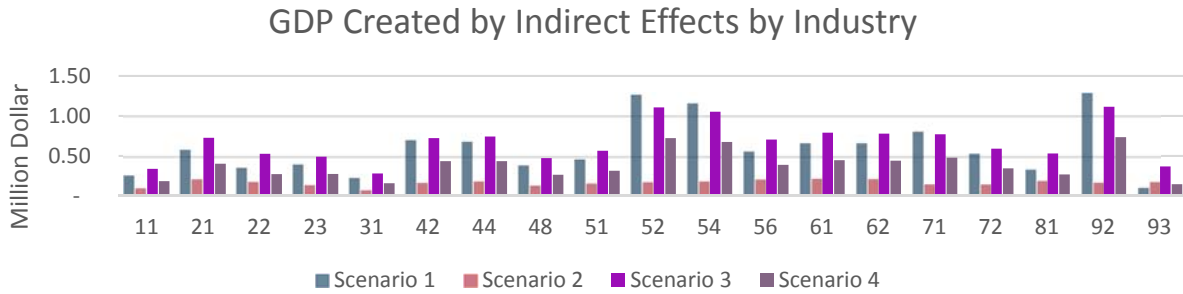


Note the following Scenarios: S1: \$100 M to BN (no trade effects); S2: \$100 M to HN (no trade effects); S3: \$50 M to BN and \$50 M to HN (trade effects); S4: \$50 M to BN and \$50 M to HN (no trade effects)

**Indirect Effects (GDP)**

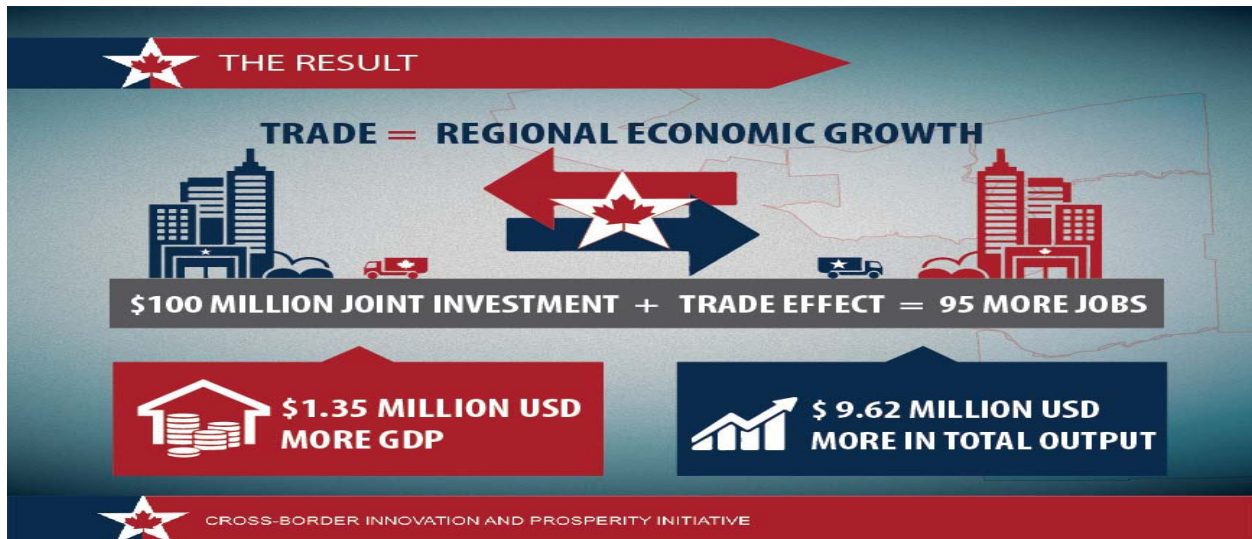
Scenario 3 shows the highest indirect effects in GDP increase in many industry sectors while Scenario 1 outpaces Scenario 3 in several industry sectors. This is the constant results in overall effects and direct effects as well. This may be caused by higher tax rate and lower salary level of HN than BN region. However, as shown before, Scenario 3 is superior to other scenarios in overall

Table 11



Note the following Scenarios: S1: \$100 M to BN (no trade effects); S2: \$100 M to HN (no trade effects); S3: \$50 M to BN and \$50 M to HN (trade effects); and S4: \$50 M to BN and \$50 M to HN (no trade effects)

Figure 14



To conclude, Figure 14 provides a visual portrait of the outcome of a simulation of \$100 million investment into an integrated trade in the life sciences in the Buffalo-Hamilton-Niagara region. While the rate of job creation within the life sciences sector appear modest, they are typically very high-paying job. More importantly, the spillover generated throughout the whole economy

(other sectors outside life sciences) from indirect trade effects of the investment into the binational region is considerably large. The general picture points to positive gains in job creation and overall economic competitiveness and growth measured in GDP for the binational region.

## **Policy Implications and Conclusion**

The cross-border region encompassing western New York and southern Ontario is in transition. The economic structure of the Buffalo-Hamilton-Niagara region has changed over the past 20 years as the area has lost manufacturing jobs and replaced them increasingly with jobs in the service sector, ranging from health care and social assistance, to tourism and construction. As a result, the ratio of full-time to part-time jobs has been decreasing. Rather than maintaining a status quo outlook forged from decades of decline in population, employment and GDP, leaders on each side of the border are paying greater attention to the prospects of leveraging assets to strengthen human capital and create purposeful transformation to foster sustainable communities, creativity and innovation. Communities in the region currently are targeting investment in cultural/heritage tourism and health sciences innovation; advanced manufacturing; and stewardship of their natural assets.

This context serves as the background for the focus of our study. We seek to examine whether it makes sense to collaborate with cross-border neighbors for innovation-driven economic development. Our project aims to contribute to the discussion about catalyzing economic well-being in Buffalo-Niagara Hamilton region as a binational region by presenting an empirical case for strengthening cross-border partnerships. Recent reports suggest that cross-



border regions are becoming more globally competitive for firms and talent. Our key objective therefore is to demonstrate through a relatively simplified econometric modeling that a binational, coordinated approach to community economic development will create jobs and well-being in the regions on both sides of the border, as opposed to a “go-it-alone” community development approach.

The policy implication of this project is that sustainable cross-border regional coordination and collaboration require objective information to build understanding. The questions then become: What is the “economic case” for coordination and collaboration? What are the opportunities, and what are the challenges? Conversations over the past five years in the Buffalo-Hamilton-Niagara binational demonstrate that leadership on both sides of the border are seeking a process that builds understanding, relationships, capacity, and ultimately an agenda to thrive as a binational region in an increasingly competitive and globalized world. As the largest cross-border region along the Canada-US border, this binational region is unique in North America for the depth and breadth of its cross-border assets.

On a final note, integrated cross-border communities are at a strategic advantage in the current age of globalization by virtue of their organically international economic structure relative to other economic regions. Too often, however, local communities have felt as though they are on their own amid the impersonal forces of change. Smaller economic regions are often ill-equipped to take on the forces of globalization. Moreover, municipal and national boundaries that serve political and administrative purposes do not correspond with economic geography, which often involves a constellation of municipalities within a certain industrial corridor or economic cluster. The tendency then is to foster fragmentation and parochialism among residents where a more holistic approach is needed. This clearly points to the need to rethink and

restructure current modes of intervention towards more integrated approaches whereby local communities combine their critical assets to combat the threats and exploit the opportunities of global industrial restructuring and economic change.

The literature and empirical evidence on economic clusters place considerable emphasis on their socio-cultural as well as economic characteristics: a community of people and a population of firms in one naturally and historically bounded area. Economic clusters provide the most tangible expression of the fusion of economy and society. This socio-economic understanding of economic clusters has brought to the fore the policy salience of non-economic, socio-territorial dimensions of the concept. It also raises implications for the imperative of creating the institutions and processes that will facilitate interaction, trust, and cooperation among constellations of local actors within a shared geographic space.

This study conceives of binational economic clusters for public policy purposes as geographically delineated spaces for strategic industrial reinvention towards greater competitiveness and innovation. They provide a platform for asset mapping, problem identification, investment planning, knowledge sharing, organizational learning, and management of new market opportunities. In short, thinking in terms of binational economic clusters can help design platforms of local economic development governance that are critical pieces of regional economic reinvention in an age of tectonic global industrial restructuring.

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