Urban Regions & Universities: Building the Foundations of our Future Prosperity

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Check against delivery.
Good afternoon. Thank you for that kind introduction. I am grateful to Ambassador Saint-Jacques for the opportunity to address this distinguished gathering.

It is lovely to see such a wonderful turnout. I have been to Beijing on several occasions in the past and I am always deeply impressed by the warmth and generosity of our hosts. Thank you again.

Ladies and gentlemen, I am honoured and delighted to be speaking to you today. One of the reasons I was so excited to take on the Presidency of the University of Toronto is that I have focused much of my academic career on studying the economies of urban regions and the roles that major institutions such as research universities play in their development.

Now, two years into my term, I believe it is increasingly clear that this relationship between cities and universities is critical to our collective prosperity. In fact, my argument today will be a simple one:

Global cities in partnership with global universities are building the foundations of our collective future prosperity.

While there is growing recognition – both in China and in Canada – that urban regions are fundamental sources prosperity, I believe that their importance remains underappreciated.

I am going to argue this afternoon that this is going to change.

In China as well as in Canada, many traditional sources of prosperity are being challenged by both cyclical and longer-term change. To position our countries for success in the future, we will have to focus our collective efforts on identifying our most promising assets – both sectorally and geographically – and then leveraging them fully.
I am going to make three points this afternoon:

First: The geopolitical landscape is changing quickly. The impact on Canada and China has been – and will continue to be – profound.

Second: Around the world, urban regions are increasingly recognized as national assets driving innovation, wellbeing, and prosperity. I will illustrate this with an example I know well.

Third: This has important policy implications for national, sub-national, and regional governments – and I will make a few suggestions for how we might respond.

**Part One: The geopolitical landscape is undergoing major change**

But let me start at the beginning. It is commonplace to say that we live in a world of rapid change – over the past couple of decades, rapid change has become the new normal. Let me highlight two examples each from Canada and China.

First, while Canada fared better than many countries during the last Global Recession, our recovery has been slow and uneven. Recently, our economy and our dollar have been buffeted by the plunging price of oil. The reverberations
continue to play out, but we are learning once again how perilous it is to rely too heavily on a single dominant source of growth and prosperity.

At the same time, hopes that the devalued Canadian dollar would spur a resurgence of manufacturing haven’t yet been realized, and the evidence of such a recovery remains elusive – perhaps not surprising since such adjustments take time.

But we have learned from past business cycles that a low dollar, on its own, does not constitute the basis for long-term, sustainable economic growth. Our automotive sector is a key case in point.

Automotive investments in Canada totaled about $750M (US) in 2014 – cause for some optimism. But over the same period manufacturers invested a monumental $7B (US) in Mexico, much of it going towards the construction of seven new assembly plants. So despite last year’s increase in Canada’s automotive production, our share of North American vehicle output shrank to 14% as Mexico’s climbed to nearly 20% (from just 3% in 1987). Currency fluctuations alone will not revive the Canadian automotive sector.
Given the obvious risks associated with relying on oil to drive our economy, and with the uncertain prospects facing our traditional manufacturing heartland, it seems obvious to be asking ourselves a larger, existential question: where will our future prosperity come from?

China might be asking a similar question, though here many of the major indicators have a different tenor.

Indeed, China has led one of the most profound and dramatic transformations in human history. These data from the World Bank show the staggering decline of poverty in China measured as a percentage of the total population living on US$1.90 a day or less. This has happened over the past thirty years alone.

One of the great drivers of this extraordinary transformation has been unprecedented urbanization.
Thirty years ago, China’s population was 80% rural. Today China’s population is approaching 60% urban. By 2050, the proportion is expected to reach 75% urban. [OECD] Massive urbanization has helped lift hundreds of millions of people out of poverty.

But the side effects of these transformations are becoming increasingly noticeable. Air quality in Beijing is notoriously bad, as is its traffic. I thought it was rough on the 401 in Toronto… Until I saw images posted on Twitter by the People’s Daily:

This is a 50-lane traffic jam from October. I understand that in 2010 a similar traffic jam lasted 12 days!
More seriously, this graphic shows the kind of complex challenges that China’s extraordinary transformation has engendered. As populations move out of the grip of the diseases of poverty – communicable, maternal, neonatal, and nutritional diseases such as parasitic diseases, respiratory infections, nutritional deficiencies, and diarrhea [the gold line] – they move into the domain of chronic, non-communicable diseases endemic in the world’s high-income countries – cardiovascular diseases, cancers, diabetes, and mental disorders [the red line]. China has made striking progress on the first set of health issues; and, along with the rest of humankind, they now face growing challenges from the second.

For decades, China’s growth has been based on rising export demand, inexpensive and abundant labour, inexpensive and abundant land, and a low cost attributed to environmental externalities. Given the obvious risks associated with relying on these features to power tomorrow’s economy, China – like Canada – is asking itself: where will our future prosperity come from?

**Part Two: The Value of Urban Regions**

It is here that I suggest we turn our gaze towards our cities, and the sectors that are driving the economies of our major metropolitan regions. Most obvious among these – particularly in the case of Toronto and Beijing – are services, especially financial
services. Canada’s banks, for example, fared well coming out of the last recession, and Toronto has emerged as the world’s leading centre for mining finance and one of the world’s most important centres of expertise in the management of long-term assets such as pension funds.

Then there is the burgeoning creative economy, comprised of a diverse array of sectors such as film and TV production, fashion, food, digital media, visual and performing arts. We might also add tourism to the list…

…as you can see from the image, among the last year’s 14 million overnight visitors, was Pacman… who ate a number of our police cars and trucks. The movie Pixels from which this photo was taken was filmed in part at the University of Toronto this past summer.

Beijing can tell a similar story. Its cultural and creative industries accounted for roughly 13% of the city’s GDP in 2014, up more than 8% over the previous year.

Closely related sectors such as information and communications technology and services should also be acknowledged for their importance in both cities.
These economic activities all share one interesting and important characteristic: they are fundamentally urban activities. They thrive in the rich and stimulating environment provided by metropolitan regions.

This is my first major point this afternoon.

The literature on the economic geography of innovation confirms what entrepreneurs, venture capitalists, and creative people seem to know instinctively: cities are privileged sites for innovation, entrepreneurship, and the flourishing of ideas and opportunities. The forces underlying this connection are many and varied.

- By providing interesting and important problems to solve, cities naturally stimulate the development of new ideas or products to address them.

- Cities offer a deep pool of specialized services and well-educated human capital that support entrepreneurship and the development of new products.

- Indeed, the most talented, creative and entrepreneurial members of the labour force prefer to live in urban settings offering a high quality of place: cities that are culturally vibrant, safe, physically appealing, with good schools, and open to newcomers and new ideas.

- Such cities foster the circulation of knowledge among firms – including those in the same industries, as well as those in seemingly unrelated industries. The capacity for cities to facilitate such ‘knowledge spillovers’ and localized learning provides tremendously fertile conditions for innovation, even in a time when information technologies make it easy for information to be shared instantly over long distances.
Importantly, these same cities are increasingly interconnected. Urban regions are gateways to other centres of knowledge production around the world, bringing ideas, opportunities, and energy to the local milieu.

The Toronto Biomedical Example

To help illustrate the value added from a metropolitan region, let us look at a place I know well, the Toronto region, and its partnership with an institution I know well: the University of Toronto.

Many are surprised to learn that the Toronto region is home to the third-largest biomedical cluster in North America, trailing only San Francisco and Boston. It is striking not only because of its size, but also its diverse composition, with research strengths in everything from immunology and vaccines to cancer care, children’s medicine, cardiac care and brain research.

Moreover, it hosts a large and dynamic collection of firms in biomedical technologies and devices: in diagnostics, imaging, testing, and assistive devices. This diversity has created unparalleled opportunities for convergence across these individual areas of strength to produce unique and highly innovative new activities.

Underpinning this cluster are several key foundational assets.
The University of Toronto is the primary research and teaching hub, home to the country’s largest Faculty of Medicine, as well as the full range of health science faculties: Nursing, Dentistry, Pharmacy, Public Health, Social Work and more. You might add to this a number of remarkable interdisciplinary centres for research and teaching that draw on our diverse strengths in medicine, engineering, dentistry, cell biology, computer science, chemistry, physics and related fields.

Nine hospitals that are fully affiliated with the University have stellar global reputations for their own strengths in research, education, and clinical practice. Together with 18 other community affiliate hospitals in the region, they form a phenomenal health sciences network.

Accelerators, incubators, and innovation hubs – chief among them the MaRS Discovery District – provide space, support services, access to capital and a nurturing environment for start-ups in a broad array of sectors. The newest addition to the list is J Labs from Johnson & Johnson Innovation, which selected Toronto for their first international expansion precisely because of the region’s strength as a biomedical cluster with few equals in the world. And behind all of these institutions and investments is one of the most highly educated, diverse, and dynamic workforces in North America.

How does one measure the performance of this biomedical cluster? One obvious way to benchmark its strength globally is through the scale and impact of its research.

In all the health and life sciences, only Harvard University publishes more research than U of T and its affiliated hospitals – and when it comes to impact (as measured by citations), publications from the University of Toronto are cited more frequently than research from all other universities except Harvard and Johns Hopkins.

Another way to appraise research quality and performance is by looking at who our researchers partner with, and how frequently. There are good reasons to believe that such
metrics are becoming increasingly important. A recent editorial in *Nature* argued that collaboration between researchers on a global scale is becoming essential in fostering scientific progress. Moreover, in this age of growing global collaboration, “Excellence seeks excellence, so elite national universities are also leading international collaborators.”

The data behind this idea are absolutely striking.

Here is a network graph of the 100 most frequent collaborators among the world’s top 50 research-intensive institutions, as defined by the Times Higher Education World University Rankings. The red circles represent the world’s top 50 universities. The lines connect each of the top 50 institutions to their top 100 collaborators. The closer the circles, the more interconnected their collaborations.

It is immediately evident how tightly clustered the world’s top institutions are. There are clusters of regional or discipline-specific collaborations around the outside, but the huge majority of institutions are all crowded in the middle, indicating close inter-linkages through research collaborations.
It is important to note that these institutions come from 14 different countries – including Canada’s University of Toronto at #19 and China’s Peking University at #42. They are central nodes in a *global* knowledge-producing network.

Why does this matter? Quite obviously, in Toronto, Boston, London, or Beijing our present and future prosperity depends on our ability to access and use knowledge; not just the knowledge we produce locally, but also knowledge that is produced in *other* leading centres of research and innovation around the world. Our collective prosperity hinges upon collaboration. Hence, the University of Toronto and its teaching hospitals serve as vital portals to global knowledge networks, bringing important benefits to Toronto and Canada.

Here is a map of the University of Toronto’s collaborations from the past five years that produced 200 or more publications.

And here is the same map for the Beijing region. These are regions that are *globally interconnected* through their research and scholarship.
It is also important to emphasize that Toronto and Beijing are interconnected through the flow of students between them. Students from China comprise by far the largest share of the University of Toronto’s international student body – far exceeding the number from India or the United States.

And just a few days ago, I was privileged to preside at the University of Toronto’s Asia Pacific graduation ceremony in Hong Kong, where students who were unable to travel to Toronto received their degrees.
It is clear that the movement of students between China and Canada will benefit both of our countries, by fostering deeper mutual understanding and by facilitating the flow of knowledge between two of the world’s great knowledge-producing nations.

OK, you might be saying, this is impressive. But how does all of this advanced research and education tie back to the roles of cities in building our future prosperity?

It all comes back to the privileged partnership between urban regions and the institutions they host. Well-connected, globally networked centres of knowledge production are increasingly coming to the fore as the world’s leading cultural and economic centres. Venture capital and other forms of mobile investment seek out these special places and the opportunities that are signaled by their world-leading research and talent, their quality of place, their global reach, their markets and services. A recent paper in the *Handbook of Creative Cities* captured this idea succinctly:

“[W]ell connected *research* cities are likely to be important cities in the global *economy*; nodality in *research* often corresponds to nodality in *other* parts of the economy.”

Again, the evidence is compelling. These data show the top 25 urban agglomerations by number of research publications for the period 2011-13. Notice how consistently this list includes the
world’s most dynamic metropolitan *economies*.

On the global stage, public policy in many countries has moved increasingly to exploit this intimate connection between cities and a *nation’s* capacity for innovation, resilience, and long-term prosperity. For example, in the UK a few years ago, the Cameron Government created a Minister of State for Universities, Science and Cities.

**Part Three: A Few Implications for Public Policy**

This leads me to the final part of my remarks: a few suggestions for public policy. First and foremost, innovation policy must acknowledge that those activities with the greatest innovative capacity are not evenly spread across the national (and international) landscape, but are instead concentrated in a relatively small number of urban regions.

Public sector investments designed to stimulate innovation ought to be similarly concentrated, rather than allocated in a diffuse and overly dispersed way.

In a world of highly globalized production systems and supply chains, the only reliable path to sustained prosperity is to focus on those activities whose competitive advantage is difficult to replicate in other regions, or by other firms. Therefore, the goal of economic development and innovation strategy should be to enhance and support those firms, sectors and urban regions that possess unique capabilities, competencies, and innovative capacities.

Second, international connections, partnerships, and openness are *vital*. We need to foster more international collaboration – at the university, industry, and municipal levels. These are the global networks that will contribute immeasurably to our success.

Third, stimulating business investment in R&D is a critically important element of innovation policy. When industry invests in research, it builds a region’s capacity to absorb and harness the knowledge, discoveries, and – most importantly – highly qualified
personnel being generated by the local higher education and advanced research sectors. The world’s most innovative regions host ecosystems where scientists, entrepreneurs, venture capitalists, and industry leaders translate research into prosperity.

In the Toronto region, such an innovative ecosystem has begun to flower. And as it grows, it will be a powerful complement to the remarkable flourishing of entrepreneurship we are witnessing.

In fact, over the past decade, faculty, staff and students at the University of Toronto have been at the heart of one of the fastest-growing entrepreneurial clusters on the continent. And since 2010, no single university in North America has helped create more startup companies than U of T and its partner hospitals.

One day soon, Toronto might even find a place on this map, showing where ‘unicorns’ come from – unicorns, of course, are those startups with valuations of a billion US dollars or more.
I would make three quick observations in this connection.

First, these companies are small in number and highly clustered. Only a handful of regions can boast four or more: San Francisco/Silicon Valley, Los Angeles, New York, London, Stockholm, Berlin, Tel Aviv, Beijing, and the Shanghai region including Hangzhou.

Second, China – and Beijing in particular – are flourishing, with a disproportionate number of younger unicorn firms.

Third, each of these major regions is home to a mutually enriching partnership between a global city-region and world-class institutions of advanced research and education.

As an unnamed venture capital fund manager recently commented succinctly:

“Ultimately, money flows where ideas flow.”

So, to sum up, our leading urban regions are building the foundations of our planet’s
future prosperity. I believe we need to engage in a local and global conversation about how we can best help these cities excel in this role by concentrating our investments in knowledge infrastructure and improvements in quality of life in these high-potential urban regions.

It has been a privilege starting that conversation with you today.

Thank you for your kind attention.