

POLICY PAPER

Students, Universities and the Private Sector

March 2013

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EXECUTIVE SUMMARY

This policy paper showcases partnerships between universities, students, and the private sector, which is most commonly referred to as public-private partnerships. Partnerships between the public education sphere and the private business sphere have existed in the past but in recent years it has garnered more attention.

Students believe that private entities must never be allowed to limit academic freedom, partnerships should be tied to teaching and research, the building blocks of the knowledge economy, universities should remain public institutions, and that any financial benefit gained as a result of these partnerships should be shared between all parties involved (i.e., private businesses, universities and students).

The Students, Universities, and Private Sector Policy Paper has been divided into four sections, which includes: An introduction to public-private partnerships, private involvement in academic programming, entrepreneurship and student involvement in the private sector, and research and innovation. Finally, OUSA has put forth the following recommendations:

Private Involvement in Academic Programming

- Ontario universities should renew or create additions to their donation policies to ensure that they properly ensure the protection of academic freedom in the establishment of new programs.
- Governance documents, financial agreements and all foundational documents leading to the creation of an academic public-private partnership must be made public to all actors in a university.

Entrepreneurship and Student Involvement in the Private Sector

- Ontario's universities should strive to introduce more students to entrepreneurship through active promotional campaigns.
- The Provincial Government should create new incentives for universities to explore entrepreneurial activities.
- The Provincial Government should create new support-based initiatives for student entrepreneurs.

Research and Innovation

- The provincial government must leverage and promote the post-secondary education sector as a key player in enhancing Canada's innovation potential.
- The provincial government must work with local and federal partners to create policy incentives to enhance the creation and growth of regional knowledge clusters and innovation systems.

INTRODUCTION

“Privatization” might be one of the most loaded words in public policy itself. Its significance derives from the fact that it lies at an intersection between the most fundamental political debate in modern society: the role and size of government in the economic and social affairs of the nation. There are many who believe that there is inherent virtue to either a small or large public role in the financing of societal enterprises such as education, health care or housing.

A fear of an increasing level of privatization at universities is commonplace amongst many in Ontario’s academic community. However, the umbrella term of privatization is actually used by students, faculty and administrators to describe a number of trends in higher education, including but not limited to:

- The increasing percentage of university operating revenue derived from students through tuition and related fees;
- The changing role of private donors in supporting university operations;
- The forging of research partnerships with private, non-university entities;
- The creation of academic programs with links to the private sector.
- The potential off-loading of teaching, research, administrative or other capacities of the university to private entities.

Thus, it is important at the outset of this policy paper to outline that this paper is not about “privatization.” Rather, the ensuing discussion is specifically geared to address the topic of Public-Private Partnerships, which encompasses only the latter three options on the above list. The reality of our current Ontario university context is that new types of partnerships are already being formed with private sector actors, but with little discussion of the impact they might have on students. This policy paper seeks to fill this void, rather than attempt to settle a centuries-old debate on whether public institutions like universities should be completely privately or publically funded.

That said, any discussion of currently existing and emerging types of public-private partnerships will inevitably provoke questions about the role of academic freedom, the limits of private influence on a university campus and the proper function of the university itself. Where appropriate, the paper will lay out principles governing the appropriate form of partnership between private sector actors and universities.

The overarching purpose of this policy paper will be to advocate a maintenance of the autonomy and academic freedom currently expected of our universities, while encouraging private-sector collaboration where mutual benefit.

Functionally, this policy paper will attempt to accomplish three objectives:

- To examine the range and types of public-private partnerships and evaluate their impact on undergraduate students.
- To recommend parameters for appropriate types of private involvement in the university sphere.
- To recommend ways that public-private partnerships could be better leveraged to enhance the undergraduate student experience.

For the purposes of this paper, research will be defined as work that is undertaken by a faculty member in conjunction with a student and/or a private sector actor to enhance the knowledge within a particular subject matter.

Innovation is defined as something that demonstrates a focus on the development of new, or the enhancement of old ideas or practices, for either commercial or broader societal benefit. Innovation seeks to improve existing systems or products often through inspiring entrepreneurship

IN WHAT WAYS DO UNIVERSITIES COLLABORATE WITH THE PRIVATE-SECTOR?

Before launching into a discussion of principles, concerns and recommendations OUSA has crafted on the issue of public-private partnerships, it is worth spending some time creating a precise definition. A public-private partnership, by definition, is any agreement between a private and a public entity to create, administer or deliver some sort of service or good. Obviously, this can cover a very wide range of activities. For example, a public school or hospital contracting food services to a private catering company could be considered a public-private partnership. If this paper were to focus on all types of public-private partnerships, it would be hard to keep discussion focused on the most important types for undergraduate students.

Therefore, discussion of public-private partnerships will be limited to those that interact with the academic missions of the school. That is, where schools have agreements with private providers that concern research or teaching.

With this distinction made, it can be observed that there is a wide variety of public-private partnership activity happening in the academic sphere of universities. These partnerships are widely discussed, but seldom understood outside of the circles of academia and industry that deal most with them. Governments generally understand that they can help commercialize research, which helps the economy. Universities understand them as a way to attract prestige and revenue, while industry understands them as a way to capitalize on research being conducted anyways.

However, the reality of public private partnerships is slightly more complicated. They serve a wide variety of functions that, in turn, accomplish different end results.

MAJOR FUNCTIONS OF UNIVERSITY-PRIVATE SECTOR COLLABORATIONS¹

Technology Commercialization

The most commonly known type of public, private partnership, where university research is patented, licensed and brought to market through the transfer of knowledge from the university sector to the private sector.

Business Assistance

Where the university utilizes faculty and student resources to assist private actors with business education, the writing of business plans, etc.

Workforce Development

Programs to provide new skills or employment and education in workers' rights & compensation.

Regional Partnerships

Connecting local stakeholders in the region in order to promote local economic success.

Community Development

Improving local business growth and campus neighborhoods through facilitating opportunities for entrepreneurship.

In all of the above cases, academia interacts with the broader community in order to pursue mutually beneficial goals. It is worth noting that these benefits can be conferred to individuals in the university or broader community, the university as a whole, or even broader society as a whole. For instance, technology commercialization practices may bring financial benefit to an individual firm and professor, but if the result of a public-private partnership of this type is the creation of a new industry, the university may gain benefit through increased prestige or recognition for being a place of high-quality research, while society will reap economic benefits such as increased employment opportunities, new technology and more.

Due to the wide-ranging benefits of the various types of partnerships, a complete inventory of them would be an intense undertaking, as they take place at all levels of the university community. Some are faculty led, some are student led and some are undertakings of the institution centrally. Additionally, some types have

¹ Breznitz, S, Feldman, M. (2010). *The Engaged University*. Atlanta: Journal of Technology Transfer.

spurred greater interest and investment by governments and private actors. As such, this policy will concern itself with the three types of public-private partnership in particular.

POPULAR TYPES OF PUBLIC-PRIVATE PARTNERSHIP IN ONTARIO²

<i>Type of Partnership</i>	<i>Function of Partnership</i>
<i>Technology Transfer Offices</i>	<i>Spaces where research and technologies developed at the university level can meet with private sector actors to be commercialized. Also called centers of excellence, innovation parks, etc.</i>
<i>Public Research Institutes</i>	<i>Where university and private sector actors come together to conduct research for non-commercial purposes. The Balsillie School of International Affairs is an excellent example of such collaboration.</i>
<i>Incubators and Idea Accelerators</i>	<i>Spaces that offer technical expertise and other resources to help accelerate the development of entrepreneurial firms.</i>

Technology Transfer Offices exist most often to leverage funding spent on Research and Development in the higher education sector into commercial products that will have some positive economic benefit on society as a whole. It is often seen as an important component of the emerging knowledge economy.³ As a result, technology transfer has attracted a great degree of interest and investment from both higher education and government circles. Through **Networks of Centres for Excellence** Canada's Commercialization of Research fund, the federal government funds a variety of technology transfer offices in Ontario. Most of these centers are not run through the universities themselves, but rather are independent organizations that create partnerships between industry and business in regions of Ontario.

Provincially, several large partnerships dedicated to technology transfer, research commercialization and entrepreneurship exist between universities and the private sector.

- The **Ontario Network of Excellence** is a member organization that brings together independent entrepreneurs, advisors, sector-specific organizations and post-secondary institutions to run a wide variety of services, including facilitating technology transfer. The Network is funded by the Government of Ontario and funds collaborative research projects, salary-sharing programs for students interested in working in R&D, Knowledge exchanges and much more.
- The **Ontario Centres of Excellence** network is a not-for-profit organization funded through the Ontario Network of Excellence, as well as several provincial and federal ministries. The network invests in projects that help research taking place in the academic or research sphere gain commercial viability. Specifically, the province of Ontario funds an Industry-Academic Collaboration Program (ICAP) that maintains a network of technology transfer offices at Ontario universities, supports talent development programs and supports commercialization opportunities for promising research initiatives. It is worth noting that this program works in partnership with the federal government's Networks of Centres of Excellence program for commercialization of research. All Ontario universities participate in the Ontario Centres of Excellence network.
- The **Ontario Partnership for Innovation and Commercialization** is a cooperative partnership between Algoma, Brock, Lakehead, Laurentian, Nipissing, OCAD, Ryerson, UOIT and Trent, dedicated to promoting technology transfer opportunities on campus, while providing support to faculty interested in commercializing research.

² Adapted from: Jenkins et al. (2010). *Innovation Canada: A Call to Action*. Ottawa: Government of Canada.

³ Martin Institute for Competitiveness and Prosperity. (2010).

Nearly every university in Ontario has created or developed partnerships with some form of technology transfer office. Many of these offices are members of the Ontario Network of Excellence.

EXAMPLES OF TECHNOLOGY TRANSFER OFFICES IN ONTARIO⁴

<i>Institution</i>	<i>Technology Transfer Office</i>	<i>Institution</i>	<i>Technology Transfer Office</i>
<i>Algoma</i>	<i>Essar Convergence Centre</i>	<i>Ryerson</i>	<i>MaRS, Centre for Urban Energy, OPIC (Lead Institution)</i>
<i>Brock</i>	<i>BioLinc</i>	<i>Toronto</i>	<i>MaRS, Centre for Commercialization of Regenerative Medicine</i>
<i>Carleton</i>	<i>Carleton Immersive Media Studio, Talent First Network</i>	<i>Trent</i>	<i>No specific office mentioned, but a member of OPIC</i>
<i>Guelph</i>	<i>Catalyst Centre – Industry Liason Program</i>	<i>Ottawa</i>	<i>Technology Transfer & Business Enterprise Office</i>
<i>Lakehead</i>	<i>The Innovation & Economic Development Office</i>	<i>UOIT</i>	<i>Office of Technology Transfer &</i>
<i>Laurentian</i>	<i>Centre for Excellence in Mining Innovation</i>	<i>Waterloo</i>	<i>Waterloo Commercialization Office (WatCo)</i>
<i>McMaster</i>	<i>Centre for Surgical Invention & Innovation, Centre for Probe Development, Centre for Commercialization of Regenerative Medicine, Xerox Centre for Engineering</i>	<i>Western</i>	<i>Centre for Imaging Technology Commercialization, BioIndustrial Innovation Centre, Western Research Development Office</i>
<i>Nipissing</i>	<i>Technology Transfer & Research Partnerships Office</i>	<i>Wilfrid Laurier</i>	<i>University-Industry Liason Office</i>
<i>OCAD</i>	<i>Digital Media Research & Innovation Initiative, Mobile Experience and Innovation Centre</i>	<i>Windsor</i>	<i>Office of Research Services (Commercialization Services)</i>
<i>Queen’s</i>	<i>Innovation Park at Queen’s University, PARTEQ Innovations, GreenCentre Canada</i>	<i>York</i>	<i>Intellectual Property and Commercialization Office, MaRS, VentureLab</i>

Additionally, as can be plainly seen in table X, universities often enter into partnerships with external technology transfer offices, in addition to offering their own technology transfer services through their own central research offices.

Public Research Institutes: It is not always the case that industry and university actors collaborate for commercialization purposes however. Oftentimes, knowledge mobilization is as much an objective of partnership as creating new products. Business leaders looking to glean insight into long-run trends and phenomena have a great deal of incentive to invest in research with no immediately obvious output. In a few

⁴ Adapted from: Council of Ontario Universities. (2012). *Fostering Entrepreneurship at Ontario Universities*. Toronto: Council of Ontario Universities.

cases, this incentive has translated into investments that have created research institutes and instructional partnerships with institutions.

Institutes and schools are usually created by large donations made to the institutions, leaving some in the academic world fearful that the research mission of institutions can effectively be changed by infusions of private revenue. Proponents of such partnerships argue that they expand the scope and volume of research activity taking place in our higher education sector, involving the private sector in supporting research that might otherwise either go unsupported, or supported solely by public investment.

Two examples of Public Research Institutes are outlined below.

CASE STUDIES OF ONTARIO PUBLIC RESEARCH & TEACHING INSTITUTES

	<i>Balsillie School of International Affairs</i>	<i>The Munk School of Global Affairs</i>
<i>Degree-Granting Institutions</i>	-The University of Waterloo -Wilfrid Laurier University	-The University of Toronto
<i>Private Financial Contribution</i>	\$50 Million – Jim Balsillie	-\$35 Million – The Peter & Melanie Munk Charitable Foundation.
<i>Funded By</i>	-CIGI (A Private Think Tank Funded By Both Public & Private Sources) -Federal & Provincial Capital Grants -The City of Waterloo (Land Donation) -Increased operating support from UW and WLU.	-The Peter & Melanie Munk Charitable Foundation -Federal & Provincial Grants -Increased Operating Support from University of Toronto
<i>Mission</i>	To conduct advanced research, education and outreach on global governance.	To integrate research on global affairs with teaching and public education. No governing documents on research focus, though a clarification exists that all academic program decisions will be the exclusive purview of the university.
<i>Research Mandate</i>	To conduct academic research, in keeping the BSIA's five-year research-plan, approved by the BSIA board of directors.	
<i>Teaching Mandate</i>	To provide certain academic programs, approved by the BSIA board. Once implemented, all programs are run under the auspices of participating universities. BSIA currently offers two MA and one PhD program.	The Munk School currently offers four MA programs, two PhD programs and seven undergraduate programs.

In both of these two examples, public research institutes are operated through the degree-granting authority of the host institutions. However, institutes of this kind are often spurred by interest on the part of private donors, only coming to fruition through the provision of private funds.. In both of these cases, agreements have been struck between the participating funding sources to maintain the principles of academic freedom and autonomy, but the extent to which the terms of individual arrangements fulfill this promise is up for debate.

Incubators & Idea Accelerators are a quickly growing segment of universities, and are a relatively new development. Oftentimes, they are not easily distinguishable from technology transfer offices or other types of community outreach initiatives currently taking place on campuses. The basic goal of business incubators is to give the university a greater role in the fostering of entrepreneurship. Oftentimes, this entrepreneurship goes hand-in-hand with research taking place at the university itself. Incubators can be standalone centers in the university, open to students, faculty and wider community, but they can exist as closed-off academic programs, open only to enrolled students and participating faculty. Given that incubators & idea accelerators are a relatively recent trend in the university community, a wide variety of models exist in Ontario, outlined below.

ONTARIO UNIVERSITY ENTREPRENEURSHIP INITIATIVES

<i>Institution</i>	<i>Entrepreneurship Program</i>	<i>Institution</i>	<i>Entrepreneurship Program</i>
<i>Algoma</i>	N/A	<i>Ryerson</i>	<i>Digital Media Zone, StartMeUp Ryerson</i>
<i>Brock</i>	<i>Blueprint, BioLink</i>	<i>Toronto</i>	<i>The Next 36, TechnoLABS</i>
<i>Carleton</i>	<i>Lead To Win, Nicol Internship Program, TIM Entrepreneurs</i>	<i>Trent</i>	<i>Entrepreneurship Games</i>
<i>Guelph</i>	<i>Project SOY (Soybean Opportunities For Youth)</i>	<i>Ottawa</i>	<i>Start-up Garage, Entrepreneurship Mentorship Program, Entrepreneurship-in-Residence Program</i>
<i>Lakehead</i>	<i>Entrepreneur Certificate Program</i>	<i>UOIT</i>	<i>Ontario Global Edge, Gaming and Entrepreneurship Program</i>
<i>Laurentian</i>	N/A	<i>Waterloo</i>	<i>VeloCity Residence, Garage & Campus, Conrad Business, Entrepreneurship and Technology Centre, Student Entrepreneurship Co-op (Masters Program associated).</i>
<i>McMaster</i>	<i>Xerox Centre for Engineering Entrepreneurship & Innovation, The Don Pether Incubation Centre</i>	<i>Western</i>	<i>BizInc, Quantum Shift</i>
<i>Nipissing</i>	<i>The Nipissing University Student Development Fund</i>	<i>Wilfrid Laurier</i>	<i>Laurier LaunchPad</i>
<i>OCAD</i>	<i>Information Catalyst, Mobile Accelerator Program</i>	<i>Windsor</i>	<i>Youth Entrepreneurship Partnership</i>
<i>Queen's</i>	<i>Innovation Park</i>	<i>York</i>	<i>NetImpact</i>

The above list is by no means an exhaustive list of all of the ways Ontario universities are supporting entrepreneurship in surrounding communities and the province as a whole. Many of the technology transfer initiatives above, including MaRS, have business development and idea incubator components, geared towards linking faculty with entrepreneurs in the broader community. Furthermore, it is not uncommon for

student organizations to foster entrepreneurship. At Waterloo, students have created clubs supporting those who want to attain the skills necessary to create mobile apps, which are funded through central student organizations.

GUIDING PRINCIPLES

Principle One: Private entities must never be allowed to limit the freedom of the academic to explore, express, publish or teach new ideas and research.

Academic freedom is at the heart of much debate in higher education, with many different actors believing that it applies to different things. At a very minimum however, students believe that it must mean that universities remain a space where the flow of knowledge goes unhindered by influence from outside actors. In their policy on academic freedom, Canadian Association of University Teachers (CAUT) highlights that “it is fundamental to a democratic society to have an autonomous academy in which academic staff have academic freedom in their teaching, their research, their extramural speech, and their speech about institutional matters. Academic freedom is essential if academic staff are to fulfill their professional and social responsibilities in generating, sharing, and interpreting knowledge that can inform decisions about products and important public policy issues.”⁵

Students wholeheartedly endorse this principle, particularly when applied to collaborative partnerships the university enters into. When a university puts their brand on a partnership, the public should be able to assume that the partnership reflects the same principles espoused by a university itself; a commitment to academic honesty, integrity and academic autonomy. Research conducted by a privately funded research institute housed in a university, for instance, must advance the public, as well as the private good, with nothing important being restrained in order to further individual actors’ private interests.

CAUT raises some specific points that are worthy of mentioning as part of this principle:

- In public-private collaborative agreements, the university, nor the private sector should be granted any additional powers to limit any academic output of a student or faculty member, department or school.
- All matters related to curriculum design must remain under the authority of the senate of each institution, or a designate subsidiary faculty or department operating under the authority of a senate.
- The university must also strive to ensure that public-private arrangements do not result in the lowering of quality inputs (staff, resources, etc) in other departments. The university should still retain the ability to make strategic decisions over academic programs (i.e, closing or opening departments and faculty), but this process should continue as it always has, through the school’s policies and institutional quality assurance plans (IQAPs). Decisions to open public-private departments should never come alongside the closure of other departments.⁶

Principle Two: As much as possible, collaborative partnerships should create opportunities for students.

Collaborative partnerships with industry have a great deal of potential to transform the traditional academic experience and add value to the time a student spends at an academic institution. However, with technology commercialization and business investment in research and development at the top of the public agenda, it appears that most public-private partnerships are geared towards the research mission of the university.

There is nothing inherently wrong with linking research and development with industry, but students believe that there is more opportunity to be found in industry collaboration than simply the commercialization of Research and Development. Opportunities for experiential education, for students to develop industry contacts and gain some exposure to commercial research are also important potential benefits of an increased level of industry-university collaboration.

⁵ Canadian Association of University Teachers. (2012). *Guiding Principles for Academic Collaborations*. Ottawa: Canadian Association of University Teachers

⁶ Ibid.

While university faculty should retain exclusive, final authority over the grading and evaluation of students, the learning potential that comes with students working with industry experts is immense. Brock University's Interactive Arts & Science Program provides an excellent example of such a partnership.⁷ The program is housed at the Centre for Digital Humanities at the nGen complex in downtown St. Catherines. Funded through the Ontario Network of Excellence, the nGen facility houses a variety of technology and software companies, many of whom have developed partnerships with Brock to offer Interactive Arts & Sciences students the opportunity to conduct in-study internships and develop contacts while still in school. Students often go on to work for these firms post-study.⁸ The setup is also aimed to promote regional economic growth by encouraging top talent to stay in the Niagara region.

There are a few other programs in Ontario that resemble Brock's role in nGen, but we believe that integrating the classroom and the workspace, in specific disciplines, can yield valuable outcomes for students.

Principle Three: Where knowledge or resources generated by the university have the ability to directly benefit the broader province, infrastructure should exist to facilitate the process.

Universities are the recipients of a vast sum of public funds. In addition to the \$3.5 billion invested for general operating purposes, universities in Ontario received over \$2.6 billion for sponsored research, \$883 million of which came from the private sector.⁹ This investment in university research is highly beneficial, as it benefits local and national economies and allows human understanding of the global environment to more fully develop.

However, the ivory tower can sometimes be an apt metaphor for universities, as professors often conduct research in isolation, or in collaborative partnerships with other professors. OUSA believes that it is completely appropriate for the government and private sector actors to facilitate the development of technology transfer mechanisms, create knowledge mobilization networks or utilize the research conducted by faculty to benefit society as a whole, including local and national businesses that contribute to the economy.

The benefits of supporting such mechanisms are well known. In 2011-12 alone, industry collaborations supported by just one federal program in Canada supported the creation of over 2,400 new jobs, started 39 new companies and resulted in the creation of 145 new products. The cost of this to the public has been relatively small in comparison to the cost borne by the private sector, with partner companies contributing \$1.85 for every \$1 invested by the government.¹⁰ The entire impact of industry-university collaborations would be difficult to quantify, but if such a limited scope of programs can produce such an incredible public benefit, they would seem to be highly useful.

Principle Four: The Government must remain the primary financier of public post-secondary education and public research in Ontario.

Industry collaborations often raise valid fears of a "privatization" of the university's research or teaching mission. Indeed, a world where most research in university was financed by private entities would be highly problematic from a student perspective. Even with explicit clauses in place to protect the academic freedom of institutions, a high percentage of private investment in research & development would make it difficult for schools to avoid the soft influence that would be granted private sector actors through finance to shape the priorities of the institution.

Luckily, this is not the case in Ontario currently; in fact, it is quite far away from being the case, both from the standpoints of operating and research budgets. Between 2000 and 2012, private revenue in research only fluctuated between 31 and 35 per cent of total funds. Interestingly, the amounts invested in research

⁷ Brock University. (2013). *Biolinc Website*. St. Catherines: Brock University. Accessed online: <http://www.brocku.ca/BioLinc>

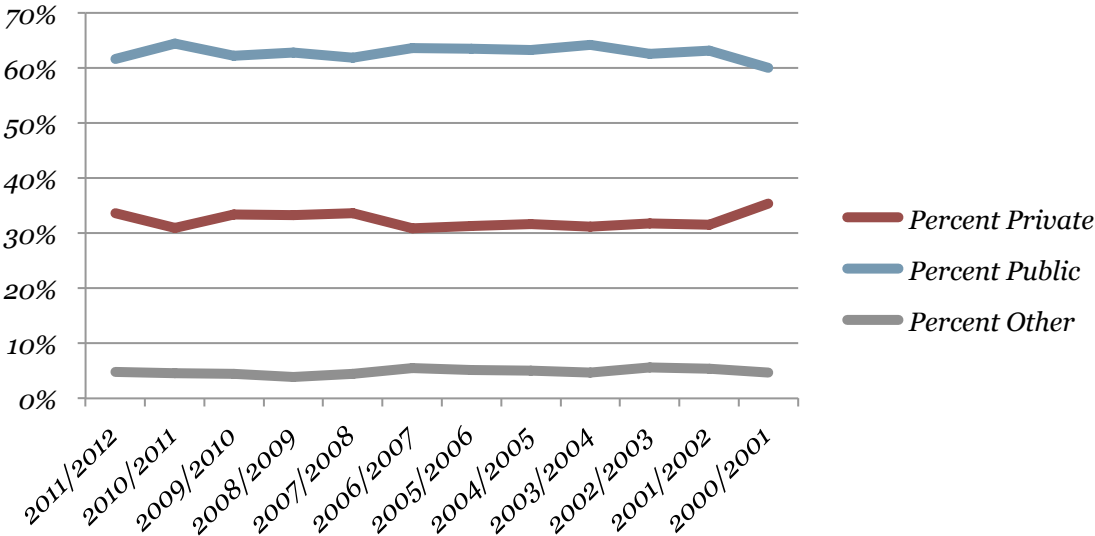
⁸ Ibid.

⁹ Adapted from financial data provided by the Council of Financial Officers – Universities of Ontario, an affiliate of the Council of Ontario Universities.

¹⁰ Government of Canada. (2013). *Networks of Centres of Excellence: Delivering Results that Matter to Canadians*. Ottawa: Accessed: http://www.nce-rce.gc.ca/Research-Recherche/2012/index_eng.asp

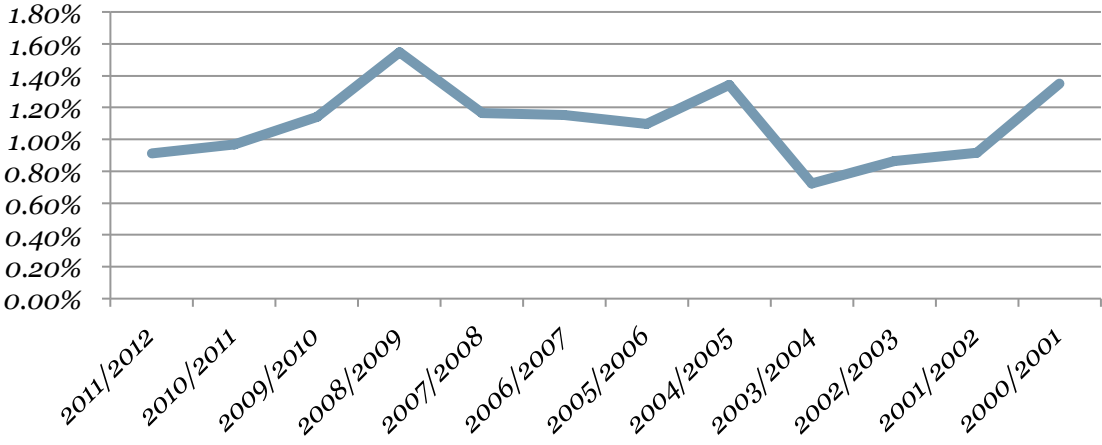
from both the government and private sector more than doubled in this same time frame. Federal investments in research increased from over \$556 million in 2000 to over \$1.2 billion in 2011/2012. Private sector investment increased from \$447 to \$883 million in the same time frame. Increased government investment (mostly federal), has allowed the total sum of money going towards research at Ontario universities to remain mostly public.

FIGURE 1: PERCENTAGE OF SPONSORED RESEARCH FUNDS CONTRIBUTED BY PUBLIC INVESTMENT AND PRIVATE DONATION¹¹



With regards to university operating grants, revenue from private donors has always played a miniscule role, with donations only accounting for less than 1.5 per cent of total budgets. This has remained largely the same for the past 10 years.

FIGURE 2: PERCENTAGE OF UNIVERSITY OPERATING REVENUE COMPRISED BY DONATIONS¹²



While universities have become more successful at attracting revenue, university revenue data does not paint a story of privatization. Rather, universities have been subject to increases in research revenue from both the public and private sector standpoints. Students believe that governments should continue investing

¹¹ Adapted from financial data provided by the Council of Financial Officers – Universities of Ontario, an affiliate of the Council of Ontario Universities.
¹² Ibid.

their current share of public-sector research revenue, in addition to encouraging greater private-sector investment.

Principle Five: If students are involved in a public private partnership or entrepreneurial venture, Universities must ensure transparency and fairness of their intellectual property rights within the agreement.

Intellectual property can be loosely defined as the product of intellectual or creative activity that can be protected under the law to some extent. There are various forms of legal protection, but the two which are most likely to be relevant in the University environment are copyright and patents. The Canadian Copyright Act provides that the author of a work is the first owner of copyright. However, where a work is created by an employee in the course of his or her employment, in the absence of an agreement to the contrary, the employer is the first owner of the copyright. Patents protect inventions – that is, creations or discoveries, which are new, not obvious and useful. A patent prevents anyone else from using the invention without the patent owner's permission for approximately 20 years¹³.

In a public private partnership there is a natural ambiguity created by the presence of multiple stakeholders who also might have a predetermined contractual agreement on the objectives and rights of research. Institutions have a clear obligation to inform researchers working on projects which are in whole or in part supported by privately sponsored funding of the sponsor rights associated with the funding and to fully inform the researchers that their legal "creator ownership" rights may be significantly impacted by pre-existing sponsor rights to intellectual property developed under the research project¹⁴. OUSA also believes that Institutions should also prioritize clauses that protect student intellectual property rights or provide them with fair remuneration for the public-private agreements they sign.

University of Waterloo has been identified as one of the better examples of Intellectual Property Management, under their bylaws all parties are free to own full rights and commercialize any of their own IP. Should a student wish to utilize the services of the University to commercialize their idea or research the University executes a formal written agreement with such creator-owners whereby Waterloo incurs any costs associated with IP protection (eg. patents) and assigns professional staff to manage and achieve commercialization success. Under this partnership, the success from commercialization efforts is split 75% to the creator-owners and 25% to Waterloo (net of UW's recovery of IP protection costs). Whereas, arguably McMaster University's Intellectual property laws are more ambiguous and restrictive. In the case of any newly created or discovered Intellectual Property created by a Student, the decision to commercialize may proceed with the unanimous consent of several stakeholders, within a certain restrictive time frame and still contains a provision for a public private partnership agreement to supersede the right of the student to own newly created or discovered Intellectual Property arising at any of the Institutions (On which the University has the first claim).¹⁵

On a similar principle, students utilizing advice or information on an entrepreneurial venture from an Incubator, Technology Transfer Office or a similar University resource must also retain their patent and copyrights unless they explicitly waive them through a mutual agreement.

Principle Six: Each individual institution shall have the authority and responsibility to define academic freedom within their institution, in consultation with students.

Universities are communities of scholars and students, each with individual needs and perspectives that must be taken into account. As a result, OUSA fundamentally rejects a top-down approach to the definition of academic freedom. While there are substantial areas where a provincial government could have a massive

¹³ Canadian Intellectual Property Office. (2013). *Canadian Intellectual Property Office Website*. Ottawa: Industry Canada. Accessed: <http://www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/Home>

¹⁴ University of Waterloo. (2013). *Waterloo Intellectual Property Rights Policy*. Waterloo: University of Waterloo. Accessed: <http://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-73-%E2%80%93-intellectual-property-rights>.

¹⁵ McMaster University. (2013). *McMaster Joint Intellectual Property Policy*. Hamilton: McMaster University. Accessed: http://milo.mcmaster.ca/policies/joint_ip_policy

impact in facilitating a conversation, universities must have the ability to make decisions on what academic freedom means in an autonomous fashion.

PRIVATE INVOLVEMENT IN ACADEMIC PROGRAMMING

Concern One: Lack of clarity in public-private partnership agreements has led to concern over academic freedom in privately funded academic programs.

Despite the enormous potential economic benefit posed by increasing the number of university/private-sector collaborations, they are not always easy bedfellows. While universities are places where research is carried out for oftentimes-intangible goals, the private sector can tend towards a narrow focus on financial deliverables. While it is in the interest of the private sector to invest in both higher education (for the training of more skilled workers) and research (new technology), private sector expectations of universities can sometimes be beyond the pale, largely due to the natural role of a firm to seek maximum utility out of any investment. While donors must have the right to know whether their donation is being used well, they should never have the ability to make decisions regarding curriculum, research mission, and other activities traditionally carried out by the university. As such, it is important for universities to ensure that collaborative agreements with industry actors reflect the best interests of the university; making sure that no un-due private sector influence is allowed in the classroom.

Perhaps the most recent examples of public-private partnerships that crossed the line into the traditional territory of academic freedom were the agreements that the Centre for International Governance Innovation (CIGI) attempted to strike with York, and successfully struck with the University of Waterloo and Wilfrid Laurier University. CIGI is a non-partisan think-tank started by former Research-in-Motion CEO's Jim Balsillie and Mike Lazaridis in 2001. Over time, the Centre has come to be funded by 19 wealthy donors and all three levels of government. It's role as a not-for-profit organization mean that it is not necessarily a profit-maximizing firm, as many traditional public-private partnerships tend to be. Regardless, it's attempts to collaborate with York, Waterloo and Laurier have led to a great deal of controversy.

The CIGI partnership with UW and WLU allowed for the creation of the Balsillie School of International Affairs (BSIA) in the City of Waterloo in 2007. While the school is a valuable addition to Ontario's academic landscape, funding for the school was the product of a multi-million dollar donation by CIGI. As a result, the school's governance structure was created collaboratively between the two universities and CIGI.

The agreement between CIGI and the two universities allowed for the creation of a governing board with equal representation between CIGI, UW and WLU. However, for a motion to pass this board, each a vote from each actor was required, essentially giving any interest on the board a veto. This governing board has authority over budget and operations, as well as the strategic research direction of the school. Several faculty organizations, including CAUT, responded by arguing that this was an over-reach in the traditional power afforded to a private donor.

In order to avoid a censure, the university released a memorandum of understanding that clarified several of the board's powers. Namely, the MOU provided a more concrete definition of "Strategic Research Direction" than existed in the original governance document. The MOU clarifies that the board's purview only applies to setting the "overarching research direction of the school (that is, the scholarly advancement of multi-lateral and global governance)."¹⁶ It goes on to say that the board will have no purview over the research projects of individual professors, among a few other clarifications on limits to the board's power. Furthermore, the board only has power over the non-academic budget.

Recommendation One: Ontario universities should renew or create additions to their donation policies to ensure that they properly ensure the protection of academic freedom in the establishment of new programs.

Every university in Ontario has a policy governing donations, all of which specify that where donations are put in place to set up new academic processes (new research or teaching initiatives), academic integrity must be maintained. These structures are either under the purview of the senate or the board of governors, which

¹⁶ Established from a memorandum of understanding drafted between Wilfrid Laurier University, Waterloo University and the Balsillie School for International Affairs (BSIA). Accessible: http://www.wlu.ca/documents/53541/BSIA_Governance_MOU_Senate_Jan_14_2013.pdf

control the academic and corporate functions of the university. However, each school's policy differs in structure and, in particular, thorough exploration of the issue of what academic freedom means. Two examples of institutional policies are outlined below to illustrate this point.

EXAMPLES OF DONATION POLICIES AT ONTARIO UNIVERSITIES

McMaster Gift Acceptance Policy (2011)

"The University will not accept gifts when a condition of such acceptance results in an abridgement of its academic freedom or its integrity."

York University (2006)

"The University will not accept gifts when a condition of such acceptance results in an abridgement of its academic freedom or its integrity."

The case of CIGI, Waterloo and Laurier is an excellent example of a case where a more precise definition of what constitutes academic freedom could have been helpful. Once a memorandum of understanding properly clarified the definition of strategic research direction and the powers of the Board of Directors, CAUT dropped their motion to censure the two institutions. In this case, clarity over what academic freedom is, means and does could have avoided a substantive conflict.

OUSA would suggest that the policies strive to articulate the some of the following standards, rather than simply relying on the phrase "academic freedom."

If private sponsorship of academic programs is to continue, it must abide by strict and clear guidelines to ensure that the broader trend of private involvement does not come with too many strings attached. Clear university policies would make it clear to donors and university stakeholders that the agreements the extent to which a donor can be involved in the affairs of an academic program they set up. The policies should serve two goals; first, to ensure that a donor does not have oversight or involvement in the individual research or teaching activities of the professor teaching in a given school, second, that the donor has the ability to be reasonably informed and aware of the activities of the school they have donated to. In other words, they should be able to request periodic updates on the progress of research, or other key pieces of information about the school.

The agreements should also distinguish that a donor should have the right to be involved in the establishment of the broad subject of the institution. For instance, CIGI should be able to be involved in ensuring that the Balsillie school maintains its mission of pursuing the study of global politics; it should not however, be able to tell individual professors how that mission should be maintained.

Recommendation Two: Governance documents, financial agreements and all foundational documents leading to the creation of an academic public-private partnership must be made public to all actors in a university.

Universities are communities of scholars, students and workers that help support academic pursuits. As a result, partnerships with outside organizations or individuals are developments that the whole university community should have some input on. While it is true that the leadership of a university is responsible for its long-term direction, the rest of the university community should maintain some right to comment on new developments. This would be difficult to accomplish if the foundational documents leading to the creation of academic programs remain behind closed doors. Thankfully, this has been the case in Ontario, for the most part. The governance structure and financing arrangements behind both CIGI partnerships were made available, allowing for a public debate.

Additionally, since university records fall under the purview of the Freedom of Information and Protection of Privacy Act, any individual could request such an agreement. However, due to the likelihood that public-private partnerships will become more common, a standard of automatic public disclosure should be set early.

ENTREPRENEURSHIP & STUDENT INVOLVEMENT IN THE PRIVATE SECTOR

Concern Two: There is an insufficient supply of work-integrated learning opportunities to meet rising student demand

At a time when university education is being increasingly linked to labour market success, policymakers have lauded co-operative education, community-service learning and other work-integrated partnerships as a way to make sure that students graduating from universities have some work experience, making them more job ready. For example, the Ministry of Training, Colleges and Universities' recent discussion paper highlighted fostering entrepreneurship as a key goal of Ontario's post-secondary sector in the upcoming future.¹⁷

It is often forgotten that co-operative education, work integrated learning and student business incubators are all forms of public-private partnerships between the university and potential employers. Ontario has a successful and well-documented history of being a leader in the provision of work-integrated learning opportunities, with the University of Waterloo currently home to the largest co-operative education program in the entire world.¹⁸

With the government committed to providing more pathways for work-integrated learning, co-operative education and entrepreneurship opportunities, it is concerning that demand for such programs already appears to slightly outstrip supply. Even at the University of Waterloo, students are warned that employment is not a sure thing, with lower employment rates to be found among more junior students.¹⁹ In a recent survey conducted by the Higher Education Quality Council of Ontario, finding enough placements for students was the second most-cited challenge facing Work-Integrated Learning in Ontario, with 61% of university professors citing availability as a growing problem.²⁰ Furthermore, on a similar survey, 14.4 per cent of employers cited that they did not have the proper resources to properly recruit, train and supervise co-op students.²¹ If Ontario truly seeks to make private-sector work experience a larger component of our post-secondary education system, it must be prepared to address these challenges.

Concern Three: Many Ontario business incubation initiatives are focused solely on faculty, missing a valuable opportunity for student involvement and entrepreneurship.

While nearly every Ontario University has a technology transfer office in place, linking faculty with entrepreneurship opportunities, only a handful currently have business incubators that openly encourage student involvement. Ryerson's DMZ, Waterloo's VeloCity incubator and Brock's involvement in St. Catherine's nGen centre are all excellent examples of programs that attempt to capitalize on student entrepreneurship, but currently these programs are not widespread enough to meet the Ontario government's demand for increasing student entrepreneurship.²²

While many universities have *some* sort of entrepreneurship program, only a handful have what could be considered full-fledged incubators. For instance, York University currently has a research chair in international entrepreneurship and an advocacy group encouraging entrepreneurs to be environmentally efficient, but has no central area for students to go to develop their start-up ideas.²³ Trent University has a week-long competition for entrepreneurs, but no incubator for them to work in year-round. All in all, just slightly over half of Ontario's universities offer full-fledged business incubators, based on an initial scan. While this is progress to be proud of, not every student has the available resources to evaluate whether entrepreneurship is a skillset they wish to utilize.

¹⁷ Ministry of Training, Colleges and Universities. *Strengthening Ontario's Centres of Creativity, Innovation and Knowledge*. Toronto: Queen's Printer for Ontario.

¹⁸ University of Waterloo. (2013). *Co-operative education website*. Waterloo: University of Waterloo Press. Accessed: <https://uwaterloo.ca/co-operative-education/why-co-op/employment-statistics>

¹⁹ Ibid.

²⁰ Peters, Julie, Academia Group Inc. (2012). *Faculty Experiences with and Perceptions of Work-Integrated Learning (WIL) in the Ontario Postsecondary Sector*. Toronto: Higher Education Quality Council of Ontario.

²¹ Sattler, P. & Peters, J. (2012). *Work-Integrated Learning and Postsecondary Graduates: The Perspective of Ontario Employers*. Toronto: Higher Education Quality Council of Ontario.

²² Ministry of Training, Colleges and Universities. *Strengthening Ontario's Centres of Creativity, Innovation and Knowledge*. Toronto: Queen's Printer for Ontario.

²³ Council of Ontario Universities. (2012). *Fostering Entrepreneurship at Ontario Universities*. Toronto: Council of Ontario Universities.

Concern Four: Not enough students have the opportunity to explore entrepreneurialism within their field of study.

Through the Ministry of Training, Colleges and University's discussion paper on post-secondary transformation and the strategic mandate process, university entrepreneurship initiatives have come to receive a great deal of attention. The trend towards fostering and supporting student entrepreneurship in universities is not limited to Ontario however. The European Union has outlined the fostering of entrepreneurship and innovation as a key component of its Lisbon Strategy for Growth and Employment.²⁴ Despite this trend, entrepreneurship centres operate outside the traditional sphere of academia.

Even Ontario's most prominent student entrepreneurship centers, the Ryerson DMZ and VeloCity, do not interact with most academic programs at the school. For instance, Ryerson offers a digital specialization program, which exposes students to the work going on in the DMZ, but the choice to even learn about entrepreneurship is a process students must opt-into, rather than are exposed to.²⁵ The intersection of one or two academic programs with a center for entrepreneurship appears to be the case at Brock, Waterloo and McMaster as well.²⁶ Students in traditional arts and science disciplines are unlikely to come into contact with entrepreneurship initiatives unless they actively seek them out. Though history, philosophy and biology students might have valuable skills to contribute to a business venture, nothing in the typical university academic program encourages these students to evaluate whether these skills could be applied in an entrepreneurial way. If Ontario truly seeks to create more entrepreneurs, more students must be exposed to the concepts, benefits and risks associated with starting a business.

With so few academic pathways deliberately offering an exploration of entrepreneurship, it is hard to accept that students "graduating with degrees as well as businesses" will soon become the norm. While operations like Ryerson's DMZ are producing promising results and valuable economic returns, they are still very much independent operations within the structures of universities. It is not desirable that every student should become an entrepreneur, or work on projects within these spaces, it must be understood that most students are still not exposed to entrepreneurship, despite the increasing amount of resources supporting these initiatives.

Furthermore, entrepreneurship is often placed at odds with traditional academic activity. OUSA's conversations with facilitators of some Ontario entrepreneurship centres have highlighted that reconciling a university's educational demands with the life of an entrepreneur can be a difficult task for students, as well as faculty attempting to navigate both worlds. This implies that, despite an increasing focus on entrepreneurship within the ivory tower, a serious conversation about how entrepreneurship can be effectively leveraged into teaching and learning recognized by a university credit has yet to happen.

Recommendation Three: Ontario's universities should strive to introduce more students to entrepreneurship through active promotional campaigns.

Many commentators on Ontario economic policy, including the Mowat Centre and Martin Institute for Competitiveness and Prosperity have noted that Ontario currently lags behind the OECD both productivity and innovation.²⁷ While these words are often overused, in this case they apply very specifically to the amount of Ontario's research and development that ends up in products and technologies being brought to market.²⁸ This phenomenon is often called Canada's "innovation gap," which is often misunderstood to the rampant overuse of the word "innovation."

²⁴ European Commission. (2008). *Entrepreneurship in Higher Education, particularly in non-business sectors*. Lisbon: European Commission Enterprise for Industry Directorate General. http://ec.europa.eu/enterprise/policies/sme/files/support_measures/training_education/entr_highed_en.pdf

²⁵ Taken from the Ryerson Digital Media Zone website. Accessible: <http://digitalmediazone.ryerson.ca/>

²⁶ Brock University. (2013) *Interactive Arts and Science Program*. St. Catharines: Brock University. Accessed: <http://www.brocku.ca/humanities/departments-and-centres/interactive-arts-and-science>;

²⁷ Mowat Centre for Policy Innovation, Ontario Chamber of Commerce, Leger Marketing. (2013). *Emerging Stronger 2013*. Toronto: Mowat Centre for Policy Innovation. Accessed: <http://mowatcentre.ca/pdfs/mowatResearch/76.pdf>

²⁸ Yakubski, K. (2009). *Canada's Innovation Gap*. Toronto: The Globe and Mail. Accessed: <http://www.theglobeandmail.com/report-on-business/canadas-innovation-gap/article1368640/?page=all>

One of two factors, an under-investment in research and development or a lack of willingness amongst individuals to take risks on business ventures can cause an innovation gap.²⁹ Though there is widespread concern that Canadian businesses under-invest in research and development, the federal governments have more than doubled spending on research initiatives at Ontario universities, with particular emphasis on research in engineering and health technologies that could lead to major economic innovations.³⁰ In fact, many have pointed out that the level of research taking place at universities has increased dramatically in recent years.³¹

Entrepreneurship is a critical component in closing the innovation gap, which is a primary reason why many groups examining the competitiveness of Ontario have noted training and encouraging more entrepreneurship as a key economic priority.³² This is easier said than done however; actors involved in entrepreneurship initiatives at universities are quick to point out that entrepreneurship must involve some risk, meaning that direct funding for “entrepreneurship spaces” across universities is unlikely to produce useful economic dividends.³³

Rather than forcing every university to create it’s own DMZ or VeloCity, institutions should be encouraged to engage in entrepreneurship promotion activities, particularly aimed at students who do not traditionally consider it as a career option. These activities should direct students to resources where they can learn more about entrepreneurship, complete with an understanding of the risks, rewards and overall processes.

Through the addition of specializations in aerospace, design, health and social entrepreneurship, Ryerson is hoping to have 10 per cent of it’s student body involved in the development of some kind of product, service or company by the time they graduate.³⁴ This does not mean that 10 per cent of students will be starting business, but rather 10 per cent of students will have been exposed to entrepreneurship as a career option and life choice; 10 per cent of students will be able to assess whether entrepreneurship is right for them. Whether through government incentive or market pressure, more universities should encourage students to investigate entrepreneurship and equip more students with the knowledge of how to turn an idea into a business or firm.

Recommendation Four: The Provincial Government should create new incentives for universities to explore entrepreneurial activities.

The Ministry of Training, Colleges and Universities has articulated it’s intent to provide new and dedicated resources to support Ontario’s young entrepreneurs.³⁵ This is welcome news, as student entrepreneurs are more likely to carry and refine their business skills throughout the rest of their lives. Encouraging entrepreneurship is not as cut-and-dry an approach as might be initially conceived however. Typically, when the government expects an outcome of the university sector, they are simply able to launch targeted funding, create a report-back structure and report progress at the end of the fiscal calendar. This is not always possible with entrepreneurship, particularly entrepreneurship that will boost local economies and help employ more Ontarians.

Risk-aversion has been cited as one of the hindrances to burgeoning entrepreneurship in Ontario. Even the most risk averse university will create it’s own VeloCity or DMZ if given the funds to do it, but the institutional commitment to making that centre a success -to risk it’s own resources on something that could succeed or fail- is the heart of entrepreneurship required to inspire students to create their own businesses. If institutions are simply allotted money and told what to do with it, the investment would defy the very spirit of entrepreneurship it is intended to provoke.

²⁹ See Definition at Beginning of Paper.

³⁰ Mowat Centre for Policy Innovation, Ontario Chamber of Commerce, Leger Marketing. (2013). *Emerging Stronger 2013*. Toronto: Mowat Centre for Policy Innovation. Accessed: <http://mowatcentre.ca/pdfs/mowatResearch/76.pdf>

³¹ Clark et al. (2012). *Academic Reform: Policy Options for Improving the Quality and Cost-Effectiveness of Undergraduate Education in Ontario*. Kingston: Queen’s University Press.

³² Mowat Centre for Policy Innovation. (2012).

³³ Valerie Fox & Hossein Rahnama, Ryerson Digital Media Zone. Interview conducted March 2013.

³⁴ Mowat Centre for Policy Innovation. (2012).

³⁵ Ministry of Training, Colleges and Universities. (2012). *Strengthening Ontario’s Centres of Creativity, Innovation and Knowledge*. Toronto: Queen’s Printer for Ontario.

OUSA recommends that the provincial government make new funds available to universities to help foster student entrepreneurship, but that the government require that universities make a concerted investment in their own ideas, quantifying results and committing to targets. Some ways that the government could structure the funds are as follows:

- Provide funding for entrepreneurship initiatives in the form of a mix of grant and interest-free loan. Providing interest-subsidized credit for entrepreneurs has been used as a tool by many jurisdictions to incentivize entrepreneurial activity.³⁶ Studies of the effectiveness of this type of policy have revealed that they can be effective at moving capital to targeted populations, but at the expense of non-targeted entities. Given that the funding would be open to all universities and colleges, and that universities and colleges are not an open market, this spin-off effect would not apply to the application of low-risk loans to institutions.
- Create an innovation fund with a set expiry date, explicitly stating that funding for student entrepreneurship centres will not be added to base operating funding, as many expiring targeted funds are. This way, for entrepreneurship initiatives to add value to the university community long-term, they will have to attract investment either from the institution centrally or external investors.
- Require that institutions submit proposals for entrepreneurship centres that indicate how they will integrate with local economic clusters, the academic curriculum and differentiate themselves from the offering of other universities and colleges. Further, they should be required to indicate how they would add value to Ontario's economy, projecting jobs created, products brought to market, etc.

Recommendation Five: The Provincial Government should create new support-based initiatives for student entrepreneurs.

A crucially important component of Ontario's support for postsecondary entrepreneurship should be direct support for student entrepreneurs. Already, student entrepreneurs in Ontario have attracted investments from the Toronto Star, GO Transit, all levels of government, venture capitalists and many others.³⁷ Ryerson University has even gone as far as to set up a dedicated network of angel investors to promote businesses started within the university, including those created by students. Furthermore, their digital media zone accelerator program receive equity funding, giving the institution a direct stake in the success or failure of its businesses. As a result of these sorts of direct investments, entrepreneurship at Ryerson has flourished, with the digital media zone creating over 650 new jobs.³⁸

However helpful institutional idea accelerators have been, the fact remains that the financial realities of student entrepreneurs are not well known or well researched. Students who begin startups and businesses during school have to juggle their workplace costs with their tuition, ancillary fees and living expenses. For students who begin businesses after graduation, those who utilized student loans to help pay for their education will be required to grapple with substantial student debt, limiting the amount they will be able to contribute to their entrepreneurial activities. Governments are accustomed to supporting students through the provision of integrated student loans, but this system is not always an easy fit with the realities of entrepreneurship. Student entrepreneurs face vastly different types of costs and assets than a typical student. As such, new types of student support must be created in order to accommodate this new aspect of our post-secondary system.

OUSA's recommendation is that the provincial government merge the concepts of student financial assistance and entrepreneurship in the creation of a new type of grant program, accessible to student entrepreneurs at Ontario universities. This program should have a few key features:

³⁶ Minniti, Maria. (2008). *The Role of Government Policy on Entrepreneurial Activity: Productive, Unproductive or Destructive*. Baylor University.

³⁷ Ryerson Digital Media Zone. (2013). *Ryerson Digital Media Zone Website*. Toronto: Ryerson University. Accessible: <http://digitalmediazone.ryerson.ca/> and <http://www.ryersonangelnetwork.com/>.

³⁸ Ibid.

- The fund would be a competitive application process, requiring that students develop business, development and marketing plans.
- The fund should take into account both academic and business costs associated with the university as student is working from.
- The fund should take the form of a grant, as opposed to a loan in order to ensure that the failure of the business does not prevent the student from rebounding and beginning new ventures.
- Some component of the fund should take the form of equity, giving the granting entity (the government or an arms-length foundation) a stake in the success or failure of the business.
- The fund should accommodate all different types of entrepreneurship, including technology and social entrepreneurship.
- It should also have differentially sized grant amounts, allowing businesses of all different sizes to be supported.

RESEARCH & INNOVATION

Principle Seven: A knowledge economy, fuelled by university research, will play significant dividends to students.

In simple terms, the knowledge economy is an economy in which growth is fueled by innovation, the production and application of new knowledge, the education and output of highly qualified personnel who have the requisite knowledge, and from the skills and training of the population. In all these matters, universities play a crucial role. There are critical factors that play a part in development of a knowledge economy including the following the regulatory and political environment, the entrepreneurial culture of organizations, and the effectiveness of capital markets. OUSA agrees that the strength of a knowledge economy fundamentally comes down to the creation, application and transfer of knowledge. University research is the most effective tool to achieve this end.

As such, investments in university research from both the public and private sectors will play crucially important dividends to students. The first and foremost of these benefits is jobs for recent graduates. It is broadly agreed that research and innovation not only create new scientific tools, but also new firms that require the highly-skilled labour that emerges from a university environment.³⁹ Private sector collaboration plays a crucial role in this case, turning research into firms, start-ups that can create both jobs and economic surplus.

The second benefit is economic stability. It has been shown that

Finally, well-funded university research brings along a host of benefits for undergraduates in their education. The opportunity to engage in undergraduate research, apply for research assistantships, apply for and engage in publically funded research projects all gives students valuable hard skills that they can take into the workforce.

Concern Five: Canada has stagnating productivity and innovation rankings within the OECD.

One economic trend that has Canadian policymakers concerned is our slow productivity growth, which represented on average less than one percent (0.6%) of growth from the year 2000 to 2009. Compared to other OECD countries, Canada's productivity growth was less than half that observed by other countries (1.5%).⁴⁰

For many years, OUSA has observed that Canada's economic growth has relied heavily on increases in labour and capital inputs. Yet when other factors of productivity are accounted for, a weakening and declining economy is evident. However there is one input that has gained international success in building economic growth and that is innovation. In fact previous research has found stronger long-term productivity growth to have a direct relationship with innovation. Specifically, the factors included in the measure of total productivity growth are often referred to as *multi-factor productivity* (MFP), which can act as a measure of innovation.⁴¹ OUSA is concerned about Canada's stagnating productivity and innovation rankings within the OECD, and one way we believe this decline can be rectified is by strengthening the role of the post-secondary sector.

Innovation is a complex measurement that takes time and assumes different levels of risk at every step. Some experts in macroeconomic policy have made a link between the research produced by post-secondary institutions and moving innovation in Canada forward.⁴²

³⁹ Organisation for Economic Co-Operation and Development. 2008. Assessing the Socio-Economic Impacts of Public R&D. Paris: OECD.

⁴⁰ Organisation for Economic Co-operation and Development. 2010a. Measuring Innovation: A New Perspective. Paris: OECD.

⁴¹ NEC (National Economic Council) (2011), *A Strategy for Innovation*, The White House, Washington, DC.

⁴² OECD (2012), *OECD Economic Surveys: Canada 2012*, OECD Publishing. http://dx.doi.org/10.1787/eco_surveys-can-2012-en

Canada's economic climate has many assets, particularly: strong public institutions, credible policy, macroeconomic stability, a good regulatory framework and a well-educated workforce. However, there are some disadvantages, which include: uneven capital taxation, limited capital markets for innovation, a lack of competitive pressures in certain sectors, and weak funding channels between the body of research produced by post-secondary institutions and the market economy (Refer to Figure).

It is worth noting that the government has played one of the more prominent roles in supporting research out of the post-secondary sector through tax credits like the Scientific Research and Experimental Development tax credit, which cost the federal government \$3.6 billion and the provincial and territorial governments collectively, \$1.5 billion in 2011. Some critics have argued that government intervention has not been strategic about the commercialisation of post-secondary research in terms of increasing funding to back ideas with the greatest potential or in terms of incentivizing public-private partnerships.⁴³ Together, this suggests that the government has a critical role in encouraging the growth of innovation in this country, but the risks associated to these investments can be better managed by concentrating less on tax credits and relying more on grants.

FIGURE 3: DIRECT GOVERNMENT FUNDING OF BUSINESS R&D AND TAX INCENTIVES FOR R&D⁴⁴

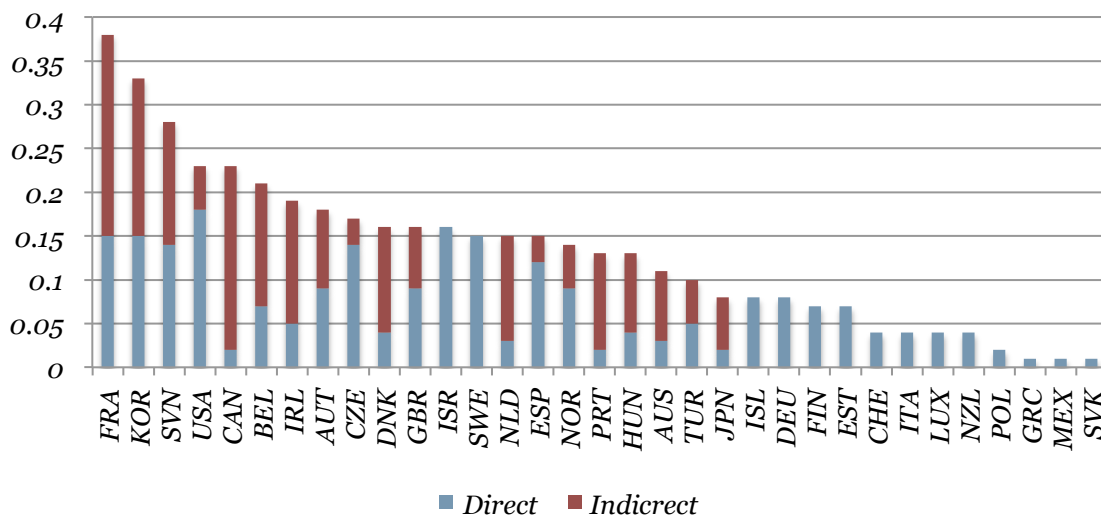
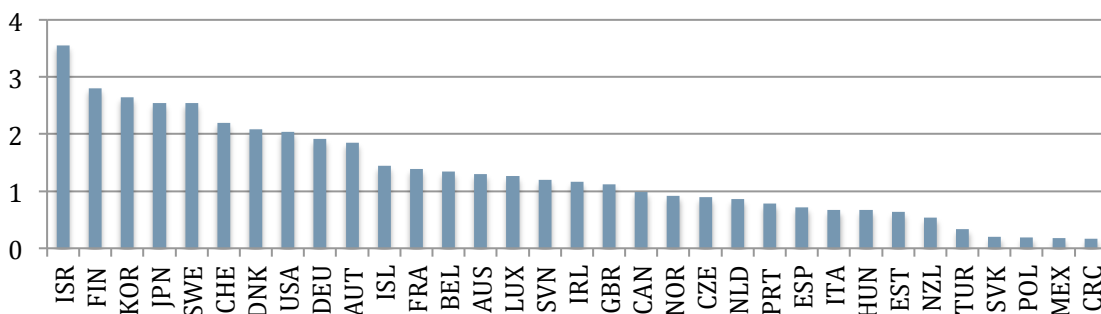


FIGURE 4: EXPENDITURE ON R&D IN THE BUSINESS SECTOR AS A PERCENTAGE OF GDP



The implications of stagnating national and regional productivity and innovation for students are indirect, mostly resulting in a missed opportunity. Investment in Research and Development, in addition to commercialization of this research, has been shown to have a great degree of impact on positive economic growth. If Ontario makes no attempt to help Canada close the productivity gap, it is highly likely that other

⁴³ Baghana, R. and P. Mohnen (2009), "Effectiveness of R&D Tax Incentives in Small and Large Enterprises in Québec", *Small Business Economics*, No. 33.

⁴⁴ Figure Source: OECD, *OECD Science, Technology and Industry Scoreboard 2011*

jurisdictions will outperform, both with regards to general economic growth and knowledge job growth. With an increasingly mobile labour-force, the risk of declining competitiveness to the well-being of our province is substantial.

Recommendation Six: The provincial government must leverage and promote the post-secondary education sector as a key player in enhancing Canada's innovation potential.

University research has led to discoveries that have sometimes produced new industries. Colleges, polytechnics and universities also conduct a broad range of applied research relevant to both the business and non-profit sectors. While a large portion of this research funding comes from the government, business-sponsored research in Canadian universities currently totals more than \$785 million a year⁴⁵

Currently, government support for public-private research collaborations is delivered through programs that fund projects directly with post-secondary institutions. Traditionally these funding programs were project specific with the funds being directly administered to a lead researcher.⁴⁶ However this has been inefficient in terms of providing funding for public-private research collaborations that are large scale, responsive to the economic climate, and outcome oriented. The latter can result in breakthroughs and can build capacity in existing and emerging industry sectors, but particularly the post-secondary education sector can benefit from these renewed funding efforts by allowing innovative research to happen on a much larger scale.⁴⁷

Recommendation Seven: The provincial government must work with local and federal partners to create policy incentives to enhance the creation and growth of regional knowledge clusters and innovation systems.

Regional knowledge clusters carry a host of benefits to students, including the creation of jobs in a local economy for recent graduates, co-op and work-integrated learning positions for current students, as well as increased attention, funding and prestige for the post-secondary institution at the focal point of the cluster. More prestige associated with a degree can be a boon in the labour market, while more direct funding can ease an institution's cost pressures and allow resources to be directed to increased quality. There are a number of ways to incentivize this sort of activity, but it is worth spending some time to define what a regional knowledge cluster is, as well as how it functions.

A regional innovation system (RIS) is defined by a cooperative and collaborative occurrence between knowledge creation and knowledge diffusion (i.e., organizations through firms, universities, training organizations, private research firms, and technology transfer offices.) that states that innovation is a geographical process sustained through regional communities that share common knowledge bases and localized resources (e.g., specialized labour market, suppliers, local learning processes, local traditions for interacting etc.). Furthermore, a RIS confirms that innovation is embedded in social relationships that develop over time. These social relationships are often informal and determine a specific image representation, and sense of belonging which enhances the local innovative of a synergic and collective learning processes. These processes are enhanced and correlated to geographical concentration and proximity to innovation centres.⁴⁸

Canadian provinces are arguably at a natural disadvantage for the creation of such networks due to its centralized governance structure with power concentrated heavily with federal and provincial governments, in comparison to more decentralized systems in United States of America that operate on a county-level. This is important because knowledge is largely a public good that is incumbent on public institutions to stimulate 'open systems' such as 'open science' and 'open source' software, which in turn may facilitate 'open innovation.' The important task of regional innovation policy is to use the RIS to create a series of policies that allow for integrated, 'platforms' to develop clusters of innovation that are neither too specialized, nor too diverse.⁴⁹ Some of the policy tools available to the provincial government in the support of this end are:

⁴⁵ Canadian Association of University Business Officers. (2010).

⁴⁶ IPFSRD (Independent Panel on Federal Support to R&D) (2011), *Innovation Canada: A Call to Action*, Ottawa.

⁴⁷ IPFSRD (Independent Panel on Federal Support to R&D) (2011), *Innovation Canada: A Call to Action*, Ottawa.

⁴⁸ Jerome, L., & Jordan, P. (2008). Building an Institute for Triple-Helix Research Innovation. *Institute for Triple Helix Innovation*

⁴⁹ Harmaakorpi, V. (2006) Regional development platform method as a tool for regional innovation policy, *European Planning Studies*, 14,1093–1112

- Tax subsidies
- Direct Research & Development (r&d) and Science & Technology funding to public, private and educational sector.
- Creation of regional innovation and entrepreneurial clusters^{50,51}
- Removing import tariffs to expose local firms with international competition as well as business practices.
- Immigration policies and recruiting world class knowledge workers.
- Organizational Management and fostering Social Capital⁵²
- Open Innovation: “the use of purposive inflows and outflows of knowledge to accelerate internal innovation and to expand the markets for external use of innovation, respectively”⁵³. This elusive concept is highly conditional on the availability of a strong public knowledge base, mobile educated population and finance for innovation (which often has to be public finance due to capital incentive market failures by the private sector). One can also argue for the ability of international partnerships and immigration exchange can also help increase the diversity of open innovation⁵⁴.
- Intellectual Property & Patents: If enterprises find it too difficult to apply for patents or to defend their rights in case of infringement, they will rather keep their knowledge secret – so that no trade occurs at all⁵⁵
- Targeted funding for the Post-Secondary Research Sector: Governments need to develop mechanisms to allocate their funding according to criteria of excellence, which can be realised by linking research performance to financial incentives. This would imply that grants are not offered as lump-sums, but made contingent on output criteria and visitations. (Case studies will be visited from Netherlands and Estonia for the last two points)⁵⁶
- Government Procurement of Research Capital: The US’s 2010 “Four Policy Principles” Report by the Consortium for Science, Policy and Outcomes advises that, while most innovation occurs in the private sector, there are many good examples of government-sponsored innovation (notably encouraged through government procurement). This report hence stresses that a “public works model” is particularly relevant to energy innovation⁵⁷. In Canada there already exist organizations National Research Council, Agriculture and Agri-Food Canada, National Defence and Atomic Energy of Canada Ltd that could be utilized for expansion of influence⁵⁸.

The literature has revealed that there has been a minor shift in innovation policy towards a network based paradigm that supports basic and early stage applied research in the university sector While institutions like Genome Canada and CIHR are good examples of network theory in action, however the funding for these institutions is controlled centrally through NCR⁵⁹.

⁵⁰ Hospers et al. (2009). *The next Silicon Valley? On the relationship between geographical clustering and public policy*. International Entrepreneurship and management journal 5, 565-586.

⁵¹ Leydesdorff, L. (2001). *The Transformation of University-industry-government relations*. The Electronic Journal of Sociology. 5-04. Accessed: <http://www.sociology.org/content/vol005.004/th.html>

⁵² Zheng, W. (2010). A Social Capital Perspective of Innovation: Where is Empirical Literature Leading Us?. *International Journal of Management Reviews*, 11, 152-180.

⁵³ DeJong, JP. (2010)

⁵⁴ (Campbell, 2009)

⁵⁵ Ibid

⁵⁶ www.proinno-europe.eu

⁵⁷ (Pirtle, 2010)

⁵⁸ (Stewart, 2011)

⁵⁹ Holbrook, A., & Salazar, M. (2007). Canadian Science, Technology and Innovation Policy: The Product of Regional Networking?. *Regional Studies*, Vol. 41.8, 41.8, pg 1129-1149.

Cities, in particular, can make a significant difference to innovation outcomes by utilising their budgetary planning mechanisms to support local universities and colleges with activities such as the re-zoning of land, providing networking opportunities, enhancing local infrastructure, incentivizing graduate retention, utilizing local economic development departments, etc.⁶⁰ Municipalities also contain many small and medium-sized enterprises (SMEs), which are a diverse set of businesses that play a key role in the economic and environmental future of innovation.⁶¹

An excellent example of these concepts in action exists in Waterloo's Communitech regional innovation hub, which supports nearly 1,000 companies in the Waterloo region. It was started with an investment from the provincial government, but has generated over \$12.00 in regional economic activity for every dollar originally invested.⁶²

Case study examples of the role of cities in supporting innovation exist across OECD countries, however Sweden is one of the most prominent. In Sweden municipal governments support local innovative research and projects by improving the quality of local infrastructure and related municipality services, lowering taxes and fees, and by opening up national and international opportunities.

Similarly Karlskrona in southeast Sweden is the other end of the spectrum, where a failing industrial city was able to leverage its few innovative communications firms into creating a world-class cluster in collaboration with local universities. This example also showed that clusters could be designed and built from scratch in a relatively short time⁶³.

Through the Ballard Fuel Cluster, Canada has its own success story.⁶⁴ Ballard Power Systems is a world leader in high-energy lithium batteries. In 1983, the federal government issued a request for proposal on behalf of the Military who saw a need for this technology. Both provincial and federal governments invested over \$100 and a network was created with the University of Victoria. This public-private research collaboration developed working prototypes of their technology within a single decade, which started to attract other players into the innovation network. This region is now populating with skilled human capital, university research links, direct influence through the National Research Center and international industrial links.⁶⁵

HELPFUL TANGENT: PUBLIC-PRIVATE PARTNERSHIP AT MCMASTER UNIVERSITY: BASIC CLUSTER FORMATION EVIDENCE

The McMaster Innovation Park is a great example of a successful and evolving Private Public Partnership, coupled with a move towards creating a regional Innovation Hub. The MIP has a vision of facilitating the transformation of ideas into commercial opportunities as well as towards hosting modern purpose built research facilities. The park since it opened has continued to expand to meet the needs of McMaster as well as investors. The building supports laboratories, offices, and training facilities for research and development in a number of wide-ranging key areas. It has been facilitated through development of strong relationship with both partners in industry and the private sector.⁶⁶ McMaster has emphasized a priority in partnering with the private sector in order to continue to develop exciting initiatives that build on already established strengths.

McMaster Automotive Resource Centre (MARC) is a 26 million dollar project that will accelerate automotive research while improving educational and employment opportunities across Hamilton and beyond.⁶⁷ It will

⁶⁰ Norden (2007) *Industrial Symbiosis for Norden*, Copenhagen, Nordic Council of Ministers Vallance, P. "Rethinking economic geographies of knowledge." *Geography Compass*, vol. 1(4), pp. 797-813, 2007.

⁶¹ Business in the Community. Inspiration successfully engaging Europe's smaller businesses in environmental and social issues- a thought-piece for the Copenhagen Centre. Denmark: The Copenhagen Centre; 2003.

⁶² Communitech. (2013). <http://www.communitech.ca/about/start-here-communitech-101/8-things/>

⁶³ Lunderquist, P., & Power, D. (2002). Putting Porter into Practice? Practices of Regional Cluster Building: Evidence from Sweden. *European Planning Studies*, 10(6), 686-702.

⁶⁴ Vargars, R & Perez, C. "Globalization of Innovation and Dynamics of a Regional Innovation Network: The Case of the Canadian Fuel Cell Cluster". Science and Innovation Policy, 2009 Atlanta Conference.

⁶⁵ Note for future research: Internationalization of research is an emerging issue, both for commercialization and for social justice and equity. If OUSA pursues further additions to this paper, it may be worth considering the benefits that open access and democratization of research can have for students.

⁶⁶ McMaster University Secretariat. (2012). *Board of Governors Agenda: Thursday June 7th, 2012*. Hamilton: McMaster University. Accessed: http://www.mcmaster.ca/univsec/mtgdocs/board/B_MTG_7Jun12.pdf

⁶⁷ Ibid.

be a state-of-the-art research facility through partnership with academic, government and industrial partners. The project has been funded in large part through a 11.5M dollar commitment from the federal government and the Federal Economic Development Agency.⁶⁸ While construction of the building has been primarily through federal and McMaster funds, the centre is expected to gain private interest. In addition a major focus of the new auto research centre will be the work of Ali Emadi, an internationally renowned leader in advanced powertrain technology, who was recruited from the US and holds the \$10M Canada Excellence Research Chair in Hybrid Powertrain⁶⁹. Also located nearby is the federally funded CANMET Materials technology laboratory which is slated to have a close connection with the MARC; this evidence points towards McMaster being able to leverage itself as a hub for automotive research, this is especially beneficial when one considers its close proximity to production plants of major companies like Ford (Oakville) and Chrysler (Brampton).

Upon the construction of MARC, McMaster has already received a variety of offers from various private sector partners who hope to house research partnerships within the publicly funded research centre. The first announcement of this nature is Ford Motor Company and the Natural Sciences and Engineering Research Council of Canada (NSERC) are providing \$2.5 million in funding to establish the a Research Chair in Hybrid/Electric Vehicle (HEV) Powertrain Diagnostics.⁷⁰ McMaster expects that other investors will come forward and that the MARC evolves into a research hub for the automotive sector by successfully partnering with both Government and Private Corporations.

Similarly Privately funded research chairs play a large role in increasing universities capacities to continue to prioritize health research and create a regional network with the presence of major hospitals in the city (McMaster Children's hospital, St Joseph's and the overall Hamilton Health Sciences network). Recently at McMaster four new Research Chairs were approved by the Board of Governors to focus on Health Science Research.⁷¹ The David Braley Chair in Human Stem Research, the Boris Family Chair in Education and Internal Medicine, the Boris Family Chair in Human (Blood) Stem Cells, and the Boris Family Chair in Human (Neural) Stem Cells will all focus on research into important fields of medical research. All four chairs represent ideal private funding for research within a public institution. The individual donating will have no involvement in the hiring process, and the appointment will be given complete academic freedom. These research chairs reflect the principles that OUSA expects from private investment in academia. An ad-hoc selection committee appointed by the Dean of the Faculty of Health Sciences will select the research chairs. In addition, the parties donating the funds will have no involvement or influence in the work produced by the research chair.

⁶⁸ McMaster Daily News. (2011). *Federal investment transforms warehouse into auto research centre, promising benefits to local economy*. Hamilton: McMaster University. Accessed: <http://dailynews.mcmaster.ca/article/federal-investment-transforms-warehouse-into-auto-research-centre-promising-benefits-to-local-economy/>

⁶⁹ Ibid.

⁷⁰ Canadian Manufacturing. (2011). *McMaster, Ford and NSERC join forces to develop hybrid powertrains*. Hamilton: Design Engineering. Accessed: <http://www.canadianmanufacturing.com/design-engineering/news/mcmaster-ford-and-nserc-join-forces-to-develop-hybrid-powertrains-42980>

⁷¹ McMaster University Secretariat. (2013).

STUDENTS, UNIVERSITIES & THE PRIVATE SECTOR POLICY STATEMENT

WHEREAS Each individual institution shall have the authority and responsibility to define academic freedom within their institution, in consultation with students.

WHEREAS Private entities must never be allowed to limit the freedom of the academic to explore, express, publish or teach new ideas and research.

WHEREAS As much as possible, collaborative partnerships should create opportunities for students.

WHEREAS Where knowledge or resources generated by the university have the ability to directly benefit the broader province, infrastructure should exist to facilitate the process.

WHEREAS The Government must remain the primary financier of public post-secondary education and public research in Ontario.

WHEREAS If students are involved in a public private partnership or entrepreneurial venture, Universities must ensure transparency and fairness of their intellectual property rights within the agreement.

WHEREAS Lack of clarity in public-private partnership agreements has lead to concern over academic freedom in privately funded academic programs.

WHEREAS There is an insufficient supply of work-integrated learning opportunities to meet rising student demand.

WHEREAS Many Ontario business incubation initiatives are focused solely on faculty, missing a valuable opportunity for student involvement and entrepreneurship.

WHEREAS Not enough students have the opportunity to explore entrepreneurialism within their field of study.

WHEREAS A knowledge economy, fuelled by university research, will play significant dividends to students.

WHEREAS Canada has stagnating productivity and innovation rankings within the OECD.

BIFRT Ontario universities should renew or create additions to their donation policies to ensure that they properly ensure the protection of academic freedom in the establishment of new programs.

BIFRT Governance documents, financial agreements and all foundational documents leading to the creation of an academic public-private partnership must be made public to all actors in a university.

BIFRT Ontario's universities should strive to introduce more students to entrepreneurship through active promotional campaigns.

BIFRT The Provincial Government should create new incentives for universities to explore entrepreneurial activities.

BIFRT The Provincial Government should create new support-based initiatives for student entrepreneurs.

BIFRT The provincial government must leverage and promote the post-secondary education sector as a key player in enhancing Canada's innovation potential.

BIFRT The provincial government must work with local and federal partners to create policy incentives to enhance the creation and growth of regional knowledge clusters and innovation systems.