

# Accelerating Growth: Canadian Funding Policy for Innovation Intermediaries

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## Executive Summary

There has been a sustained increase in the amount of innovation intermediaries in Canada and the capacity for supports in this space. As part of an ambitious innovation agenda, the government of Canada has sought to support these actors with targeted funding programs, such as the Canadian Incubator and Accelerator Program (CAIP), and has offered complementary supports for incubators and accelerators throughout the innovation “valley of death”. While more public sector support for innovation generally, and start-ups and scaleups more specifically, is both laudable and timely, the implementation of these supports has been subject to numerous hurdles, not all of which have been overcome. Quite simply, the design of the funding supports some market interventions unintentionally, while other valuable interventions intended to receive funding are passed over.

At a technical level, CAIP program uptake and disbursement of funds was unsteady in early phases. Innovation intermediaries have had to allot considerable energy into the administration and reporting requirements of the program itself, a sure sign of the potential for program optimization. There is some evidence to suggest that the funding disbursement and oversight mechanisms were distortionary, with burdensome administrative requirements effectively steering the funding away from optimal activity areas. With the reporting standards and metrics internal emphasizing politically salient outcomes at the expense of more meaningful indicators and rigor in program evaluation, it is an open possibility that the success metrics in this space have been unintentionally over-reported, in some cases, claiming the same success factor multiple times. Future rounds of funding will require much more concerted attention on success metrics and attention to uniform standards.

A broader thematic question that often recurred throughout the research was whether or not innovation intermediaries should be supported by the public coffer at all. Our research cautions against a hasty retraction of support for innovation intermediaries. There are many innovation intermediaries that make invaluable contributions to Canada’s capacity to innovate, some of which we had the pleasure to interview and were often some of the most vocal about the sector’s deficiencies. In spite of these success stories, the wider sector of innovation intermediaries faces numerous issues that detract from the credibility of the sector, at least in its existing form. This includes a clear over-expansion in the number of innovation intermediaries, conflicting and competing organizational mandates often lumped together, and the often-distortive effect of innovation intermediaries on market signals.

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The report makes several recommendations which all point towards a more targeted and intentional funding program that can help spur the retrenchment of the sector. Some innovation intermediaries spawn serial success stories but are bottlenecked by a need for greater public funding, while other publicly-funded innovation intermediaries have dubious claims of responsibility for a small number of successes. An inclination towards a wide and politically significant distribution of spending may well have circumvented some of the competitive spirit required for the effectiveness of innovation intermediaries. This strikes at a core issue of innovation policy more generally; how can public funds be utilized to empower private markets, all in the public interest? The report concludes that this is a challenging task but one that is nonetheless possible with meticulous attention to private sector imperatives, and a public sector willing to take a courageous approach to risk.

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## 1) Scope and Methodology

This study focuses on an in-depth analysis of incubators and accelerators (from hereon called “innovation intermediaries”). In particular, we are examining their role in connecting client firms globally – with global innovation networks, value chains and customers. More precisely we are investigating Canadian innovation intermediaries (with more precise attention on accelerators) that are receiving government funding from the National Research Council (NRC) through the federal government’s Canadian Accelerator and Incubator Program (CAIP). We examine how these innovation intermediaries work with their client firms, the extent to which they help firms connect globally and how they measure success.

We also attempt to assess the incremental benefit of government funding on the effectiveness of innovation intermediaries and to identify exemplary practices in accessing global innovation networks. Data collection consisted of 32 interviews conducted between February and September 2017. Interviews lasted roughly 45 minutes each and were conducted by phone according to the participants’ availability. Two CAIP organizations declined to be interviewed due to time constraints on their part and several others were unable to be reached successfully. The control group consisted of 4 interviews with innovation intermediaries that were not selected for participation in the CAIP program. The control group served to prevent research truncation or confirmation bias in the study’s findings.

Interviews included a range of participants, industry sectors and types of innovation intermediary. Innovation intermediaries themselves ranged greatly in size, scope and focus of operations. Some included dedicated physical locations, others partnered with another organization to have a physical presence and did not host a physical operation themselves, while others still were national and principally operated a digital presence. Interviewees represented stakeholders from all the major regions in Canada and were conducted in both French and English, depending on the linguistic preferences of the interviewee.

An additional wave of interviews was conducted with stakeholders that were not directly involved in the operations or decision-making of innovation intermediaries. This group principally consisted of representatives from client firms who had gone through business incubation or acceleration in a Canadian innovation intermediary. In smaller proportion, stakeholders were interviewed from the policy and expert community who are connected with the funding of innovation intermediaries in Canada. This gives the study additional depth and breadth while providing an arms-length perspective on the policy environment from those least at risk to “group-think” (**Figure 1**).

**Figure 1: Characteristics of Organizations Interviewed<sup>1</sup>**

<b>Characteristic</b>	<b>#</b>
Innovation Intermediary	15
CAIP Funded	10
Businesses	11
Policy Community	3
Conducted in English	26
Conducted in French	6

## 2) Background of Innovation Intermediaries

Before the appearance of incubators and accelerators, “technology transfer” was viewed to be the most important technique for promoting innovation. This paradigm is generally associated with the 1980 ratification of the Bayh-Dole Act in the United States (Merill & Mazza, 2011). After this point, the emphasis of innovation policy was on improving the intellectual property climate through legislation, targeted subsidies and the development of technology transfer offices. The initial goal of TTOs was to provide technical support to researchers in order to solidify the ownership of discoveries, so those discoveries could ultimately be developed into commercially viable products by being licensed, sold or spun out into a start-up company.

This so called “technology push” approach (Crelinsten, 2005) has attracted criticism due to the fact that commercial success depends on many other factors besides good research and technology. Furthermore, TTOs are generally unprofitable, with typical returns that TTOs and their host institutions enjoy from technology licensing equal, on average, to the costs of running the TTO. Spin out firms from TTOs typically struggle and either fail or sell earlier than would have been optimal, which can often result in the transfer of IP to foreign interests at bargain basement prices.

Since the 1990s there has been a growing consensus that an exclusive reliance on TTOs is insufficient to bridge the so-called innovation ‘valley of death’ (Flanigan, 2015). As a result of these and similar critiques, many TTOs have since expanded their mandates and now offer a wider range of services (Fishburn, 2014). Nonetheless, there is mounting criticism of TTOs, particularly the success metrics they employ, such as licensing revenue (Gardner, et al. 2007, Clarke & Reavely, 2011) or number of spin-offs, with no measures of spin-off survival rates or business success. It has become clear that TTO metrics offer, at best, an incomplete picture of innovation performance (Fung et al. 2007), focusing as they do on technology rather than

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<sup>1</sup> Several organizations had more than one interviewee, which accounts for the discrepancy between the total number of interviews and the total number of organizations interviewed.

value creation, sales and overall business success.

More broadly, TTOs are criticized for short-termism and for adopting too narrow a scope of action (Valdivia, 2013), including a disproportionate focus on immediate revenue generation (Litan, et al. 2007). Furthermore, TTOs often suffer from low institutional empowerment (Bramwell, et al., 2012) and an overall inability to bridge the gap between businesses and academic research (Kendell & Kendell, 2009).

In Canada, the number of licenses issued by TTOs has steadily declined since 2009 (Flanigan, 2015) while the number of startups has steadily increased. This may be an indication that traditional technology transfer from an academic institution to a firm via a licensing agreement has been bypassed as the core mechanism of innovation in policy circles in favour of increased emphasis on entrepreneurship as an engine of innovation policy. Although TTOs remain an important tool in promoting technology and were historically a crucial stepping-stone in the evolution of innovation intermediaries, the emerging consensus is that technology transfer is typically too focused on trying to match technology to a problem rather than being solutions-oriented in approach.

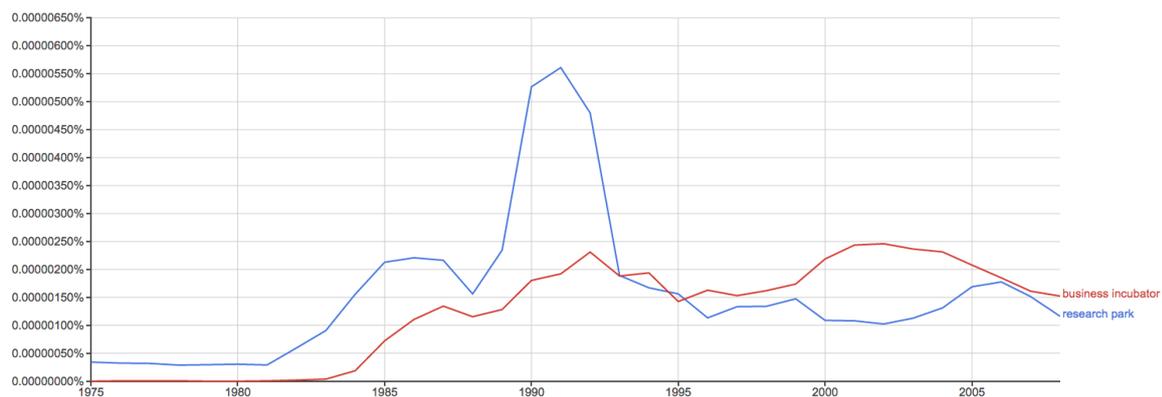
Research parks first began to emerge in the mid 1980s to address some of the gaps left by TTOs, adopting a more holistic view of innovation that emphasizes interaction between researchers and commercial players. Research parks provide a collaboration space for industry and academics, emphasizing the cluster model of industry promotion. In this model, growth is seen as partly due to synergies in industry through the close proximity of complementary businesses (Bramwell, Nelles and Wolfe, 2008) and academic-industry cross-pollination through co-location and shared workspace arrangements (Dimick, 2014; UNESCO, 2016). Research parks are an extension of technology transfer offices in that they believe that successful innovation will often require support after the technology transfer stage and that fragile initiatives require continued assistance to become firmly established.

One significant improvement of the research park model is that while TTOs seldom cover more than a small share of their operation costs (Heher, 2007), research parks can often achieve revenue neutrality once start-up costs are paid. Research parks can also be used in partnership with local efforts at job creation and urban redevelopment (Robbins, 2015) and thus feature prominently in regional development initiatives and political programs (Goldstein & Luger, 1990). However, this link can make research parks politically appealing beyond their demonstrated utility and it is possible that research parks often engender job creation at the expense of innovation performance (Löfsten & Lindelöf, 2002). This concern is especially relevant to Canada, as some have observed an increased policy emphasis on job creation rather than innovation competitiveness (Flanigan, 2015).

Research parks achieved the height of their popularity in the innovation policy literature in the early 1990s and were ultimately surpassed by business incubators by the late 1990s. As is clear in **Figure 2**, the two concepts share some intellectual heritage and they have been guided by similar lessons about innovation. In fact, the first business incubator established in Batavia, New York, could have just as easily been described as a research park, were it not

for the sliding fee schedule for tenants (Dimick, 2014). Business incubators, while sharing much in common with research parks, tend to be more niche in size and industry focus. They will often offer a wider range of client services designed to facilitate research commercialization. While there are many different business incubators and attributes, all are defined by, “the objective of facilitating the successful new venture development of the incubatees while simultaneously containing the cost of their potential failure” (Hacket & Dilts, 2004a, p. 57).

**Figure 2: Frequency of the Terms “business incubator” and “research park” in all books published between 1975 and 2008.**



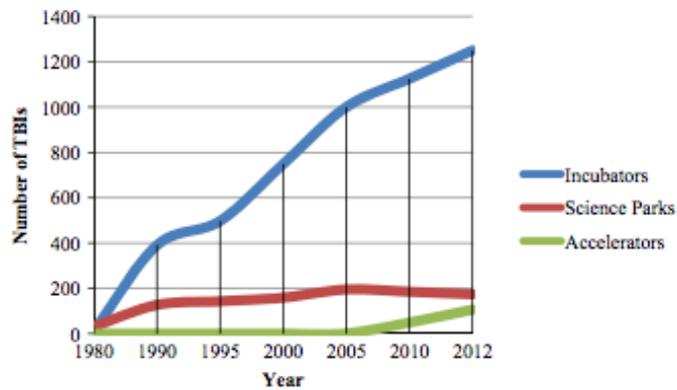
Source: Google Books, Ngram Viewer.

Business incubators represented a significant improvement on the more “hands-off” approaches of TTOs and research parks, and the number of business incubators grew dramatically in the 1980s and 1990s. Yet incubators too have recognized limitations. For one, even though incubators help to sustain newer business initiatives during fragile early stages, they often lack the ability to encourage the development of sufficient scale for them to be sustainable (Hacket & Dilts, 2004b). There are also concerns that incubated businesses may become dependent on the subsidies of the incubator, creating perverse incentives and rescuing businesses that should be allowed to fail (Schwartz, 2009). Finally, business incubators share a limitation with TTOs in that they focus on technology and utilize metrics that measure innovation inputs rather than outputs, making it difficult to judge truly successful outcomes. Business incubators also share a limitation with research parks, in that they are essentially real estate plays in which revenue comes from the tenants regardless of whether or not their business is successful.

Business accelerators developed in the mid to late 2000s in order to address the limitations of these earlier intermediary models and to focus more narrowly on business success (See: **Figure 3**). Accelerators aim to help startups and early-stage firms grow quickly so that they may achieve a sustainable scale of business operations and achieve financial independence (Mian, et al. 2016). Through a competitive process, accelerators select an exclusive group of start-ups and put cohorts through an intensive regimen of mentoring, training, scaling-up and growth (Cohen & Hochberg, 2014). This process usually occurs over a defined term and is accompanied with a privileged access to sources of expertise, networks and venture capital

(Pauwells et al., 2016). As is the case for most innovation intermediaries, accelerators have proliferated without displacing previous models. As such, the presently existing innovation infrastructure includes all types of innovation intermediary, sometimes working together and collaborating with one another.

**Figure 3: Number of Technology-Based Incubators in the United States (1980-2012)**



Source: Mian, S., Lamine, W., & Fayolle, A. (2016)

Business accelerators have their skeptics as well. As with previous iterations of innovation intermediaries, there are concerns about how well the metrics for accelerators actually represent successful innovation (Pauwells et al., 2016). Some raise further doubts about whether accelerators are significantly different from incubators (Pauwells et al., 2016) or suggest that there is an oversupply of accelerators (Clarke, 2013). It should be noted, however, that the study of accelerators is very limited due to their relatively recent emergence, making new research into business accelerators an important priority for the innovation community (Pauwells et al., 2016).

### 3) Innovation in the Canadian Landscape

Canada has a long history of weakness when it comes to the commercialization of research (Jenkins Report, 2011; CCA, 2013; Balsillie, 2015) although it is important to be aware of the significant variation in innovation performance that exists between provinces. Canada's overall performance has been especially weak when it comes to business enterprise R&D, patents, and researchers (See **Figure 4**). These measures have been used to confirm a general weakness in the ability to move research "from mind to market", a weakness that successive governments have sought to correct. However, others have suggested that the real weakness is a feeble culture of entrepreneurship and commerce in Canada (Crelinsten, 2005; Barber and Crelinsten, 2016).

**Figure 4: The Conference Board of Canada’s Innovation Report Card**

REPORT CARD											
Innovation Indicators											
	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
Public R&D	B	C	A	A+	C	A	A	B	D	D	C
Researchers	D	D-	D-	D-	D-	C	C	D-	D-	D-	D
Connectivity	C	C	B	D	C	C	B	D	C	B	B
Scientific articles	B	C	C	A	D	B	B	B	B	B	B
Entrepreneurial ambition	A	B	n.a.	B	n.a.	B	A	A	A+	A+	A+
Venture capital investment	B	C	D-	D	D	A	B	D-	D	D	A
Business enterprise R&D	D	D-	D-	D-	D-	C	D	D-	D-	D-	D-
ICT investment	C	D	B	C	D	C	B	C	D	C	C
Patents	D	D-	D-	D-	D-	D	D	D-	D-	D	D
Enterprise entry rate	n.a.	A	A	D	C	D	B	B	A	A	B
Labour productivity	C	B	D-	D	D-	D	D	D	C	B	D

Note: Data for the most recent year available were used. For details on methodology and data sources, see the "Methodology & Data" section of this website.  
Source: The Conference Board of Canada.

Source. The Conference Board of Canada, 2015.

With the 2008 recession ushering in an era of low growth among the advanced industrial economies, the ability to unlock innovative capacity in the economy had become even more important to the policy community. This concern may have been especially pronounced in Canada, which depends greatly on the U.S. market and also during this time witnessed the disappearance and decline of flagship firms like Nortel Networks and Research in Motion (Blackberry). With the impetus for new innovation policy and improving the innovation ecosystem now brought front and centre, the various governments of Canada began to develop programs and policies to support its innovation intermediaries.

Today, most of the attention is around the Innovation and Skills Plan of the Trudeau Government, which seeks to launch new and ambitious initiatives for Canada’s innovation agenda. The programs under this umbrella are in their early days, making their successes and challenges difficult to evaluate in any meaningful way at this point. However, some of the policies launched under the Harper Government’s various Economic Action Plans are sufficiently mature that their effectiveness can be evaluated in a way that informs future iterations of government innovation programing.

#### 4) The Canada Incubator and Accelerator Program (CAIP) Program

In 2013 the Government of Canada allocated \$60 million (rising to a total of \$100 million in 2014) to the Canadian Incubator and Accelerator Program (CAIP) as part of Canada’s Venture Capital Action Plan (VCAP). Although VCAP originated with the Ministry of

Finance, a multitude of federal entities contributed to the development of the program. Funds are to be disbursed as non-repayable loans for use by leading Canadian business incubators and accelerators over a five-year period. The program was launched by the National Research Council of Canada (NRC) and the Industrial Research Assistance Program (IRAP) in fiscal year 2014/2015. Funds allocated through this program exist as a supplement to existing funding that any level of government provides to these incubators and accelerators. There are no guarantees of this program being renewed when the initial allotment has been expended at the end of its five-year duration.

From roughly 100 applications, the CAIP program selected 15 organizations for funding, representing a total of 16 incubators and accelerators. Applications were judged on the basis of how the funding would permit the applicants to expand programs and service availability, prepare early-stage firms for investment, facilitate support and expertise to young firms, and engender wealth creation more generally. These criteria are guided by the overarching goal of CAIP to expand the innovation capacity of the CAIP-funded accelerators and incubators, whether that be by expanding their geographic reach, their intake or their ability to service additional sectors. Successful applicants were awarded different amounts on the basis of their size and how they proposed to use the funding (see **Figure 5**). Eligible activities for CAIP funding include overhead costs and salaries whereas long-term improvements, such as real-estate acquisition, are ineligible.

**Figure 5: Distribution of CAIP Funding by Participant**

<b>CAIP Participant</b>	<b>Total Allocation</b>	<b>Per Cent of Total Funding</b>
Centre for Drug Research and Development	\$10,934,891	12.7%
Wavefront Wireless Commercialization Centre Society	\$9,949,092	11.6%
Ryerson University	\$9,565,982	11.1%
BC Technology Industry Association	\$8,842,746	10.3%
Invest Ottawa	\$8,282,490	9.6%
Communitech Corporation	\$8,276,511	9.6%
The Governors of the University of Alberta	\$5,387,718	6.3%
Centre d'entreprises et d'innovation de Montréal	\$5,245,146	6.1%
MaRS Discovery District	\$4,114,483	4.8%
Corporation Innocentre du Québec	\$3,804,472	4.4%
Prince Edward Island BioAlliance Inc.	\$3,396,999	3.9%
Propel ICT Inc.	\$2,646,259	3.1%
The Next 36	\$2,010,355	2.3%
Bioenterprise Corporation	\$1,886,316	2.2%
"Biomedical Commercialization Canada Inc."	\$1,059,890	1.2%
Canada Accelerator Co Inc.	\$621,892	0.7%
<b>Total</b>	<b>\$86,025,242</b>	

CAIP will continue funding the participant incubators and accelerators through to March 31st 2019 at which point the program is set to expire. It is not clear whether CAIP will be renewed, refunded, terminated or merged into another funding initiative. Nonetheless, this study outlines some lessons that are valuable for future programs since elements of the CAIP design and lessons from its implementation will no doubt be considered in future initiatives to

support innovation in Canada.

## 5) Interview Results

### a) Program Design

#### *Funding Mechanisms*

The CAIP program has eligibility requirements for participating intermediaries that seek to promote public benefit. One such requirement is that the funding be used to expand either the service offerings of the participant, or the capacity of existing services to new areas.

Interviews indicated that participants were generally able to meet the objective of expanding their offerings. Some opted to accomplish this by expanding their operations beyond a specific city or region so that they could be accessed more widely, while others principally expanded their types of offerings, such as making mentoring services available or opening an incubation space.

Participating innovation intermediaries were required to match CAIP funding on a one-to-one basis, an issue that regularly came up in interviews due to some of the technical challenges it posed. In principal, interviewees agreed with a matching funding requirement, especially when it comes to their client firms searching for capital. As one publicly funded innovation intermediary described it, “If you are unable to attract enough private capital to match the public capital dollar for dollar, you are highly unlikely to succeed. That means you are not a good investment for public funds and you should maybe be allowed to fail.” However, for the incubators and accelerators themselves, many felt that the matching requirement was inappropriate.

Some interviewees highlighted that incubators and accelerators are mostly funded out of public dollars to begin with. While an innovation intermediary may be well-funded and widely recognized as being successful, it might still not be able to attract sufficient additional funding from diverse sources to allow it to match the capital eligible from the CAIP program. This matching requirement, perhaps unintentionally, introduces a dynamic where those who already receive public funding are better situated to receive even more public funding. Interestingly, the interviewees in the minority opinion- those who were most comfortable with the matching requirement- tended also to have more significant funding and budgets to begin with, and thus were less affected by the matching funding requirement.

#### *Administrative Procedures*

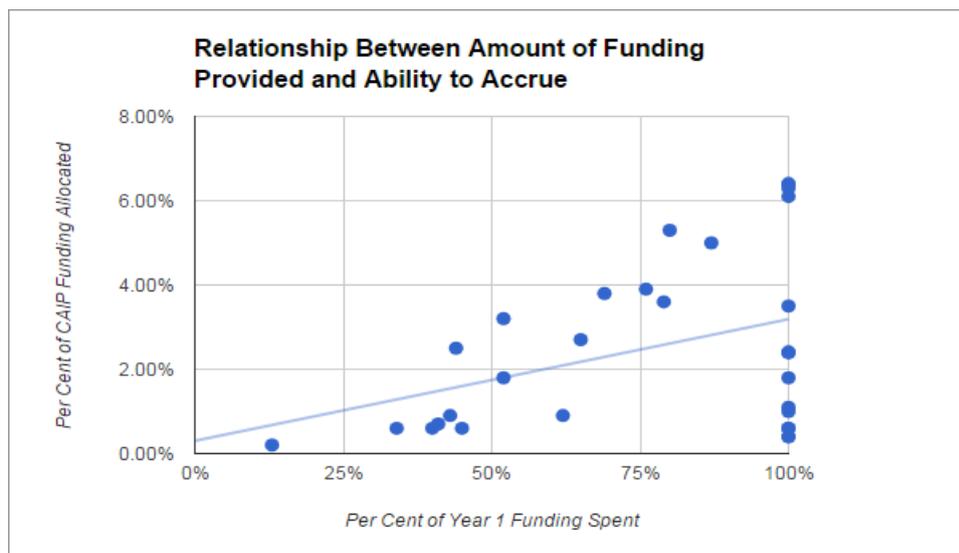
A majority of interviewees bemoaned the amount of time and energy spent on red-tape and bureaucratic reporting requirements that were built into the CAIP program. Others objected specifically to details of how the CAIP funding was to be allocated and spent within the recipient organization, which many considered onerous and unnecessarily bureaucratic. One interviewee even went so far as to say that, had they had been aware of the administrative burden in advance, they would have given a second thought to their application to CAIP. This sentiment is in line with some third-party observations of the Canadian business climate more

generally, which notes that Canadian SMEs face more red-tape and administrative barriers than counterparts in the U.S. (Deveau, 2013).

An independent evaluation of the CAIP program by the Circum Network noted that the structure of reimbursement for eligible costs added greatly to the bureaucratic burden of participants. While interviewees understood that a federal funding agency would want to have a clear sense of how their money is being spent, many recommended that future program design should give close consideration to streamlining the process to include just what reporting and administration is absolutely necessary, in order to reduce the burden on participants (Gauthier et al., 2016).

There is an interesting dynamic at play regarding the administrative capability of the CAIP recipients. We found evidence suggesting that the administrative and technical resources available for CAIP-funded programming was closely correlated with that of the recipient organization and its size. Running a linear regression demonstrated a positive correlation between the amount of funding allocated through the CAIP program and the recipient intermediary's ability to access and spend that funding successfully (See **Figure 6**).

**Figure 6: Linear Regression of Gross Funding and Per Cent of Funding Accrued in Year 1**



This pattern would seem to indicate that the size of the innovation intermediary plays a role in their ability to put CAIP funding to use. With a greater size comes a greater institutional capacity for administration and stakeholder relations. This gives larger innovation intermediaries a greater ability to accrue CAIP program funding, and perhaps even to influence the expenditure and reporting criteria that govern this funding. This raises the possibility that funding of innovation intermediaries is allocated in a sub-optimal manner or that smaller innovation intermediaries are disadvantaged for funding due to reasons other than performance.

### *Improvement in Funding Accrual Rates – Learning or Distortion?*

There was a clear difference in participant uptake in the CAIP program between year one and year two, which merits further consideration. In year one, over 38 per cent of the allocated CAIP funding for that year was not paid out to participants, a number that decreased to 8 per cent in year two. (See **Figure 7**) Naturally, it was in the interest of both CAIP participants and the public administration to use all the funding that was allocated to the program, which points to a problem in the program’s initial roll-out.

**Figure 7: CAIP Participants Funding Allocation and Spending (2015-2016)**

CAIP Participant	2015		2016	
	Allocation	Spent	Allocation	Spent
BC Technology Industry Association	\$1,500,000	\$972,148	\$1,850,000	\$1,397,690
Bioenterprise Corporation	\$530,990	\$70,860	\$380,400	\$379,955
"Biomedical Commercialization Canada Inc. "				
	\$225,397	\$225,397	\$225,146	\$225,146
Canada AcceleratorCo Inc.	\$132,252	\$132,252	\$132,105	\$132,105
Centre d’entreprises et d’innovation de Montréal	\$500,000	\$202,011	\$875,000	\$875,000
Centre for Drug Research and Development	\$2,325,421	\$2,325,421	\$2,322,833	\$2,322,833
Communitech Corporation	\$2,060,446	\$908,066	\$2,058,153	\$1,798,153
Corporation Innocentre du Québec	\$500,000	\$311,203	\$854,825	\$854,825
Invest Ottawa	\$1,647,884	\$1,304,745	\$2,366,051	\$1,895,468
PEI BioAlliance Inc.	\$768,313	\$330,000	\$863,986	\$863,986
Propel ICT Inc.	\$483,930	\$217,403	\$655,305	\$655,305
Ryerson University	\$2,267,577	\$1,170,668	\$2,265,054	\$2,265,054
The Governors of the University of Alberta	\$1,279,556	\$659,383	\$1,278,132	\$1,278,132
The Next 36	\$581,178	\$200,214	\$580,532	\$238,960
Wavefront Wireless Commercialization Centre Society	\$2,010,472	\$1,384,675	\$2,205,935	\$2,196,678
MaRS Discovery District	-	-	\$350,000	\$350,000
Total	\$16,813,416	\$10,414,446	\$19,263,457	\$17,729,290
Per Cent of Allocation Unspent		38.1%		8.0%

This raises questions about the success of the program’s design and administration, such as whether the significant amount of unused funding in year one is indicative of an initial mismatch in expectations between CAIP participants and administration. On one hand, the dramatic increase in utilization rate could be attributed to these organizations learning how to operate more effectively, but on the other, it could ultimately be an indication of shortcomings in program design and execution.

One potential scenario could be that the CAIP funding has unintentionally had a distortive effect on recipient organizations. Indeed, if participants were not able to accrue a significant portion of the available funding at the launch of the program due to its operational requirements for spending, their dramatically enhanced ability to accrue this funding in year two might indicate that participants made structural adjustments to their operations that

would permit them to more closely meet the program requirements. This very real possibility raises further questions about the degree to which these spending requirements have produced optimal spending patterns and operational practices, a theme that recurred throughout the interviews undertaken in this study.

### *Measuring Success*

One of the goals of this study is to examine how different stakeholders in the incubator/accelerator space define success. Do the managers of the incubator/accelerator, their client firms and their funders all define success in the same way or are there differences in objectives of the different stakeholders surrounding innovation intermediaries? For example, could it be that funders looking for job creation, while client firms are looking for revenue and global market share?

The CAIP cohort of innovation intermediaries and their stakeholders of use a wide range of non-comparable metrics for judging success, which range greatly in sophistication and reliability. One of the outcomes of the CAIP initiative was that it spurred a burst of activity within the wider policy community about how innovation metrics may be improved and standardized. In some cases, metrics that had been developed and put into use by CAIP participants were adopted by other, higher-order programs, including within government. This spurt of activity in turn helped to form the basis for new standards for innovation metrics that one could expect would ultimately see wider use.

One of the most commonly employed metrics at the outset of CAIP was job creation. While government stakeholders often preferred this metric over others, interviewees from innovation intermediaries and larger businesses noted serious and potentially catastrophic flaws with this metric. The most critical issue is that job creation cannot be equated with innovation, productivity or improvement in competitiveness, which are the ultimate end goals of the government's policies to support innovation. In the single-minded pursuit of job creation, government policies risk confusing a political objective with the actual causal mechanism at the heart of innovation. "They (governments) are optimizing their policies for the wrong metric" one interviewee explained. Another interviewee noted, "The number of people employed is not a priority for how we measure our own success, but governments like it."

Putting aside the issue of whether or not job creation is the correct success metric to employ, the way job creation itself is measured also has serious flaws. For example, many job creation metrics do not distinguish between full-time and part-time employment. Nor do they include important considerations for pay or quality of employment. For instance, a business founder drawing a starvation salary before going into bankruptcy be technically considered as a new job created, but this could be hardly be viewed as a successful outcome on closer inspection. If job creation is a necessary metric for political reasons, a preferred approach should also include longitudinal considerations, such as measuring the number of person years of employment over a specified multi-year period of time.

Other commonly used metrics, especially by those in receipt of public funding, are those that track the amount of capital attracted, either as a gross total, or as a ratio to each dollar of public investment capital. Many of these so-called “leverage metrics” (i.e. \$5 raised for every \$1 of public funding) were popular among elected officials and some innovation intermediaries, but again, closer inspection reveals significant analytical flaws. For one, this approach does not offer equivalency across industries that have different time horizons for growth and profitability (e.g. pharma vs. software). Furthermore, different leverage metrics were perhaps over-extrapolated in order to demonstrate local job creation that resulted from the attraction of capital. A multiplicity of confounding variables also makes it difficult to determine true causation, raising questions about how much of the employment created is meaningful, or how much of the investment measured is truly “new” investment versus a miscounting of existing investment.

A more constructive metric for assessing the effectiveness of innovation intermediaries would be to assess firm survival and growth, a metric that several interviewees had attempted to put to use in their operations with varying degrees of success. However, in order to measure firm survival and growth effectively, one would need to establish a system of tracking the fortunes of companies after they leave the incubator or accelerator, an activity that, for many, would prove prohibitively resource-intensive. In fact, while many interviewees admitted that longitudinal data about graduated firms’ health, sustainability, or potential bankruptcy would be the most valuable metrics from an evaluation standpoint, such data was least frequently collected or used. It was especially rare that this information would be sought after a firm had graduated from an innovation intermediary.

Most intermediaries interviewed either did not follow up with graduated firms as a matter of practice, or had not arrived at a process for continuous follow up that satisfied their operational and reporting requirements. Of those who claimed to follow up with graduated firms, the majority suggested that the process for doing so was *ad hoc* and unsystematic, sometimes consisting of little more than checking to see which businesses were still in operation or maintaining a live website. Only one of the innovation intermediaries interviewed in this research claimed to follow up in a regular and systematic way with graduated firms, but even this exceptional case had some obvious methodological flaws.<sup>2</sup>

## B) Policy Considerations

### *Measurability*

The wide range of success metrics employed and the inconsistency in their use raises serious concerns about the degree to which innovation intermediaries’ impact can be reliably measured. While reliable measurement would seem conceptually possible, there are very few successful examples in practice. Of the few successful examples that do exist, none could be said to be comprehensive in their scope. Even in cases where accurately measuring and attributing the impact of public investment is possible, there remain unanswered questions

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<sup>2</sup> Unfortunately, in this case the longitudinal collection of data was a relatively new initiative of the innovation intermediary making the results of little value to the present research.

about the effectiveness of these investments. Indeed, there is reason to suspect that even the best metrics only capture a small portion of the necessary information required to pass judgment on an overall funding program like CAIP.

Another issue is the degree to which the execution of the program itself has the potential to distort the relevant metrics for measuring the program's success. Critics of these kinds of supports for business innovation argue that valuable initiatives elsewhere are no longer being funded because private capital is being steered towards government-led initiatives; a phenomenon also known in the economic literature as "crowding out". This distortionary feature could be further exacerbated by government programs that require recipient innovation intermediaries or firms to leverage private capital as an eligibility requirement. These structural considerations undermine the neutrality of measurement mechanisms, which claim, for instance, that a program was able to attract a certain amount of private capital.

Many of these metrics also do not sufficiently capture distinctions that pertain to the quality of services being offered by the innovation intermediaries being; a factor that contributes to a relatively low quality of service in some cases. Some interviewees felt that the quality of service provided by publicly-funded intermediaries is generally inferior to the offerings of fully private players. In a similar vein, the expanded availability of innovation intermediaries resulting from increases in public funding was viewed to be problematic in and of itself. Some venture capitalists suggested that the increased volume of innovation intermediaries ultimately disrupts normal market signals that investors use to make business decisions, thereby muddying the waters of capital markets.

In one specific example, the exponential growth in the availability of "pitch training" for entrepreneurs was critiqued since this form of training does not tangibly improve the investability of the firms receiving the training. If many people are able to "pitch" well, it makes it more difficult for many less savvy investors to determine which companies are inherently good or worthwhile as prospective investments. One VC actually claimed to specifically avoid investing in firms that had spent time in accelerators, "because their pitches are formulaic and don't address the real issues of how well the entrepreneur understands the business and their customers."

A common theme raised by the innovation intermediaries themselves who were interviewed was that the innovation intermediary's capacity for monitoring was often the biggest determinant of which success metrics the innovation intermediary would employ, rather than the inherent value of the monitoring itself. This made the adoption of certain flawed metrics much more common than other metrics that are arguably superior. Metrics specifically mentioned in this context included: counting the number of companies graduated or in residence, the amount of support services offered by an innovation intermediary itself, successful exits, and the volume of capital raised. These are all input metrics that have little to do with business success; but they were used simply because they are easier to measure and not because they are more comprehensive. Other measures that would be significantly more useful from a policy or evaluation standpoint were used less frequently because of

technical barriers that would make them prohibitively resource-intensive.

A general concern with metrics arises from some indications that success stories were being tracked with much more rigor than were failures. Part of this is technical; it is easier to follow the activities of a company achieving massive success than it is to follow a company that is struggling or has *de facto* failed. Another consideration is of course that success stories are much more useful for the marketing and branding of innovation intermediaries than are its failures. While from a program design and policy perspective, failures are at least as instructive as successes, they are likely to be under-reported because the reporting agents have little incentive to do so. The lack of attention to failures by the intermediaries and their funders is a significant, and disturbing, finding.

### *Interactions with Government*

Many interviewees noted the difficulty in interactions with government including long timelines and wait times, obscurity in regulatory and program details, and a difficulty in accounting for all government programs and supports for which their business might be eligible. One interviewee suggested that the government create a singular portal that convenes government resources to make them more accessible to external users: “it really comes down to consolidated funding, a central hub. Ok, you are a start up, go here. There are a lot of missed opportunities (due to lack of awareness).” One solution that is being piloted is Innovation Canada, which was introduced in Budget 2016 to house all of ISED’s industry funding programs in a simpler and more transparent structure.

Innovation Canada includes a Clean Growth Hub to address the government’s focus on clean technology; the Innovation Superclusters Initiative, a \$950M program to support five technology superclusters; Innovative Solutions Canada, a \$100+M procurement program involving 20 federal government departments and agencies that will provide funding to support the creation of innovative solutions by Canadian small businesses (a pilot modeled after the US SBIR program); and a Strategic Innovation Fund, with a budget of \$1.26 billion over five years, that consolidates and simplifies ISED’s sector-specific programs, namely the Strategic Aerospace and Defence Initiative, Technology Demonstration Program, Automotive Innovation Fund and Automotive Supplier Innovation Program. Stakeholders seemed to suffer from a low awareness of Innovation Canada, although it should also be noted that Innovation Canada’s efforts were fairly recent at the time of interviews.

Similar observations were made about the absence, or more accurately the lack of awareness, of a whole of government perspective on innovation policy. Several stakeholders suggested that relevant government programming was designed in a vacuum and suffered from a lack of harmonization and integration with one another. Again, this falls within the mandate of the relatively new Innovation Canada, suggesting that prior consultations have raised this issue and that government has begun to act upon this feedback. Although awareness still seems to be generally low on the basis of the interviews conducted in this study, one innovation intermediary described a break with past challenges and marked improvement in recent

times, stating “The type of interactions that I’ve had with government on the policy and political side, I’ve been impressed in the last 6 months... Things are improving, but there’s a lot to be done.”

A range of stakeholders bemoaned the lack of shared vision for innovation intermediaries that afflicted all manner of institutions related to innovation, including public sector partners. Some stakeholders suggested that government programs tend to reward and validate existing successes, rather than providing supports to unproven initiatives that are most likely to be truly innovative and are likewise in greatest need of public-sector financial support. Interviewees holding this view tended to base these shortcomings on a perceived culture clash that existed between private and public sector values. Many private sector stakeholders claim to have a high risk tolerance that is at odds with government culture, which they characterize as marked by risk minimization and avoidance.

Indeed, innovation as a class of activities is almost universally defined by a propensity to take calculated risks, which in turn feeds into the culture of stakeholders that adopt mantras like “fail often” and “win big”. These attitudes sometimes sit in opposition to the values of the public service that seeks to minimize risk. However, the belief that this risk tolerance is fundamentally at odds with government has been challenged by some (Mazucatto, 2015) with the idea that state-led entrepreneurial activity (such as U.S. government’s use of military spending) can support the development of general purpose technologies in a way that the private sector could not. This is to suggest that the state may have a significant role to play in de-risking some elements of innovation, but it may first need to overcome some of the obstacles of risk-aversion in the culture of public administration.

When asked about the advantages of innovation intermediaries versus other policy measures for supporting innovation - such as tax credits, the trade commissioner service, direct funding to companies etc. - most innovation intermediaries signaled they worked in concert with other policy interventions; not in competition. One interviewee used the analogy of a high performance sports team, “This question is almost like, ‘should we spend more on equipment or coaches?’ We obviously need both.” Another interviewee made a similar suggestion, noting that the question of innovation intermediaries versus other policy measures supporting innovation is “not an either/or (proposition), it’s an both/and (one).” A third interviewee suggested: “All of these (policy) measures are necessary because they interact with different stages of the (commercialization) process.”

### *Concentration of Resources*

Most interviewees mentioned weaknesses in the innovation intermediary space generally, but felt that their own institution's contribution was exemplary or exceptional. That said, interviewees highlighted a large variability in quality of intermediaries, itself poses a problem for coherent policy approaches to innovation intermediaries. One interviewee attributed poor quality to lack of selectivity in accepting client firms. “When you keep access to services open to any start up, just about anybody jumps on board. It lowers the quality you are able to

offer to the lowest-common denominator. With this in mind, it's of little surprise that startup industries have a bad reputation, because it's a jungle out there!”

To that end, many interviewees felt that Canada’s innovation ecosystem would be well served by a contraction in the number of entities working in the incubation and acceleration space. Many believed there to be a glut in the number of innovation intermediaries, with many small and *ad hoc* players operating in this space – sometimes of dubious credibility – who make implausible claims about their contributions to Canada’s economic performance. Interviewees suggested that this propensity to exaggeration was especially pronounced with regards to incubators specifically. According to one interviewee: “The incubation space is too crowded, much too crowded.” Several interviewees argued that the government should induce a consolidation of innovation intermediaries, instead focusing on a small number of highly competent actors– a proposal not unlike the initial rationale for CAIP itself.

While perhaps there is merit to the idea that Canada’s incubation and acceleration framework should adopt a more concentrated funding model, it's worth noting that this argument is also self-serving. Interviewees’ proposals to contract and concentrate funding for innovation intermediaries cannot be taken at face value since most interviewees advocating for consolidation insisted that their model was among the better ones. Furthermore, their selection by CAIP would suggest that they would stand to benefit from a greater concentration of government funding. That is not to invalidate the idea of consolidation in the number of players and concentration of funding, rather to suggest that any action in this vein requires a cautious approach.

There were similar comments regarding the geographic footprint of Canada’s innovation intermediaries. CAIP participants tended to prefer a focus on maximizing potential firm growth and innovation, with comparatively little concern for job creation in rural or economically depressed areas. While interviewees tended to empathize with the government’s need to disperse incubation and acceleration capacity regionally to improve the equitability of access and promote balanced job creation, they generally disapproved of anything that might resemble “artificial equitability”. Most interviewees supported a focused approach on growing successful firms rather than the more politically motivated goal of job creation and regional economic development.

Another issue interviewees raised is that the existing policy framework does not adequately distinguish between needs and types of services required in different regions and clusters, especially rural vs. urban regions. “In Rimouski, you need supports but are not operating in the same market segment as people let's say in Montreal who are trying to create the next billion dollar company” one interviewee suggested. In this sense, smaller clusters can become over-supported at the expense of larger clusters although the larger cluster require more supports because they are in more direct competition with global forces. “It's almost that there should be two levels of funding, one for the regions and one for the national or global.” the interviewee continued, “There has to be something for the local coaching etc. But businesses within Canada should be able to move to wherever their advantage is.”

### *Globalization and Exports*

Interviews suggested that policy designers, politicians and the public at large often view supporting companies involved in global markets as a means to improve Canada's export balance. Yet most start-ups and scale ups that were interviewed take for granted this integration with global value chains as a basic prerequisite to success. Indeed, questions surrounding global value chains were included in all interviews and very few organizations of any type suggested that business plans aiming at integration into strictly local, or national, value chains were a serious consideration. Nearly all firms interviewed were looking globally, or seeking integration with a localized segment of what was ultimately a global value chain.

To put it otherwise, there was a near consensus among interviewees on the fact that firms and innovation intermediaries should focus on the global, to the point where it's mention borders on tautology. One policy expert suggested that this (perhaps) redundant attention to a global outlook is a uniquely Canadian phenomena, "We speak with counterparts in Europe and elsewhere, and for them "going global" or being "born global" is obvious. It doesn't need to be stated. Canadians seem to be the only ones still talking about this as if the alternative is even an option." This seems to point to a disconnect between the policy community and practitioners; practitioners being fully aware of the prevalence of being "born global" and the policy community advocating for it in the abstract.

In most cases where interviewees did focus first on a domestic or local market, it was in the context of a first customer or early partner whose operations just happened to be domestic, almost by coincidence, perhaps driven by convenience. Many client firms felt that having interactions that were primarily domestic was a matter of chance more than it was a matter of condition or conscious strategy. Indeed, many other companies indicated a similar situation but one where their first customer happened to be international; their Canadian business operations effectively being limited to R&D and a head-office. In this sense, the location of first customers or partners being inside or outside of Canada would seem unlikely to indicate a significant trend, although perhaps a larger sample would yield different results.

Local conditions were generally not emphasized as important by interviewees, especially innovation intermediaries. When probed further, suggesting that they could define "local" in a manner that made the most sense to their operations (i.e. municipal, provincial or even national), most respondents gravitated towards a theme of locality that closely resembled industrial specializations or clusters. By that definition, "important local conditions" often included post-secondary institutions - for their human capital - geographic features, like the oil patch, or the regional VC community. Those with a relationship to tech and software were also likely to identify local quality of life as an important condition, much in line with the well known "Creative Class thesis" (Florida, 2002).

## C) Interaction Among Innovation Intermediaries

### *Policy Isomorphism and Sharing Practices*

CAIP participants regularly discussed among themselves various metrics they used and participants often adopted one another's practices for supporting innovation. A key part of CAIP was thus its ability to facilitate this sharing and adopting of best practices among participants. There are other examples of this policy isomorphism. The Province of Quebec has followed CAIP closely with an eye to its successes and shortcomings. In April 2017, the government of Quebec announced that it would be launching its own program for boosting innovation intermediaries that is closely modeled on CAIP. In the words of one interviewee <<C'est organisé de la même façon exactement, sauf pour quelque particularités Québécoise et que les fonds sont strictement pour les nouveaux projets >><sup>3</sup>

Policy isomorphism among the innovation intermediaries themselves started early in the program. After CAIP's launch, the participants formed an *ad hoc* working group, conducted by conference call, for troubleshooting elements of the program's administration and reporting system. "Initially, the calls were to solve technical issues but it quickly became a place for us to gripe about all the program's red-tape." one interviewee said frankly. This process permitted participants to present a united front to the CAIP administrators about what elements of the program were posing the most challenges to participants, which in turn helped CAIP administrators with their policy renewal and development.

Although the initial objective for the working group was to resolve administrative and reporting issues, and indeed some participants stopped attending these meetings after their original objective had been accomplished, the group evolved and became a forum for mutual aid and improvement. "Once we got past the initial negativity, it became a great way to compare notes and share best practices." This pertained not only to the CAIP program specifically, but to improvements in their approaches to innovation, acceleration and incubation more generally.

### *Competition and Collaboration*

The CAIP program brings to light some interesting dynamics of cooperation and competition in the innovation intermediary space. On one hand, the majority of CAIP participants regularly collaborate with one another for the exchange of best practices. As one interviewee explained the network of accelerators brought together by CAIP, "The dialogue we have is amazing, one of the best parts of the program. Sharing best-practices etc. It makes synergies. We can accelerate each other." This cooperative element is generally regarded as a highly constructive one that allows innovation intermediaries to improve and develop capacities more quickly than would otherwise be possible.

However, to the extent that innovation intermediaries try to identify and attract the best

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<sup>3</sup> Trans. "It's organized in exactly the same way, except for some particularities of the Quebec system and that it is for entirely new projects."

companies as clients, innovation intermediaries are technically one another's competition, especially for those operating in the same industry sector. Interestingly, when asked about their distinctiveness and potential competitors, without fail, every single CAIP participant that was interviewed made the identical claim to the effect that "nobody is operating in the same space as we are". For the few CAIP participants that are the only ones working in a specific industry sector, such as pharma or agtech, this assertion is more plausible. However, if we include the entire community of innovation intermediaries in Canada, then it is obvious that they do have competitors. Entrepreneurs looking for support and mentoring constantly compare different intermediaries, both across Canada and in the U.S.

Many of these organizations are regionally focused and perceive their mandate as building the ecosystem in their region. To this extent, they do not compete with the organizations focused in different regions. However, as discussed earlier, some interviewees perceive that regional economic development is the wrong focus for successful firm incubation and acceleration and that too many weak intermediaries are being funded based on that goal. In this sense, even regional focus creates competition, whereby stronger intermediaries are calling for consolidation and others are suggesting that regional economic development policy be separated from innovation policy geared to growing robust, globally successful Canadian firms.

This competitive tension is reflected in an interesting evolution of CAIP's mechanisms for allocating funding amongst program participants. While participants each received a dedicated funding envelope for their exclusive use, not all participants were able to use this funding in each year. The result was a surplus of CAIP funds that were unassigned to any particular participant. The existence of unassigned funding allowed participants to apply for "top-ups" on the basis of successes in utilizing their initial allotments. Of course, those applying for "top up" funding had already spent their initial allotment.

Those participants who were unable to match the CAIP funding, or who could not meaningfully use the CAIP funding to expand their operations or offerings, essentially freed up those resources for use by other applicants. According to one interviewee, this system was developed by the participants themselves who took note of 'slack' and proposed supplementary projects to administrators that would fit within the mandate of CAIP. In this sense, it represented a reallocation of funds from the less successful CAIP participants to the more successful ones.

This competitive dynamic was generally in line with the philosophical approaches of the innovation intermediaries themselves, who view competition as key to successful innovation. One interviewee explained in relation to CAIP funding that from their perspective, "Trying to spread the money around to make everybody happy will get you nowhere. You need to pick winners and let losers wither on the vine." The overwhelming majority of innovation intermediaries felt that this dictum applied equally to their client firms receiving their support, as it did to the innovation intermediaries themselves.

### *Criticism of restrictive government requirements*

CAIP funding recipients identified a number of restrictions placed on funding eligibility (some felt they could not make a competitive application), spending (e.g., on expansion of offerings rather than regular operations) and the requirement that public funding be matched by an equal amount of private funding. CAIP participants mentioned these requirements most often as program deficits and similar features of other government programs were similarly identified as problematic by non-CAIP interviewees. Interview results indicated that these requirements were built into the program by central agencies and not by CAIP designers specifically.<sup>4</sup> One result is that it becomes difficult to segregate responsibility for different elements of the program design that have proven either effective or problematic.

CAIP detractors state that the reporting requirements are too onerous, the eligible expenditures too narrow and the scope of possible action distortionary. To name one example, the funding could easily be put to use for a new hire that would facilitate another program, but it might not be allowed to allocate funds to existing staff or operations. One innovation intermediary described themselves as in a difficult position stuck between government and young firms, stating “Startups are dynamic, quite the opposite of the bureaucratic processes which govern our funding.” Another innovation intermediary explained, “There is a lot of administrative burden with government funding. Government needs accountability, to be sure, but it's getting tedious. The amount of red-tape might soon get to the point of being so onerous as to defeat the purpose...There is a big disconnect and one that keeps us from being as nimble as possible.”

Policy designers counter that program participants will always push for less restrictive requirements even in circumstances where they have already been minimized to the greatest extent possible. In fact, one innovation intermediary quipped: “government has to be able to say ‘no’ to entrepreneurs. Entrepreneurs always ask for (more) money.” Certainly, there is a compelling case to be made for reporting requirements, especially when government is responsible for overseeing the disbursement of such large sums of money. Nonetheless, some interviewees felt that CAIP was too onerous even when keeping these considerations in mind. To quote one: “All the government funding comes with some sort of measurement requirements, but CAIP might be one of the more demanding ones.”

One innovation intermediary outlined their idea of how a revised system would work: “If we (innovation intermediaries) have demonstrated credibility, we should receive more flexibility in return. In practice though it doesn't work that way. We should be reporting on outcomes and have a free hand to decide how that works. Especially since projects are often multi-year and so things change. We need to change and amend agreements to match the circumstances.” While this particular preferred approach may or may not be technically

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<sup>4</sup> Specifically mentioned were the financing requirements of the Treasury Board Secretariat and the Department of Finance, which apply to a wide range of programs, not just those limited to innovation intermediaries. It should be further noted that the types of requirements are not unique to the government of Canada but are common to many comparable government funding programs in other jurisdictions and at other levels of government.

feasible from the standpoint of the public administration, it is interesting to note that the “pain point” for many innovation intermediaries is more about funding flexibility than the amount of funding itself.

This call by CAIP funding recipients for more flexibility and their criticism of restrictive requirements imposed by government could reflect disparities between the objectives of practitioners and funders. Whereas government may feel the need for incrementality and regional focus, practitioners want results for their client firms. For them, it doesn’t matter where their clients come from or whether or not they represent a new type of client or the beneficiary of a new service offering. Government requirements that limit an intermediaries’ flexibility in serving its client are particularly restrictive from a business perspective, where financial success stems from having the best clients and an optimal number of them.

Interestingly, prior research<sup>5</sup> indicates a close association between the flexible use of government funding and the number of government stakeholders that fund an innovation intermediary. Innovation intermediaries that received funding from two or more levels of government were likely to have much greater discretion over how that funding was put to use. In other words, there is already a *de facto* flexibility in funding use that is afforded to trusted organizations, in the sense that they have been vetted by multiple levels of government. This finding is important and bears further research. It may be that the current system disproportionately rewards those organizations that have greater administrative capacity or familiarity with government, not necessarily those with the greatest capacity in the core functions of innovation intermediaries. Or it could be that government funders are attracted to intermediaries that are already successful. As one interviewee noted: “We had no government attention before we were successful. They didn’t care, they didn’t want to see us.”

Interviewees expressed other concerns about the underlying assumptions of the program and how they translated into the program design. For one, “Government sometimes gets confused between the difference between incubation and acceleration, seed and scale. Distinctly different areas with different problems and solutions, they should be unbundled.” These issues point to the need for more clear methodological distinctions in program selection metrics and in any future iterations of CAIP.

#### D) Start-Up and Scale-Up Perspective

The client firms of innovation intermediaries bring a distinct and valuable perspective to policies in support of innovation intermediaries and the innovation ecosystem more generally. Client firms were seldom aware of the nuances of the CAIP program or similar supports of innovation intermediaries because they do not themselves interact with these programs. Yet as direct users of the innovation ecosystem and clients of the innovation intermediaries, client firms provided a valuable perspective on both the successes of the innovation ecosystem generally and of innovation intermediaries more specifically. Client firms were asked about

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<sup>5</sup> Forthcoming publication from the Impact Group.

their experiences with innovation intermediaries, their interactions with public policy more generally, and what conditions, if any, would improve their competitive position.

### *Firms connect with multiple Innovation Intermediaries*

Many client firms were found to be affiliated with multiple innovation intermediaries at the same time, with one particular firm that was interviewed having been affiliated with as many as four innovation intermediaries concurrently. From the perspective of client firms, this was undertaken as a form of support system arbitrage, where client firms would utilize the “best” supports available at each innovation intermediary. Of those client firms that had relationships with multiple innovation intermediaries, a majority suggested that this was done intentionally to take advantage of specialized offerings for each.

In that vein, it was not uncommon for a client firm to seek incubator support from one innovation intermediary, training from another, and investment capital support from another. Interviews with innovation intermediaries themselves seemed to recognize this phenomena, with some innovation intermediaries specializing their support offerings in one area, and referring client firms to the specialized supports of other innovation intermediaries as necessary.

Given this prevalence of firms engaging concurrently with multiple intermediaries, it is both conceivable and likely that successful overall outcomes from a single firm may be counted in the output of multiple intermediaries. Firms that arbitrate between multiple innovation intermediaries are likely to be counted separately in the success metrics of each innovation intermediary. Outputs of innovation intermediaries are often reported in aggregate, rather than being deconstructed in such a way that ensures that partial results are ascribed to partial supports. As a consequence, there is a very real risk that successful firm outcomes are being over-reported. Interestingly, some client firms seemed to be aware of this possibility as a result of their interactions with innovation intermediaries.

There is also the possibility that successes are being over-reported across multiple levels of government, with provincial and federal governments each claiming responsibility for the same successful outcomes. For example, one firm could utilize supports from three separate intermediaries, each of which is supported by both federal and provincial government programs. In this case, the value of a successful exit could appear in official reporting a total of six times instead of once.

The question of attribution for successes or failures is tricky. While every intermediary that has touched a firm that is ultimately successful wants to claim responsibility for that success, in reality most successful firms avail themselves of many different supports along their development path. If they do succeed, the success reflects on the overall innovation support ecosystem; just as firm failures do. Single attributions are difficult to demonstrate and may actually not be relevant in the context of the overall ecosystem.

Nonetheless, intermediaries strive to claim responsibility for successful firms that have passed through their doors. In fact, some intermediaries actually chase after successful firms in the hope they might be able to attribute part of the firm's success to their affiliation with the innovation intermediary. Although innovation intermediaries never mentioned this, some client firms reported that after they had achieved some significant demonstrable success, multiple innovation intermediaries subsequently approached them, seeking some sort of marginal and superficial affiliation with their firm. One successful firm reported that as they moved to their Series B funding round, they began to receive non-stop recruitment inquiries from incubators even though it was clear that the firm was far too advanced in its development to have any plausible need for incubation space. Nonetheless, the firm's success is what encouraged greater solicitation of support services, an inversion of the relationship that is intended by policy designers.

### *Using the Offerings of Innovation Intermediaries*

A surprising number of client firms expressed a lack of awareness of the functions, offerings and capacities of innovation intermediaries, both generally and also in the specific case of the innovation intermediary with which they shared an affiliation. Although the difference between incubators and accelerators was generally clear in broad terms, the porous boundaries between these two types of intermediary was a source of confusion for many interviewees. Many client firms were only aware of the supports that they were utilizing and were unaware of the innovation intermediaries' overall offerings. Some were aware of the total package but suggested that only a small share of supports being offered were relevant or useful for firms in their position.

With that said, most client firms interviewed reported satisfaction with the services of innovation intermediaries and a significant share reported that these offerings were crucial to their firm's development. However, there was no clear pattern as to which services were most useful to client firms since many firms were unsure and the sample size was too small for any claims in this space to be systematic.

### *Interactions with Government*

Client firms often expressed difficulty in interacting directly with government and potential investors. Firms with longer time horizons for product development were most likely to express concerns about their interactions with government whereas firms with shorter time horizons for product development were most concerned with having quality interactions with private investors. Innovation intermediaries were often deemed necessary to bridge the gap in communications capacity; client firms often felt that could not communicate with government because those communications would have to be prohibitively technical. In some cases, this communications function with government was identified as the principal reason for linking-up with an innovation intermediary.

When speaking specifically to interactions with government, client firms relayed that there are a bewildering number of government support programs available that proved difficult to

navigate without assistance. It was challenging for them to understand which programs may be relevant for their business type and stage of development. Many client firms were unaware of the number of programs that could potentially be relevant to their operations. For government support programs that they identified as relevant and useful, many expressed an overwhelming difficulty in navigating application processes, eligibility criteria and reporting requirements.

In many cases firms reported utilizing innovation intermediaries as supports when navigating government programs and interacting with government more generally. In the words of one interviewee, “Arms length innovation organizations like incubators and accelerators are the most important part of the story in the innovation space. You can’t really work with government directly. I fully realize that (innovation intermediaries) are government funded, but they are not afflicted with the same problems as government.” This was one of many critiques of government programs’ relative inaccessibility, which often centred around themes of time constraint and slow response times that rendered programs often functionally unusable by business.

Not only did clunky processes and high administrative requirements pose a problem for those seeking to access government programs, but it also posed a problem for innovators seeking to express their needs to government. As one entrepreneur explained it, “As a start-up/scale-up company, I cannot spend time lobbying government. Not really. The incubator/accelerators are my way of expressing my needs to government.” In this sense, many client firms felt that innovation intermediaries were crucial portals for interacting with government and in some cases, that they are fundamental prerequisites to receiving government support.

In spite of the value and capability that client firms often ascribed to innovation intermediaries, as experts in providing supports to start-up and scale-up firms, innovation intermediaries were inconsistently aware of the breadth, scope and requirements of government programs that could be relevant to new firms. This inconsistency in capabilities suggests a need for more training of intermediaries about government support programs, including how to put them to use. The recent horizontal review of federal government business innovation support programs is an important first step.<sup>6</sup>

### *Seeking Investment Capital*

With regards to private funding supports and the attraction of investment capital, client firms similarly painted innovation intermediaries as being crucial nodes and portals for funding. Unexpectedly, and in contrast to government support, this was less often the case from a capacity standpoint than from a signaling standpoint. While many client firms undoubtedly completed pitch training, some felt that it was not especially valuable to their business success. Many felt that affiliation with an innovation intermediary was an important signal to

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<sup>6</sup> Treasury Board Secretariat, “Inventory of Federal Business Innovation and Clean Technology Programs.” <https://www.canada.ca/en/treasury-board-secretariat/corporate/reports/inventory-federal-business-innovation-clean-technology-programs.html>

potential investors that their firm represented a viable opportunity, and one to be taken seriously by prospective funders.

At variance with many of the claims of innovation intermediaries – tending to portray themselves and others as indispensable to the innovation and wealth creation process – a large number of client firms viewed innovation intermediaries' facilitation of investment capital less as a valuable training opportunity, and more as a rite of passage or form of signaling to investors. That is to say, instead of them providing effective training per se, accelerators effectively screen companies on behalf of investors. When asked about the value proposition of innovation intermediaries, one intermediary explained that, “We tend to know if the venture has been a good one. We understand the marketplace. We look at what the industry needs, market pull signals, and we screen companies. “

This variance can help to improve the quality of investments being made while ensuring that valuable endeavours are funded, to be sure, but it is important to ask the degree to which this relationship may take on a disproportionate importance when compared to the services being offered. There was some concern among those participating in interviews that association with an accelerator becomes a necessary form of pre-qualification from the perspective of many investors, a form of crude credentialism. While this may make sense from an investment standpoint, it may lead to overstating the value of service offerings to stakeholders at large, but funders especially. In this sense, while training from accelerators is often closely associated with client firms receiving private funding, there may not be much reason to expect this to be a cause-and-effect relationship.

If the training being offered by innovation intermediaries is not indisputably valuable to client firms, and indeed interviews with many client firms point in this direction, it may be valuable to scale back their role to one solely of signalling. If innovation intermediaries continue to be afforded a role larger than performing signalling, it is important to understand and evaluate that expanded role on its own merits. The blending of the signalling function with other operations makes it difficult to assess whether or not an expanded menu of services for innovation intermediaries truly brings added value commensurate with the additional expense of effort.

Some firms expressed that the proliferation of innovation intermediaries resulted in somewhat of a risk avoidance on the part of investors. With such an expansion in the number of client firms that had been in effect pre-qualified for investment by innovation intermediaries, the pool of prospective funders would see their potential funding ventures cluster around innovation intermediaries instead of being more broadly adventurous in their selection. Some viewed this as tantamount to investor risk aversion. The idea that the expansion in the number of innovation intermediaries increased investor risk avoidance was mirrored by interviews with VCs themselves. Investors indicated that the proliferation of start-ups and scale-ups seeking funding made it increasingly important to pre-qualify prospective opportunities to manage the flow of potential funding opportunities. and that innovation intermediaries are a way of doing that.

### *Distortionary Pressures of Educational Objectives*

The conflation of signalling with other functions, especially training, of innovation intermediaries is evident among the growing number of campus-linked accelerators. The often-close relationship between these innovation intermediaries and post-secondary institutions (and non-institutional funding for skills development for that matter) ensures that educational objectives are often interlaced with funding eligibility. Many of these innovation intermediaries may find themselves required to deliver educational outputs, which could very well lie outside of their core competency, in order to remain eligible for their wider operational funding.

In these cases, two fundamentally distinct mandates have been lumped together circumstantially; entrepreneurial training and capacity building on one hand, and investment pre-qualification through signalling on the other. In other words, there is evidence to suggest that the educational mandate may be ultimately distortionary; pushing a forced marriage between related, but not bespoke, institutional objectives. Indeed, some client firms considered their business a “summer project” that would complement regular educational requirements, and in all likelihood the start-up would be scuttled at the resumption of courses. Nonetheless, the starting up of a firm would, in a “summer start-up” situation, be measured as an independent success, as would the education and experience itself; a misreading of signals to be sure.

The conflation of educational and commercial objectives in these entities is facilitated by the relative disengagement of the private sector, but there was also the suggestion that the higher education sector has over-expanded its role and mandate. One interviewee noted that, “a lot of the universities have an empire-building perspective” adding that this results in many of them “wanting to own the programming” even while this may not be appropriate. In this sense, certain innovation intermediaries may find their operations subject to a form of university “mission creep” that incentivises them to take on a training role outside of their core competency.

Another potential explanation for this muddying of objectives and outcomes comes from the apparent failings of business education being provided to students and potential entrepreneurs in universities. As explained by one interviewee, “The way in which business students are trained is inadequate... (commercialization is) taught from textbooks that are 10 years old... (business students receive) no training as to how to evaluate market opportunity, how to engage.” These shortcomings push students to find their own experiential learning and indeed, it is not uncommon for university entrepreneurship courses to encourage students to interact with the university’s innovation intermediary.

### *Assessing Innovation Intermediaries*

Innovation intermediaries possessed an extremely wide array of mandates and missions, both in the variety of undertakings across the totality of intermediaries and also in the range of

objectives of individual intermediaries. This fact is generally celebrated as an indication of the diversity of supports being offered to firms in the Canadian innovation ecosystem. A more pessimistic perspective would consider whether this diversification was occurring at the expense of specialization. Indeed, any organization that is all things to all people is at risk of promoting breadth over depth.

The dynamic of specialization versus generalization was sometimes the subject of strong opinions among the innovation intermediaries interviewed. Usually, this took the form of smaller, more specialized innovation intermediaries critiquing their larger, more generalist counterparts. These critiques sometimes addressed the capacity for operational effectiveness and on other occasions were aimed at the validity of the organizations themselves. A multiplicity of operations tends to engender a multiplicity of cross appointments and funding pools, which produces a degree of opacity that some interviewees found suspect. One well-known initiative was critiqued as being a “real-estate play” disguised as an innovation intermediary, for its propensity to be accompanied with new high-value building developments.

A minority of client firms indicated a disconnect between the availability of funding and firm growth, even though addressing this kind of disconnect was the original purpose of the VCAP program under the auspices of which CAIP had been created. These firms expressed concern with the equity stakes that they would be required to forfeit to investors in order to secure additional funding. Diving deeper, the concern was that private equity was available, but not necessarily working capital, which forces early stage firms into a disadvantageous position. In wider terms, few client firms expressed concern with a lack of available funding for successful high growth firms, something confirmed by innovation intermediaries themselves. With that being said, many firms expressed that there were significantly greater opportunities to attract capital in other jurisdictions, with Silicon Valley being often mentioned as a best practice.

A striking result was the near uniformity in responses pertaining to potential markets and relations to global value chains. Nearly all client firms, regardless of sector or size, self-identified as “born globals” that would immediately pursue a growth strategy based on global demand. Similarly, nearly all firms identified themselves as focusing on business-to-business transactions, with the marginal exceptions being firms that sought to sell directly to consumers as a complement to a product or service offered by another business. Most of these businesses targeted for sales were themselves global, or at least multinational, in size and scope of operations.

### *Assessing CAIP*

At the same time that many suggestions were offered for improvement and critiques were leveled against the CAIP program and its administration, only a small minority of stakeholders critiqued the fundamental basis of government initiatives to support innovation intermediaries. The overwhelming majority of interviewees felt that CAIP, while containing

some flaws, was a successful program and one that should be continued in some form or another. Of those generally supportive of the program, a significant number were emphatically supportive and did not suggest the need for major changes. The vast majority however felt that the program required an in-depth diagnosis to upend various failings or inefficiencies, and that the program merited effort at continuous improvement.

It is worth noting that there were relatively few elements of the program design where stakeholders were in agreement about which changes would benefit CAIP and similar programs. Some of these critiques contradict one another, but the majority simply focused on different elements of the program that had relevance to them. Nearly all critics agreed that the program would benefit from a reduction in red tape, reporting requirements, restrictions on the use of funding and general improvements in how program administrators interacted with private sector stakeholders. Program designers were quick to point out that these critiques are common to most government programs and therefore are not a specific function of CAIP. Although far outside of the scope of this report, and even innovation policy analysis itself, there is a clear appetite for improved government processes and interactions.

A small minority of respondents were highly critical of the program and the fundamental basis under which it had been designed. These critiques centred around concerns for the competitive mechanisms of such programs and their impact on innovation and economic development. This included concerns that these programs generally reward the ability to successfully interact with obtuse government programs rather than the ability to successfully support innovation. More roundly, these interviewees tended to suggest that government supports in these areas effectively amounted to a sophisticated variation of unconditional support for intermediaries, or in other words, government handouts that fundamentally did not reward the types of activities they set out to support. Although the term itself was seldom used, these critiques could be surmised as concerns about rentiership, or rent-seeking behaviour, among innovation intermediaries.

This minority of respondents leveled the criticism that those innovation intermediaries most eligible to receive government support are often those that are the most risk averse and incremental. The essence of the critique is that only large and established innovation intermediaries would have the processes and administration in place to make them competitive for government grants. Much to the same end, other interviewees suggested that there is little diversity in the innovation intermediaries that win government support; that it is always the same “usual suspects” that are awarded government funding.

It was seldom the large and most-well known innovation intermediaries who engaged in this vein of criticism; rather this critique most often emerged in interviews with smaller players. On one hand, this is perhaps to be expected. Indeed, those benefiting directly from a policy inefficiency are unlikely to criticise the circumstances that give rise to it. On the other hand, this vein of criticism could also be chalked up to sour grapes, or the propensity to disparage the more successful. A full assessment of this dynamic is beyond the scope of this research, but in either case, the possibility of a policy inefficiency in this area is at least plausible and

thus merits closer attention from policy designers.

From a similar perspective, it is remarkable to note that only three of 16 CAIP participants received under \$2 million in funding through the program, and only one received under \$1 million. This raises the question of whether smaller innovation intermediaries are viable in the running for government programs at all or if they are effectively disqualified by the lack of administrative capacity that comes with having a small size. Certainly, it is difficult to imagine small and highly lean organizations having the excess capacity available to compete in government funding processes. One interviewee even went so far as to suggest that this presented a perverse incentive, that the smaller and leaner the innovation intermediary, the more apt it is to do a good job and the less apt it is to successfully compete for government support.

A surprise was the degree to which the CAIP funding had traveled. While conducting interviews with the control group of intermediaries (those who were not part of the CAIP program) it became clear that many organizations that were not directly participants in the CAIP program have some association with its funding pool. This usually entailed a partnership or cooperative relationship with an organization that was receiving funding from CAIP. This suggests that the impact of CAIP on the operations of innovation intermediaries may well have been much wider than had been intended at the outset.

## E) The Triple Helix Model

The academic literature on innovation often speaks of innovation as following a “Triple Helix” model where responsibility is shared in roughly equal measure between research (universities), industry and government (Etzkowitz and Leydesdorff, 2000). A recurring theme across interviews among all stakeholders was whether or not the “industry” part of the triple helix continues to shoulder a fair share of its responsibility for advancing innovation, specifically large corporations and finance. Many in fact suggested that “industry” had ceded much of its traditional role in the innovation process and that the remaining stakeholders were picking up the slack, specifically researchers/entrepreneurs and government. Indeed, the present balance of responsibilities in the start-up and scale-up community is highly advantageous to industry, especially in comparison with traditional in-house models of innovation and research.

The current model centred around innovation intermediaries allows the private sector to mitigate many of the risks and financial obligations associated with the expected mis-starts and dead-ends of the research and development process. Rather than taking on the largest share of the costs and risks of research commercialization, “industry” becomes involved later and later in the R&D process once their risk has been further minimized. In essence, the costs of this part of the commercialization process are effectively passed on in greater share to the other two stakeholders of the “Triple Helix”. While this arrangement is advantageous to large corporations and others in private industry, this is not a costless arrangement with many of the financial burdens and risks of investment being transferred onto the other stakeholders in

the innovation process. One interviewee from an innovation intermediary expressed frustration with this situation by demanding, “Where is the private funding that matches our funding? Private capital needs to take some risk too!”<sup>7</sup>

While some interviewee claimed that private capital has become impossibly risk averse may well be overblown, it is nonetheless clear that the initial formulation of the Triple Helix Model has evolved since its initial formulations. By many indications, large corporations are relying less on in-house models and more on start-ups that are more nimble, and thus on third party organizations that can facilitate their growth. An argument could be made that the growth of innovation intermediaries phenomenon is a product of these new circumstances, whether they be the open innovation model, dry powder accumulation in capital markets or otherwise. Whatever the cause may be, the rise of innovation intermediaries would seem to indicate that the Triple Helix Model has undergone a significant evolution.

This phenomenon may be especially marked in Canada, where Higher Education Expenditure on R&D (HERD) is one of the highest in the OECD while Business Expenditure on R&D (BERD) component is comparatively one of the lowest (Crelinsten, 2017). This imbalance has led Canadian governments to fund institutional research partners like universities to provide commercialization support mechanisms (including innovation intermediaries of course) as well as funding of applied research. This reliance on government-funded spinoffs from research institutions has been widely unsuccessful and the belief that technology will necessarily yield business opportunity has proven false. New firms face an ever-wider innovation Valley of Death due to inability to meet business challenges.

Despite high levels of expenditures to support startups, specifically through HERD, Canadian startups increasingly rely on the savings and deferred earnings of their founders to get to the point of a successful exit or sustainable long-term growth. The increasing government support of innovation intermediaries to furnish these fragile new initiatives with the necessary non-market financial supports can be partly interpreted as being the result of the shortcomings of the university-led system of entrepreneurship.

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<sup>7</sup> Although only a small number of interviewees mentioned this, there are in fact several examples of large private firms actively engaging in the operations and financing of innovation intermediaries themselves. Several innovation intermediaries of these kind were part of the sample, and other such arrangements have emerged over the timeline of this research.

**Text Box: Innocentre - A Best Practice in the Triple Helix Model**

Innocentre, headquartered in Montreal, uses a unique model whereby investors are also key stakeholders in the non-monetary support offerings to scale-up firms. In addition to being responsible for providing capital to Innocentre's client firms, as well as to Innocentre's own operations, investors also sit on advisory boards, offer favourable non-market rates to client firms for their services, and pre-qualify firms to receive support from Innocentre. On one hand, this allows client firms to be afforded a quality of service they would otherwise not be able to afford on the open market. "Entrepreneurs are fed up with paying for lawyers and consultants at \$600 per hour." explains Pierre Nelis, Chief Operating Officer, and Innocentre bridges the gap between the services that scale-ups need and what costs they can bear.

There is a mutual benefit to investors who are able to minimize risks to their investments with the assurance that the client firms are receiving sound advice, while also recouping some of their costs with these in-kind offerings. "They lend their marketing folks, their staff. This is an important element." explains Claude Martel, President of Innocentre. "For (investors) it's a way to show that they are more than just money. (Client firms) could not succeed by doing it alone." As a case in point, one of Innocentre's client firms explained how their relationship with Innocentre not only provided them with a gateway to investment capital, but also the know-how to attain preferential terms. As our report shows, access to investment capital is in many cases less important to client firms than the terms of that capital.

When asked about how Innocentre measures success, Claude Martel was proud to point out that Innocentre had attracted over \$200 million in investment so far, but that's not all, "Aside from capital, we care a great deal about the satisfaction of our clients, being of course both entrepreneur and investors... Ultimately, the most important way we judge success is by repeat business." Since in this situation satisfied clients tend to be those who have had success in their business (through growth in market share, profitability etc.), "client satisfaction" proves to be effective shorthand for commercial success. In addition, Innocentre's model is politically saleable since government capital, especially from les Fonds Fiscalisés, must be employed towards locally significant initiatives. Although there are no job creation requirements strictly speaking - an imposed success metric that risks being distortionary- there is little doubt that these initiatives create local employment desired by political stakeholders.

One of several remarkable features of Innocentre, this partnership model permits Innocentre to reconcile the interests of all three members of the Triple Helix and assure deliverables for each. It does this while avoiding potential cartelization by introducing competitive mechanisms internally and cultivating a spirit of competition and entrepreneurship.

*Public vs. Private Capital*

When interviewees were asked more specifically about the relationship between capital financing and firm growth, businesses were significantly more likely than other interviewees to respond that the relationship was not linear; that the strong availability of capital financing was not closely related to a firm's ability to grow. Upon further investigation, it became clear that the key factor at play for entrepreneurs is not to the availability of capital overall, but the type of capital that is in abundance and the ultimate investment objectives of financiers.

Many entrepreneurs felt that the objectives of prospective financiers were often incompatible with the objectives of their firms, and sought to make profitable returns far too early in the firm life cycle.

As explained by one entrepreneur, “Most VCs are looking to invest for short-term and to “flip” the company and make a bunch of cash... (you must) avoid that trap of being stuck going from short horizon capital to short horizon capital.” One respondent stated the relationship more bluntly, “We don’t want capital... VC is always looking for equity and we don’t need that, what we need is a fair line of credit.” In other words, that there is an abundance of investment capital chasing scarce opportunities but little real risk capital or banking sector appetite for risk. Yet public capital allocated to innovation intermediaries is not sufficient to fill this gap, suggesting that there is room to consider alternative policy measures.

The relationship between the public sector and risk-avoidant behaviour viewed in the private sector should be an overarching consideration for policy designers to keep in mind in the development of future programs. Certainly, risk avoidant behaviour has the potential to make innovation difficult, but to what extent should government intervene? Innovation intermediaries and other public programs do not exist to eliminate risk for private sector investment but rather to make risk more palatable. Where risk is too high to merit the realistic returns to private capital, but the initiative would have social benefit such as increased employment, higher investment impact or long term taxation benefits, it may make sense for public funding to tip the balance in favour of continued investment. It is important that all those in the Triple Helix not lose sight of the ultimate purpose of public funding, which is to support the public interest.

### *Post-Secondary Institutions and Innovation*

Many client firms had their early beginnings in a post-secondary institution, having been student founders or building on the commercializable implications of research that had been developed in the institutions. While this fact fits well with the standard narrative of research commercialization (“from ideas to market”), it may not necessarily prove a causal relationship. A large number of founders coming from post-secondary institutions cannot, by itself, be taken as a confirmation that the institutions themselves are particularly conducive to innovation. In fact, the Conference Board of Canada recently lambasted Canada’s post-secondary education system for having much higher funding and attainment rates than peer countries, with simultaneously lower education outcomes and graduate employment rates (Lalonde and McKean, 2017).

At the core of the issue is whether post-secondary institutions actively make a contribution to innovation rather than simply being associated with outcomes for which they fundamentally bare little responsibility. When asked the degree to which post-secondary institutions contributed to innovation, respondents’ assessments of these institutions were usually mixed at best, although their opinions did range greatly depending on their experience. A

noteworthy share of interviewees held decidedly negative views about universities and their role within the innovation ecosystem, viewing their effect to be neutral if not negative. As one interviewee explained, “Don’t get me wrong, I believe in discovery and basic research... but this whole idea of universities as commercialization engines... I mean, it is just not a thing.”

With regards specifically to the education being provided by post-secondary institutions, interviewees generally appreciated the ability of post-secondary institutions to train for technical skills in STEM fields, especially in those experiencing labour shortages, such as software development. The value of business education was met with decidedly less enthusiasm, with university business degrees in particular often being critiqued for being too generalist and formulaic. Most innovation intermediaries felt that no degree of business education was a substitute for experience and that regardless of prior education, the entrepreneurship support provided by innovation intermediaries remained crucial. Some even suggested that prior business education could be problematic, with students having to “unlearn” overly hypothetical (theoretical) curriculum.

Interviewees generally viewed research produced in the academy to have low utility, a result decidedly at odds with existing conceptualizations of the innovation model. Responses from all stakeholders outside of the academy (client firms, innovation intermediaries and other policy experts) generally indicated that academic research had little real-world utility, and could be successfully commercialized in only a small minority of circumstances. When asked about the value of university research, the response from innovation intermediaries in particular was overwhelmingly negative. In some cases, respondents indicated that having research experience itself was useful, but more as a way of spotting particularly talented individuals rather than finding potentially commercializable discoveries. Interviewees generally considered talent as the most important output from universities, not research.

Innovation intermediaries made suggestions to the effect that a celebrated research profile indicates a researcher with potential, not that they have produced research of value. In the words of one innovation intermediary, “university research (in tech) spends all its time reinventing the wheel or making incremental improvements on technology that was cutting edge 10 years ago. That's how it works there. So when we see a researcher with potential, we are interested in them, not their research.” Investors made similar claims, including one who went so far as to suggest that the only commercially viable research in universities is commissioned by the private sector in the first place. All this would seem to indicate a serious decoupling between HERD spending and actual research outcomes that desperately needs to be addressed.

One interesting observation is that innovation intermediaries are on occasion pairing up with post-secondary institutions for the sake of research infrastructure. Innovation intermediaries often lack themselves the necessary funding to offer laboratory space for client firms, which may ultimately prove necessary for future testing and ultimately commercial viability. In several cases, universities or colleges provided agreements to share their lab space as

necessary. In others, innovation intermediaries and post-secondary institution took on shared responsibility for this infrastructure, operating “tool libraries” for esoteric technologies and the like.

## 6) Policy Recommendations

Policy designers must take a hard look at the propensity for the same innovation intermediaries to continuously be awarded government supports. This tendency may ultimately indicate a systemic issue in innovation policy and may be a function of the inability to effectively evaluate commercialization success on its own merits. To that end, it may prove valuable to consider enhanced scrutiny for innovation intermediaries that habitually receive large government support programs, instead of the current practice that in many cases ends up being the opposite. One prospect could be an escalating scale of scrutiny that increases with the frequency or volume of government funding being awarded. Another consideration would be for a comprehensive assessment of the totality of government funding being received from all levels of government, rather than the status quo where all funding contributions and their outcomes are evaluated independently of one another. The recent horizontal review of the federal government’s innovation support programs is an important first step.<sup>8</sup>

Commerce is increasingly globalized and interconnected for a country like Canada, and government policy and rhetoric has come increasingly to match this reality. For new firms, scale-ups and innovation intermediaries, the reality of globalization is abundantly clear and is being advanced by policy initiatives and firm-level action. Yet the importance of global operations may be emphasized to the point of tautology. All innovation intermediaries and firms interviewed recognized the importance of globalization and integration with global value chains and production networks, so policy incentives for “going global” were often viewed as redundant. Even firms whose operations, networks and finances were exclusively local (a rare bunch to be sure) clearly recognized that their end markets would ultimately be global.

All of this is to suggest that the continued emphasis on prioritizing global trade may require some adjustment in programming in order for this policy to be meaningful and effective. Certainly, global trade and integration will (and should) remain a priority for Canada, but the changing nature of both innovation and globalization calls for a reassessment of the instruments through which this is achieved. Preferential treatment and prioritization of firms who sell globally according to preconceived notions of global integration may ultimately privilege some firms, or whole industries, for reasons unrelated to the end objectives of the policy. For instance, a canola innovator may find the supports available to them to be inapplicable even while they may directly contribute to significant increases in Canadian exports.

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<sup>8</sup> Treasury Board Secretariat. “Inventory of federal business innovation and clean technology programs.” Government of Canada. 2017 <https://www.canada.ca/en/treasury-board-secretariat/corporate/reports/inventory-federal-business-innovation-clean-technology-programs.html>

Certainly, this is a complex issue and one that is subject to changing circumstances. Suffice it to say that the trade-focused supports being made available to start-ups and scale-ups would benefit from closer study. One suggestion would be to create more “open source” government supports that can be used in a variety of circumstances and foster a greater openness in how organizations are selected for government support. Policies that continue to adhere to a traditional conception of trade based on the exchange of finished products, rather than the reality of global supply chains, are likely to experience diminishing effectiveness as trade bypasses these out-dated expectations. Further research and policy innovation in this area could ultimately hoist the Canadian innovation ecosystem into a greater leadership position.

There needs to be a careful assessment of the *de facto* distribution of responsibility employed in Canada’s Triple Helix model, as there are many indications that it may be misaligned. An important clue would be to establish what proportion of innovation-oriented companies are pre-revenue (sales) and remain that way without achieving sustained profitability. If the overall body of start-ups and scale-ups is weighted heavily towards non-revenue firms that do not achieve a commercial success, this is in part an indication that industry could be reaping benefits of public support for innovation without making a commensurate contribution to Canada’s innovation economy. While some might argue that it is normal for the vast majority of firms to fail, the injection of public funding into this equation demands a greater degree of responsibility for outcomes than a purely laissez faire approach to finance capital and successful firm creation.

Government programs, especially in support of economic development, will often face competing pressures for program effectiveness on one hand, and for equitable distribution among constituencies and regions on the other. Donald Savoie’s recent work addresses this issue, and while he speaks to regional development more generally, his observations also speak to the regionalism affecting the distribution of federal support for innovation intermediaries.

“Regional economic development is particularly vulnerable to solutions looking for problems. Certainly, politicians representing low-growth regions will always be on the lookout for solutions to what ails their region and ask that something be done... It is scarcely an exaggeration to assert that, when it comes to regional development, federal public servants have essentially turned the steering wheel over to the politicians and said, ‘You drive and you come up with the solutions.’ The result, as we have seen, is a series of regional development agencies covering all of Canada and a policy that cries out for coherence and clarity.”<sup>9</sup>

Certainly the distribution dilemma has affected funding programs for innovation intermediaries. The competing interest between the regional demand for development support and the desire to help foster Canadian “unicorn” firms, was apparent in the CAIP program.

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<sup>9</sup> Savoie, 2017. 234-235

This was to the frustration of interviewees working in this space, and can reasonably be understood to have limited the program's effectiveness. This could be addressed in future iterations with a bifurcation of funding, so that there are separate streams addressing the regional component and the "unicorn" component. The federal 2018 budget suggests that the program formally known as CAIP will likely be divided up and ultimately become the prerogative of Canada's regional economic development entities. Certainly, this presents the opportunity to address the conflicting pressures of regionalism, although close attention will nonetheless be required as this new programming is manifested.

Finally, work would echo Savoie's call for increased coherence in economic development policy in the context of innovation intermediaries. The most significant issue affecting Canada's supports for innovation intermediaries is its fractured nature, distributed decision-making and overwhelming emphasis on responding to the incentives and needs of the political level. This results in a situation that permits many to claim a hand in success while being absolved of responsibility for failures. Indeed, far too many of Canada's innovation intermediaries eke out their existence on the basis of government's shortcomings in the innovation space; namely lack of customer service for start-ups and scale-ups and stifling bureaucratic miasma. Government needs to exert leadership in this space so that the truly remarkable innovation intermediaries have the supports they require, while the remainder are permitted to fail, or develop a mission more appropriate to the needs of innovators.

## Bibliography

Baldwin, Richard. *The Great Convergence: Information Technology and the New Globalization*. Cambridge : Belknap Press. 2016.

Balsillie, Jim. (2015, May 8). “Canadians can innovate, but we’re not equipped to win.” *The Globe and Mail*. <http://www.theglobeandmail.com/report-on-business/rob-commentary/balsillie-learns-canadian-innovators-not-equipped-for-global-competition/article24346408/>

Barber, H.D. and Crelinsten, J. (2016, December). “Changing the innovation conversation: from research to global value exchange” (The Impact Group). <http://www.impactg.com/pdf/changinginnovationconversationdec2016.pdf>

Barber, Michael. (2015) *How to Run a Government*. London: Penguin.

Bramwell, A., Nelles, J., and Wolfe, D. (2008) “Knowledge, Innovation and Institutions: Global and Local Dimensions of the ICT Cluster in Waterloo, Canada.” *Regional Studies*. 42 (1): 101-116.

Bramwell, A., Hepburn, N. & Wolfe, D. (2012) “Growing Innovation Ecosystems: University-Industry Knowledge Transfer and Regional Economic Development in Canada.” *Knowledge Synthesis Paper on Leveraging Investments in HERD, Final Report to the Social Sciences and Humanities Research Council of Canada*, Retrieved from <http://www.utoronto.ca/progris/presentations/pdfdoc/2012/Growing%20Innovation%20Ecosystems15MY12.pdf>

Clark, P. (2013, March 14). “Waiting for the Accelerator Bubble to Pop.” *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/articles/2013-03-14/waiting-for-the-accelerator-bubble-to-pop>

Clarke, T. E., & Reavely, J. (2011). *Intellectual Property Management Policies and Practices Used by Canada’s Science-Based Departments and Agencies: Do they Support or Hinder Technology Transfer and S&T Collaboration?* Nanaimo: Stargate Consultants.

Cohen, S. & Hochberg, Y. (2014). *Accelerating Startups: The Seed Accelerator Phenomenon*. Richmond: University of Richmond.

Conference Board of Canada. (2015) “Innovation: Report Card.” *The Conference Board of Canada*. Retrived from <http://www.conferenceboard.ca/hcp/provincial/innovation.aspx>

Council of Canadian Academies (2013). *Paradox Lost: Explaining Canada’s Research Strength and Innovation Weakness*. Ottawa: Council of Canadian Academies.

- Crelinsten, J. (2005). *From Research to Commerce: Changing our Priorities about Commercialization*. Toronto: The Impact Group.
- Crelinsten, J. (2017, September 11). “Why the Supercluster Initiative May be Doomed to Failure.” *The Globe and Mail*. Retrieved from: <https://beta.theglobeandmail.com/report-on-business/rob-commentary/why-the-supercluster-initiative-may-be-doomed-to-failure/article36230524/?ref=http://www.theglobeandmail.com&>
- Deveau, D. (2013, January 21). “The smaller they are, the more they get stuck: Canada’s small businesses face high red tape costs compared to the U.S.” *Financial Post*. Retrieved from <http://business.financialpost.com/executive/c-suite/the-smaller-they-are-the-more-they-get-stuck-canadas-small-businesses-face-high-red-tape-costs-compared-to-u-s>
- Dimick, S. (2014). *Driving Creativity and Commercialization: Innovation by Design*. Ottawa: The Conference Board of Canada.
- Etzkowitz, H., and L. Leydesdorff. (2000) “The Dynamics of Innovation: From national systems and ‘Mode 2’ to a Triple Helix of University-Industry-Government Relations.” *Research Policy* 29 (2). 109–123.
- Fishburn, C. S. (2014). “Tables Turning for TTOs.” *SciBX*, 7 (3). 1-3.
- Flanigan, S. P. (2015). *The State of Technology Transfer in Canada: Assuming Failure and Assessing Blame*. Bathesda: Joseph Allen and Associates.
- Fung, D., Halwani, S., Kelton, D., MoEwan, J., & Rlohez, E. (2007). *Getting the Deal Done: Unlocking Innovation from Within Canadian Universities - A Study of the Venture Investor/Technology Transfer Office Relationship*. Ottawa: Action Canada.
- Gardner, P. L., Fong, A. Y., & Huang, R. L. (2007). *Measuring the Impact of Knowledge Transfer from Public Research Organizations: A Comparison of Metrics Used Around the World*. Vancouver: TRIUMF.
- Gauthier, Benoît., Birch-Jones, Jennifer., Kishchuk, Natalie. (2016) *Evaluation of the Canada Incubator and Accelerator Program*. Ottawa: Circum Network Inc. for the National Research Council.
- Goldstein, H., Luger, M. (1990) “Science/Technology Parks in Regional Development Theory.” *Economic Development Quarterly*, 4 (1) pp. 64-78.
- Google Books, *Ngram Viewer- Search Terms “business incubator, research park”*. Retrieved from [https://books.google.com/ngrams/graph?content=research+park%2Cbusiness+incubator&year\\_start=1975&year\\_end=2008&corpus=15&smoothing=1&share=&direct\\_url=t1%3B%2C](https://books.google.com/ngrams/graph?content=research+park%2Cbusiness+incubator&year_start=1975&year_end=2008&corpus=15&smoothing=1&share=&direct_url=t1%3B%2C)

search%20park%3B%2Cc0%3B.t1%3B%2Cbusiness%20incubator%3B%2Cc0

Heher, A. D. (2007). “Benchmarking of Technology Transfer Offices and What It Means for Developing Countries”. In Anatole Kratigger et al. (Eds.), *Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices*. (pp. 207-228) Oxford: MIHR.

Hackett, S.M. and Dilts, D.M. (2004)a “A Systematic Review of Business Incubation Research.” *The Journal of Technology Transfer*, 29 (1) pp. 55-82.

Hackett, S.M. and Dilts, D.M. (2004)b “A Real Options-Driven Theory of Business Incubation.” *The Journal of Technology Transfer*, 29 (1) pp. 41-54.

Jenkins, Tom. (2011). *Innovation Canada: A Call to Action (Jenkins Report)*. Ottawa: Public Works and Government Services Canada.

Kendall, A., & Kendall, J. (2009). Technology Transfer and Sustainable Development. In Lawrence Nkemdirim (Ed.). *Area Studies: Canada and USA Regional Sustainable Development Review*. (pp 215-247). New York: UNESCO.

Lalonde, Melissa and McKean, Matthew. *Canada’s Post-Secondary Education Performance : An International Comparison*. Ottawa : The Conference Board of Canada. 2017.

Lane, J. P. (2010) “State of the Science in Technology Transfer: Merging Technology Transfer with Knowledge Translation.” *Assistive Technology Outcomes and Benefits*, 6 (1) 1-38.

Litan, R.E., Mitchell, L., Reedy, E.J., (2007). “Commercializing university innovations: alternative approaches.” In: Jaffe, A.B., Lerner, J., Stern, S. (Eds.), *Innovation Policy and the Economy*, 8. (pp. 31–58) Chicago: University of Chicago Press.

Löfsten H., Lindelöf P. (2002) “Science Parks and the growth of new technology-based firms—academic-industry links, innovation and markets.” *Research Policy*, 31 (6) 859-876.

Mian, S., Lamine, W., & Fayolle, A. (2016) “Technology Business Incubation: An overview of the state of knowledge.” *Technovation*, 50-51. (pp. 1-12).

Merill, S.A., & Mazza, A-M., (2011) *Managing University Intellectual Property in the Public Interest*. Washington D.C.: National Research Council.

OECD. *Education at a Glance*. 2014. Paris: OECD. 2014.

Pauwels, C., Clarysse, B., Wright, M., & Van Hove, J. (2016) “Understanding a new generation incubation model: The accelerator.” *Technovation*, 50-51. (pp. 13-24).

Public Policy Forum. 2016. *Innovation Collaboration with Europe*. Ottawa: Public Policy Forum.

Public Policy Forum. 2017. *Marshalling Incubators to Build Global Companies*. Ottawa: Public Policy Forum.

Robbins, M. (2015). *Co-Location and Commercialization: McMaster University's Innovation Park*. Ottawa: The Conference Board of Canada.

Schwartz, M. (2009) "Beyond incubation: an analysis of firm survival and exit dynamics in the post-graduation period." *Journal of Technology Transfer*, 34. (pp. 403-421).

Treasury Board Secretariat. "Inventory of federal business innovation and clean technology programs." Government of Canada. 2017 <https://www.canada.ca/en/treasury-board-secretariat/corporate/reports/inventory-federal-business-innovation-clean-technology-programs.html>

UNESCO (2016). *Concept and Definition - Science and Technology Park*. Retrieved from <http://www.unesco.org/new/en/natural-sciences/science-technology/university-industry-partnerships/science-and-technology-park-governance/concept-and-definition/>

Valdivia, W. (2013) *University Start-Ups: Critical for Improving Technology Transfer*. Washington D.C.: The Brookings Institution.