

Higher education, international student mobility, and regional innovation in non-core regions: international student start-ups on “the rock”

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This paper makes a case for post-graduate international students as an increasingly important category of immigrant entrepreneur in Canada. We draw our findings from an analysis of new provincial immigrant entrepreneur programs and interviews with international student entrepreneurs in a mid-sized city in Atlantic Canada. We argue that three forces have become increasingly relevant in shaping immigrant entrepreneurs’ opportunity structures: (1) the internationalization of higher education institutions (HEIs), (2) the corporatization of HEIs, and (3) the regionalization of immigration. We show how public policy shifts in immigration and education have expanded the opportunity structure for international student start-ups. These entrepreneurs are navigating multiple dimensions of risk that stem from being both temporary migrants and business owners.

Keywords: Canada, immigrant entrepreneurship, international students, regional economies, migration

Key Messages

- International students are an increasingly important category of immigrant entrepreneur in Canada
- Public policy shifts in immigration and education have opened the opportunity structure for international student start-ups and spinoffs
- A growing student entrepreneurial ecosystem in St. John’s increasingly involves international students through campus-based entrepreneurial programs

Introduction

In the tech world, “the rock” (a colloquial term for the island of Newfoundland) is hot. In 2018, the St. John’s-based social media start-up HeyOrca!, co-founded by former international students at the local university, received an investment of two million CAD. Soon after, the provincial government announced a new immigration stream for international student entrepreneurs. By inviting international students to “come for the education, stay for the start-up” (McCabe 2018), Newfoundland and Labrador’s (NL) International Graduate Entrepreneur stream represents a

potential triple-win strategy to combat the province's challenges of aging, high youth out-migration, and unemployment. The incentivization of student entrepreneurship through immigration policy has implications for our understanding of immigrant entrepreneurship, international student mobility, and HEIs roles within regional innovation ecosystems in non-core regions. Scholars have shown that international students are key actors in the global circulation of academic knowledge and innovation (i.e., Saxenian 2005; Madge et al. 2015). Many OECD governments celebrate international students as potential investors and "ideal" future citizens (i.e., Kim and Kwak 2019). But little is known about their actual experiences as entrepreneurs.

In this paper, we fill this gap by considering the role of HEIs and international education in immigrant entrepreneurship. Conceptually, we build on the theory of mixed embeddedness, which understands immigrant entrepreneurship as a phenomenon shaped by economic, social, and institutional factors (i.e., Kloosterman et al. 1999). In Canada, the neoliberalization and regionalization of immigration policy have repositioned HEIs as major immigration gateways and providers of settlement supports for newcomers (Walton-Roberts 2011). This shift is pronounced in non-core regions like Atlantic Canada, which attract fewer immigrants through other pathways and also have limited settlement service capacity compared to primary cities (Toronto, Montreal, Vancouver) (Flynn and Bauder 2015; Pottie-Sherman and Graham 2021). With universities increasingly understood as engines of regional innovation, part of a "triadic" relationship with industry and government (i.e., Etzkowitz and Zhou 2017), linking international education to innovation is an enticing prospect for these locations.

We investigate the relationship between HEIs, international education, and entrepreneurship through a case study of international student entrepreneurs in St. John's, the provincial capital of NL. As one of four provinces to introduce international student entrepreneur programs since 2017, this case allows us to introduce a new dimension into the immigrant entrepreneurship literature. NL also stands out from the rest of Canada in terms of the province's focus on international student recruitment in its immigration strategies since 2007 (Knutson 2020).

We draw our findings from 20 interviews with international student founders and key informants in St. John's and an analysis of policy documents surrounding new entrepreneur programs in the Atlantic provinces aimed at recruiting international students (students who arrived in Canada via study permits, enrolled at Canadian institutions and do not have permanent residency in Canada). For the purposes of this paper, we define an international student entrepreneur as a person who held a student visa before or while starting a business in Canada. This group includes students who avail of official international graduate entrepreneur programs, those who commercialize intellectual property during or following their programs, and those who start businesses officially or unofficially during or after their studies.

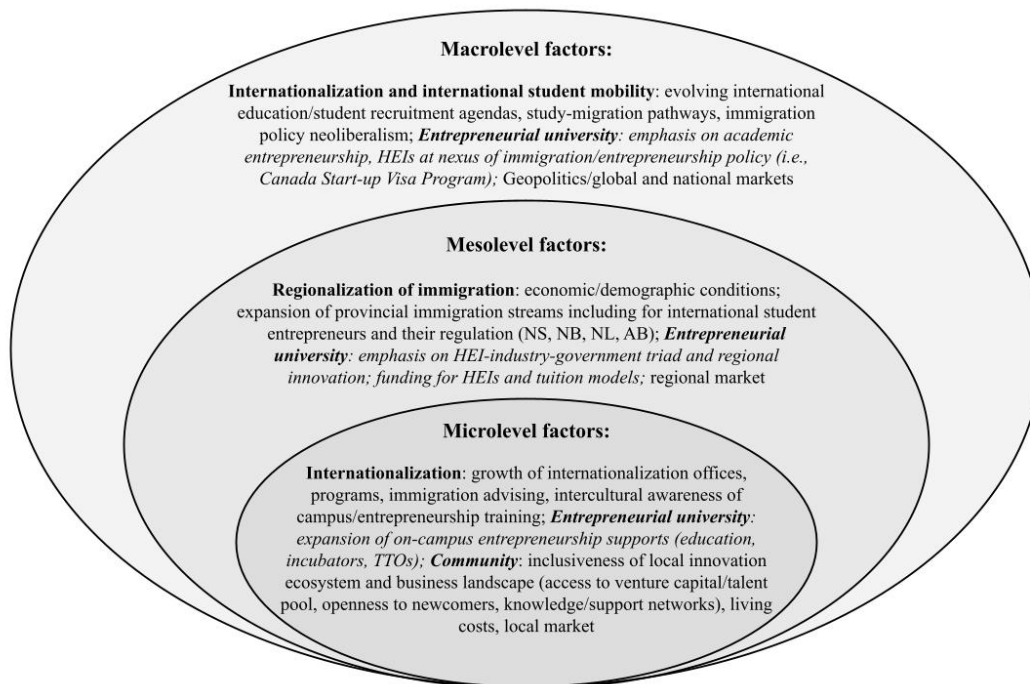
As we show, overlapping factors have opened the door to international student entrepreneurs in three important ways. First, new provincial immigration streams, internationalization efforts, and a shift in the delivery of entrepreneurial education have inspired a new cohort of entrepreneurs. Second, a growing student entrepreneurial ecosystem in St. John's increasingly involves international students through campus-based entrepreneurial programs. Third, while this new ecosystem has its benefits, our findings also illustrate challenges faced by international student entrepreneurs, including cultural barriers, discrimination, and difficulty balancing study, work, and immigration regulations.

International student mobility and the university as a global innovation gateway

To understand the relationship between internationalization and regional innovation, we look to the literature on immigrant entrepreneurship and Kloosterman and Rath's theory of mixed embeddedness (i.e., Kloosterman et al. 1999; Kloosterman and Rath 2001). This theory emphasizes that entrepreneurial outcomes are shaped by demand-side factors at three separate scales: macro (i.e., international and national level regulations), meso (i.e., regional economic conditions), and micro (i.e., HEIs, municipal, neighbourhood) (Kloosterman 2010). It highlights the role of the opportunity structure – the overlapping factors that make self-employment desirable and possible – in explaining immigrant entrepreneurship. Therefore, factors shaping the opportunity structure for self-employment can be local, regional, or global, involving, for example, the interplay between market conditions at these scales, the inclusiveness of the local business landscape, and the policy context in sending and receiving societies. Mixed embeddedness provides important insights for understanding international student start-ups by foregrounding the role of policy and institutions in entrepreneurship and the demand-side factors which encourage entrepreneurial intent.

Here, we argue that three forces have become increasingly relevant in opening international student entrepreneurs' opportunity structures in Canada: (1) the internationalization of higher education, (2) the corporatization of higher education, and (3) the regionalization of immigration. Figure 1 illustrates this set of opportunities for international student entrepreneurship in Canada at the macro, meso, and micro levels summarized in the remainder of this section.

Figure 1. Key factors expanding the opportunity structure for international student entrepreneurship in Canada



The push to internationalize

Internationalization in higher education involves the “integration of international, intercultural, and global dimensions into the purpose, functions, or delivery of post-secondary education” (Knight 2004, 11). HEIs have expanded their global reach, developing cross-border institutional relationships and shifting curricula to emphasize intercultural awareness. In this context, the number of international students studying worldwide has increased substantially, reaching 5.3 million by 2017 (UNESCO 2019). Canada, which ranks 7th among OECD countries in terms of international student enrolment, saw a doubling of international student enrolments from 2010 to 2017 (Sá and Sabzalieva 2018).

The evolution of internationalization has important implications for the study of immigrant entrepreneurship in Canada. Since the 1990s, at the macro-level, an economic agenda has dominated Canadian internationalization efforts, viewing international student recruitment as a revenue generator for HEIs and a way to train globally competitive knowledge workers (i.e., Guo and Guo 2017; Buckner 2019). Like the UK, Australia, and elsewhere, the “study-migration pathway” is an important dimension of Canada’s economic and skilled immigration policies (Scott 2015; Kim and Kwak 2019). Since the late 2000s, immigration programs for international students have become major recruiting tools for HEIs across Canada and by 2018, 60% of international students had plans to apply for permanent residency in the country after graduation (Canadian Bureau for International Education 2018; Government of Canada 2021a).

The post-graduate recruitment of student-migrant entrepreneurs aligns with the neoliberal framing of international students as ideal immigrants: young, skilled, culturally intelligent risk-takers who are flexible and “emotionally resilient” (Kerr and Schlosser 2010, 132; Adeyanju and Olatunji 2021). The neoliberalization of immigration policy in Canada has also positioned HEIs as increasingly important providers of settlement services (Walton-Roberts 2011; Flynn and Bauder 2015). International students are also considered ideal immigrants because they have their adaptation, integration, and retention needs addressed by their host HEI before graduating (Kim and Kwak 2019). Potentially entrepreneurial-minded international students have access to micro-level resources that are not available to other newcomer entrepreneurs, benefitting from “inclusion in the educational enclaves that surround their colleges and universities” (Kerr and Schlosser 2010, 125; Graham and Pottie-Sherman 2021). These resources are in addition to dedicated immigration programs at the macro and meso levels, as Figure 1 illustrates.

The entrepreneurial university

Internationalization efforts are also entangled with the wider corporatization of the Canadian university (McCartney and Metcalfe 2018). No longer simply research and teaching institutions, universities are now expected to enable entrepreneurship and commercialize academic research (O’Brien and Cooney 2019). Within this context, actors within the triad of government, university, and industry increasingly see students as potential inventors whose entrepreneurial intentions can be sparked through entrepreneurship education, cultivated through Technology Transfer Offices (TTOs) and on-campus incubators (Etzkowitz and Zhuo 2017; Sandström et al. 2018; Bazan et al. 2019; Nicholls-Nixon et al. 2020).

Globally, students comprise a significant dimension of contemporary academic entrepreneurship (Breschi et al. 2018; Sandström et al. 2018). Breschi et al. (2018) found that

nearly 15% of Canada's entrepreneurs had been students within four years of becoming entrepreneurs, the highest ratio in the OECD. As Sandström et al. (2018, 1247) note, the growing number of successful student start-ups "highlights the crucial role of universities in education, which in time may in fact generate more and better entrepreneurship" than that among faculty. In Canada, many of the business incubators hosted by HEIs are also now tied directly to federal immigration policy through the Start-up Visa Program (launched in 2017) which ties permanent residency to participation in a designated incubator (Government of Canada 2021b). This policy places HEIs directly at the nexus of immigration and entrepreneurship policy.

Such relationships are of particular importance to the broader question of how non-core regions and cities can stimulate innovation through public policy (Bramwell 2020). Research on the geographies of immigrant entrepreneurship in Canada has begun to document the diverging opportunity structures of primary and secondary cities for newcomers. Research illustrates that micro-level knowledge and support from the local community is essential for newcomers' entrepreneurial success. As Cukier et al. (2018, 5) argue, the "immigrant entrepreneur ecosystem" includes universities, immigrant-serving organizations, municipal governments, and local investors – resources which are unevenly distributed across Canadian cities and regions but are crucial for newcomer entrepreneurs.

Research also emphasizes the systemic barriers faced by diverse academic entrepreneurs and the uneven distribution of resources *within* innovation ecosystems (Cukier and Chavoushi 2020; Kuschel et al. 2020). Research on academic entrepreneurship shows that women are disadvantaged by many factors including their underrepresentation in STEM fields (particularly those with high commercialization potential), entrepreneurship education programs, patriarchal mentoring cultures, and male-dominated financial networks (see Kuschel et al. 2020). In Canada, like other countries, self-employment rates are higher among immigrant men than women (Hou and Wang 2011) and entrepreneurship is an often "neglected" dimension of settlement support (Kalu and Okafor 2021, 105). These findings likely have important implications for international student entrepreneurship.

Regionalization and the case of Atlantic Canada

Immigration regionalization in Canada refers to the patterns and policy agendas associated with countering the concentration of immigrants in the country's three largest cities (Toronto, Vancouver, and Montreal). Most Canadian provinces and territories negotiated immigration agreements with the federal government beginning in the mid-1990s, allowing them to introduce subnational immigration streams known as Provincial and Territorial Nominee Programs (Paquet 2019). These meso-level programs increased the provinces' abilities to design immigration streams to meet their own demographic and economic requirements, including programs open to international graduates (Chira and Belkhodja 2013; Wang and Hii 2019).

While immigrant entrepreneur streams have existed in Canada since the 1970s, only recently have provinces developed pathways for international student entrepreneurs. Nova Scotia launched its International Graduate Entrepreneur program in 2017 (Chronicle Herald 2017), followed by New Brunswick, NL, and most recently, Alberta. These programs represent the evolution of immigrant entrepreneurship programs at the meso-level, which have shifted from investment to escrow programs, and most recently, to "two-step" programs requiring approval of

a business plan and running of the business for a period of time before permanent residency is granted (Toughill 2019).

These two-step programs recognize the “pull” factors which encourage entrepreneurship among international students. International students have made considerable financial investments in their education and have spent years developing new networks and a “bicultural mindset,” which may lead international students to see “opportunities where others do not” (Kerr and Schlosser 2010, 122-129). These programs also reflect the “push” factors associated with immigrant self-employment in Canada (Hou and Wang 2011; Nakhaie 2015). High unemployment rates, racial and ethnic discrimination, and immigration bureaucracy may also “push” international students to seek self-employment (Kerr and Schlosser 2010, 129). These programs also represent attempts to avoid the problems that have plagued Canadian entrepreneurial immigration streams, ranging from immigration fraud to difficulty translating business acumen from one national context into another (i.e., Ley 2006; Dobrowolsky 2011). The three Maritime provinces, for example, have all had to suspend or cancel their regional entrepreneurship programs in the past due to scandal (Dobrowolsky 2011; Wang and Hii 2019; Toughill 2019). The narratives surrounding these earlier programs may have implications for how international student entrepreneurs today are socially coded as ideal newcomers and potentially more genuine compared to other categories of immigrant entrepreneurs (Toughill 2019; Allain et al. 2020).

Case study

St. John’s is the provincial capital of NL and hosts the main campus of Memorial University, the province’s single public university. Unlike other Canadian provinces, international education has been understood in NL primarily as a “repopulation” strategy rather than a source of revenue, international research linkages, or educational exchange (Knutson 2020, 179). International students often spend years adjusting to life in the province during their studies and may be more likely than other newcomers to stay after graduation. Memorial has also increasingly taken on responsibilities for their (and their families’) career, immigration, and settlement services (Knutson 2020). Memorial’s international tuition fees are notably lower than other HEIs in Canada because of a tuition freeze in place since 1999 but scheduled to end in 2022 (Kennedy 2021). During the 2020/2021 year, its undergraduate international student tuition fees totalled \$11,983 per year, compared to the Canadian average of \$32,019 (Statistics Canada, 2020). International graduate tuition fees were \$4,089 in NL, compared to \$21,780, \$10,278, and \$12,374 in PEI, Nova Scotia, and New Brunswick.

Introduced in 2018, NL’s International Graduate Entrepreneur Category represents another step in its international student-focused immigration policy. This program requires potential nominees to graduate or enroll in at least two years of post-secondary education in the province. After graduation, students must own or manage an NL-based business for one year before submitting their “Expression of Interest” to the Office of Immigration and Multiculturalism (Newfoundland and Labrador 2020). Next, successful applicants may submit their application, providing the government with a business continuity plan for review. After a successful in-person interview, the applicant receives a nomination from the provincial government, at which point they may also apply for permanent residency (Newfoundland and Labrador 2020).

In summary, three major forces in Canadian society are intersecting to open the opportunity structure for international student entrepreneurs at macro, meso, and micro-levels. St. John's provides a case study for examining the experiences of international student start-ups navigating these dynamics.

Methods

We take a qualitative approach to the study of entrepreneurship, using in-depth semi-structured interviews. Qualitative methods allow researchers to “zoom in on the particulars” of entrepreneurship, enabling them advance theory by uncovering new or previously unexplored (and heterogenous) lived experiences (Van Burg et al. 2020, 5). The findings we present are part of a broader study of immigrant entrepreneurs in St. John's, involving semi-structured interviews with eight key informants and twenty immigrant business owners (see Graham and Pottie-Sherman 2021). Twelve of the entrepreneurs in the larger sample held a student visa before or while starting a business in Canada. This sub-set of twelve interviews, along with the key informant interviews, form the basis of this paper's analysis.

Key informants were drawn from municipal and provincial government officials (4), MUN's internationalization office (1), and NGOs and local immigrant-serving organizations (3). We identified key informants through institutional websites and recruited these participants by email, and in some cases, by phone. These 1-hour long interviews focused on determining the support structures for immigrant entrepreneurs in Newfoundland and Labrador, with a focus on St. John's.

Following the key informant interview phase, we developed an interview guide for our interviews with immigrant entrepreneurs. For the broader study, we employed a quota sampling strategy where we recruited ten entrepreneurs operating white-collar businesses and ten entrepreneurs operating businesses in services or distribution. This strategy allowed us to compare the experiences of entrepreneurs in two sectors that together host 79% of self-employed immigrants in Canada (Nakhaie 2015). The lead author recruited participants by email, by dropping off recruitment letters to businesses, and through a snowballing strategy where participants were asked to share the study details with other entrepreneurs in their networks.

These interviews were semi-structured and varied in length from 40 to 90 minutes. These interviews focused on their path to entrepreneurship, supports used, opportunities and challenges faced, along with their overall experiences owning businesses in St. John's. We recorded the interviews, transcribed them verbatim, and used Dedoose software to code recurring themes within the transcripts. Table 1 summarizes the characteristics of the international student entrepreneur participants.

Table 1

Characteristics of International Student Entrepreneurs (N=12)

Gender	Region of origin	Age	Industry	# of employees	Incubator user
Male (9)	Asia (6)	20-24 (2)	Scientific/tech (9)	1-4 (7)	Yes (10)
Female (3)	Europe (2)	25-29 (3)	Food (1)	5-9 (2)	No (2)
	Africa (3)	30-34 (3)	Accommodation (1)	10-14 (1)	
	South America (1)	35-39 (2)	Esthetics (1)	30-34 (2)	
		40-44 (1)			
		55-59 (1)			

Findings: international student entrepreneurs and the entrepreneurial university

Our research highlights the diversity of experiences among international students within St. John's' entrepreneurial ecosystem. Our participants had studied in STEM fields, social sciences, and humanities and represented ten different countries of origin, although they were mainly men. Among our participants were undergraduate student start-up founders and graduate students involved in university spinoffs. These twelve participants operated an array of businesses involved in software advertising and engineering (5), computer coding (2), computer engineering (1), medicine (1), chemistry (1), food (1), and retail (1). Our participants also reflected both "push" and "pull" factors in entrepreneurship (Kerr and Schlosser 2010). Some participants had been pulled to entrepreneurship during their studies, at least one entrepreneur had pursued an advanced degree because they were unable to find work in Canada commensurate with their skills. This finding aligns with previous research underscoring that for racialized immigrants in Canada, self-employment can be a survival strategy related to labour market barriers (Hou and Wang 2011; Nakhaie 2015). The dominance of scientific/tech business and the gender imbalance of our sample may reflect the under-representation of women in STEM fields and entrepreneurship resources (i.e., Cukier and Chavoushi 2020; Kuschel et al. 2020). There may be other reasons that more male students are attracted to these training and support programs, however, our sample is too small to draw any conclusions.

Overall, our research underscored four themes. First, the university is acting like an entrepreneurial funnel for international student entrepreneurs. Second, university-based incubators are filling the network gaps of a non-core region. Third, NL's opportunity structure is open to international entrepreneurs, particularly students and former students, in particular white-collar sectors. Fourth, while this emerging ecosystem has its benefits, our findings illustrate that international student entrepreneurs are navigating multiple dimensions of risk that come from being both temporary migrants and business owners. In the following sections, we elaborate on these four themes.

The university as entrepreneurial funnel

An entrepreneurial funnel has emerged at Memorial, cultivating entrepreneurial intent among international students. For all participants, this funnel started with the draw of low tuition fees. When we asked one undergrad co-founder of a successful tech start-up why they had chosen to

attend Memorial, they explained: “it's the tuition. I thought they missed a 1 in front of the 8. It was \$8,000. I was like, “...is this an error?” As another student explained, “I just typed ‘cheapest school in Canada for international students’ and [Memorial] popped up.” All participants made similar comments about the draw of low tuition (and, in some cases, financial packages for graduate students). The financial accessibility of the institution means drawing students to the province who may eventually launch successful businesses. This finding is important given ongoing debates about fee differentials for international and domestic students (Knutson 2020) and Memorial’s 2021 announcement that undergraduate international student tuition would double in the Fall 2022 (Kennedy 2021).

For most of our participants, “entrepreneurial intent” was a quality cultivated by the education they received rather than a goal with which they had arrived. “I never thought about it” [entrepreneurship], explained one participant. Rather, participation in university programs catalyzed entrepreneurial intention, which several participants described as “catching the bug.” This finding suggests that entrepreneurship is something that can be encouraged through academic programs and public policy (Bazan et al. 2019; O’Brien & Cooney 2019; Bramwell 2020). It also confirms that entrepreneurship is not limited to international newcomers who arrive through designated immigrant entrepreneur programs (Graham and Pottie-Sherman 2021).

Entrepreneurial education has cultivated an entrepreneurial culture at the university, and the majority of students enrolled in these programs are international students. Some of the resources in the university’s entrepreneurial funnel include the Centre for Entrepreneurship (MCE), the Entrepreneurship Training Program (ETP), and the Genesis Centre (Memorial University 2018). The MCE provides guidance, resources, and a support network for the enrolled entrepreneurial community. The ETP is a phased program for graduate students where students “discover” and “develop” a business idea. The Genesis Centre is a technology-focused start-up incubator hosted by the university and the only designated incubator for the Start-up Visa Program in NL. While these programs are open to all students, international students are substantially overrepresented, comprising 75% of students enrolled in the ETP in 2018/2019 (see Table 2) and 65% of MCE workshop participants (Locke 2020).

Table 2

Enrollment in MUN’s Entrepreneurship Training Program (ETP)

SOURCE: MUN ETP (2018)

Year	Total # of students Enrolled	% of students enrolled in ETP that are international students	Number of countries represented among students in ETP
2018/19	159	76%	31
2017/18	52	86%	22
2016/17	36	90%	17
2015/16	30	90%	12
2014/15	28	86%	12
2013/14	16	81%	10
2012/13	13	100%	13

Many of our participants had used more than one of these programs and emphasized that they had helped them to overcome challenges surrounding rules, regulations, and networking. In the words of one spinoff owner, “all that equipped me with some skills to better understand the market, better understand how to shape this product into something that somebody would be interested in buying.”

Other academic experiences were also important to cultivating entrepreneurial intent. Some participants had “caught the bug” through academic programs, including co-ops, educational training, and interactions with professors. One participant, for example, emphasized that co-op education had been instrumental in driving them towards entrepreneurship by helping to rule out other career paths. These responses align with Kerr and Schlosser’s (2010, 125) suggestion that having access to the resources within “educational enclaves” fosters entrepreneurialism among international students.

A recurring theme of our interviews concerned “old vs. new” entrepreneurial resources at the university. Participants associated the former with an approach that was not sensitive to the needs of non-Canadians, whereas they perceived its “new” resources to be more interculturally aware. Several participants felt that this incubator had evolved to encourage international student entrepreneurship and that staff are now able to “talk from the point of view of an immigrant.” As one participant explained, “it was so weird five years ago. There were literally no immigrant entrepreneurs at the Genesis Centre” and the “empathy [with non-Canadians] wasn’t there.” Another participant explained that the “old” incubator approached all businesses as if they were Canadian, making assumptions that all have the same existing support networks (and family supports). Several participants emphasized that the incubator had transformed in recent years to become increasingly open to non-Canadians. In the words of one entrepreneur, “now, they actually expect you not to probably be Canadian because a lot of the programs are taken up by non-Canadians, and so they’re approaching a lot of these programs with that lens.”

This shift in training approach reflects and encourages a corresponding demographic shift in incubator participants. By 2019, 38% of companies within the incubator’s Enterprise program (which provides reduced-to-free rent for start-ups) had one immigrant founder, up from eight % in 2014. This finding aligns with understandings of internationalization as involving both increasing international enrolment and greater intercultural awareness within curricula (Buckner 2019; Stein et al. 2019).

University-based incubators fill the non-core region network gap

Our interviews also underscored how the university-based incubator and its related communities fill the network gap of a non-core region for international student entrepreneurs, providing exposure to a start-up community and a source of emotional support and inspiration. As one key informant explained, the Entrepreneurship Training Program (ETP) provides students with “foundational knowledge of what is the local business landscape...[....] within that ecosystem, it is not easy to find your way around, but the point of our ETP is to direct students to those supports.” Access to physical space (for reduced rent) in the incubator also provided a critical source of social capital. Several participants emphasized the start-up community’s role in mitigating the limitations of operating in a geographically isolated, mid-sized city compared to a larger city like Toronto. The following statement illustrates this point:

What these big cities have going for them is to truly immerse in your craft...you drink the Kool-Aid a lot more, and just give you that feel. Over here, it's not as much. Like, there's not a lot of events that you can go. There's not a lot of exposure. That's why accelerators, incubators are really important, especially here, is that you do need to put these entrepreneurs in a very concealed environment and sort of...[...] pump the Kool-Aid so that they can really thrive off that Kool-Aid.

This statement illustrates the importance of micro-level factors in opening the opportunity structure to entrepreneurs and the role of geography in openness to entrepreneurship more generally (Cukier et al. 2017). These on-campus entrepreneurship resources also provided bridges to external resources, including funding sources, to the broader entrepreneurial ecosystem in St. John's. Such resources enable prospective entrepreneurs, but especially newcomers, to develop an understanding of local, Canadian, and global markets.

Seeing others' success within this start-up community proved to be a source of inspiration as well as opportunity to iterate – in other words, to refine and change one's business idea based on feedback. As the following statement illustrates, the start-up community also offered a source of motivation:

There was a lot of programs that didn't help me technically with starting the company, but they helped on a more emotional support level, showing that this is a valid career path, and people have done that...[...] Overall, there was a very good network of people alongside the ETP program and the Genesis Centre that really provided a lot of emotional support that if you want to do this, there's a lot of people around you that want to help. I think that was the biggest factor.

Crucially, such resources provide sources of emotional support. This finding aligns with prior research on the relationship between international education, resources, networking opportunities, and the “emotional resilience” of international students (i.e., Kerr & Schlosser 2010, 133).

An open opportunity structure for international student start-ups

Besides the resources available, the entrepreneurs we interviewed emphasized that the major benefit of starting a business in St. John's is the openness of its ecosystem's opportunity structure to newcomers. While St. John's is a small city with a small ecosystem, NL, in the words of one participant, “prides itself as a very entrepreneurial province.” This entrepreneur reflected that this regional identity translated into a warm welcome for international entrepreneurs. You can be a “big fish in a small bowl,” explained another participant whose company had gained attention quickly, enabling them to attract investment. Another participant emphasized that the twin provincial economic agendas of population and economic diversification had afforded them a level of access to government officials that they might not have had in a larger, more competitive market. As they explained

they don't care that I'm not a Newfoundlander. They welcome people. They know, they understand the struggle of Newfoundland, of the low birthrates and people moving away. So, when they see a Newfoundland-based company, regardless of who it's run by, they jump on it. They love it. They want to support it. ... through time I've spent here, I do

realize that there's quite large value to being in Newfoundland because it's such a small market....[...] I'm an international student. I'm here on a study permit. I know the Premier...it's so open...

This founder's positionality (as a white man) likely contributed to the ease of his integration and social networking. However, several participants from the tech sector also emphasized that white-collar tech companies have high value in NL given its oil-dependent economy. Tech start-ups symbolize the province's path to a diversified economy and a more sustainable future. Several founders commented that they had received a warm welcome because they were international (creating global ties for NL) *and* in the right industry. "The province has a tech sector that comprises I think it might be about 22 tech companies...they're worth over a billion in total," explained one founder who continued, "to me that's the future. We don't have the population, but what we have is the time advantage. We wake up earlier than anybody else in North America. We have good people." Tech start-ups offer NL an attractive way of mitigating its geographic isolation, as many of these companies are not moving tangible goods. Moreover, NL's time zone provides the province's tech start-ups with a literal head-start on day-to-day operations while also offering local entrepreneurs cheaper and more readily available real-estate compared to other Canadian provinces.

Along similar lines, another participant mentioned that they had been surprised by the encouragement they had received from various university actors, including their professors. "I have a prof that would say, 'you know, you guys *need* to consider staying in Newfoundland when you graduate because *we really are investing* in you – the tuition and everything" [our emphasis], one participant recalled. They explained that this interaction had been a surprise to them because of their perception of the dominance of "xenophobia" in their home country. "To see somebody saying, 'hey you need to stay in my country or my province,' was really eye-opening," they continued. While this participant framed this interaction favourably, their perception – of anti-immigrant attitudes as a problem 'back at home' in contrast to a welcoming Canada – belies the racial and ethnic discrimination in Canada that is central to understanding immigrant self-employment rates (Hou and Wang 2011; Nakhaie 2015). The paternalistic tone of this interaction also reflects the problematic view that Canadian taxpayers subsidize international students' tuition and that students have a responsibility to "give back" by contributing to the regional economy after they graduate rather than "just throw it away." This finding aligns with Allain et al.'s (2020) argument that newcomers and migrant students in Atlantic Canada receive "conditional hospitality" that hinges on their ability to generate economic growth. Ultimately, this interaction underscores the importance of academic and other mentors to the pull of entrepreneurship (Kerr and Schlosser 2010; O'Brien and Cooney 2019) and especially to their role in the political economy of belonging for migrant students.

Challenges

While this new ecosystem has its benefits, the entrepreneurs we interviewed had also encountered many challenges. The first challenge stemmed from the difficulty of balancing school and work. One founder explained that they always worried that their entrepreneurial activities would cause them to breach the conditions of their study permit. Entrepreneurship is also by definition risky and many of our participants had received small investments from their

family members back at home, which placed major pressure on them. The combined pressures of completing their degrees, meeting visa regulations, and taking on added risk made it difficult to continue. At least one participant had put their business plans on hold while completing their studies, explaining that “school has tired me out so much that I cannot do anything right now because I don’t have a hold of things.”

Navigating the immigration system as business owners was also a major hurdle for some entrepreneurs. Participants talked about this in terms of the overlap of two dimensions of risk, which included their status as temporary migrants and their business risk. This risk is summed up in the following statement: “Basically, we had to run this high-risk company. At the same time, our own residency is high-risk...so I always had to box it...and not think about whether or not I’d get deported or anything.” Before the introduction of the NLPNP International Graduate and International Entrepreneur streams, immigrant entrepreneurs seeking to move from the Post Graduate Work Experience permit to permanent residency had to register their company officially with 25% of their board members being Canadian residents. Our interviews with international student founders showed how this requirement resulted in some “legally tricky” strategies employed to meet the regulations. For example, international student founders placed Canadian residents on their boards or put “shares in escrow” simply to qualify, effectively giving “free shares to somebody” and giving up the ability to actually “be your own boss” to incorporate. NL’s two PNP entrepreneur streams address this factor of uncertainty. If applicants are nominated for permanent residency under either entrepreneurial category, they can incorporate their business without meeting the 25% Canadian resident threshold on their board of directors.

Several participants also described cultural barriers to their business success in St. John’s. One person mentioned that they had experienced discrimination because their name was not recognized as a Newfoundlander name. Another participant talked about this in terms of a “trade-off” effect. While their company benefited from the smaller, less competitive market, being in a smaller city where the population has less experience with diversity had its downsides. In Toronto, they would have to “fight” harder for attention and investment but would also “have the cultural understanding in some ways. I would be able to find people that understand me, that get me.” The lack of familiarity with intercultural communication and diverse workplaces also differentiates St. John’s tech world from a more cosmopolitan city. One participant described the city as “cliquey.” Another participant reflected that some of their Newfoundlander employees were experiencing diverse workplaces for the first time. “They really didn’t know how to behave around us. It was really funny because they were the minorities,” explained one entrepreneur who had begun asking new Newfoundland-born hires in their company, “is this your first time working with a non-Newfoundland person?”

While the small market was sometimes a benefit, it also proved a barrier to company growth. Entrepreneurs emphasized difficulties in securing investment. “There are only two [venture capital firms]. If they feel they don’t want to invest in you, you have no other option, in my opinion,” explained one participant. Some entrepreneurs also stressed their challenges in finding “talent” with the right skills. As one founder put it, “I wouldn’t say we don’t have it [talent]. I would say we don’t have enough of it, right? That’s the challenge.” While the university provides a “talent pipeline” for these new companies, our interviews with these start-ups emphasized the need for mid- and higher-level talent. The presence of a large tech firm and new players on the scene also means fierce competition for junior and senior talent. “One of our developers got hired [by another local company] and he didn’t even take his computer,”

lamented one founder about the intense competition for the small number of local software developers in St. John's.

Concluding discussion

In this paper, we make a case for international students as an increasingly important category of immigrant entrepreneur in Canada but whose experiences have not been studied. As our research shows, international students-turned entrepreneurs are a diverse group of start-ups, spinoffs, and self-employed alumni from STEM and non-STEM fields. Many students “catch” the entrepreneurial “bug” during their academic programs. The campus’ growing array of entrepreneurial education programs and centres provide critical training, encouragement, and emotional support. These opportunities have become increasingly attuned to the specific needs and barriers of international students, who often lack the social capital of their Canadian student counterparts. These changes are happening as NL’s single public university is acting as a “de facto” leader of international education in the province and the main source of immigration (Knutson 2020,183).

Our research has the following key takeaways. First, public policy shifts in immigration and education have opened the opportunity structure for international student start-ups and spinoffs. The privileging of the entrepreneurial qualities of immigrants and international students is not new. What is new, however, is the increased alignment of the entrepreneurial university with immigration policy objectives at macro, meso, and micro levels. As we show, the Atlantic provinces are leading a wave of new meso-level policies aimed at retaining entrepreneurial international students. This trend is occurring against the ongoing backdrop of debate about how to best encourage regional innovation (i.e., Bramwell et al. 2019). As our data shows, entrepreneurial education programs have both expanded and become more tailored to the specific needs and barriers of international students, encouraging a welcoming entrepreneurial culture. This finding challenges the common misperception that entrepreneurship is a ‘solitary act.’ Rather, immigrant entrepreneurial support requires ongoing and adequate access to holistic settlement supports (Cukier et al. 2017). International student entrepreneurs, like other immigrant entrepreneurs, require economic and social capital, and micro-level institutions are essential to this process.

Second, our research provides further evidence that universities must be understood as innovation gateways for non-core regions. Our argument aligns with research emphasizing the role of public policy in innovation (i.e., Bramwell 2020), but we contribute to this literature by examining how immigration policy, internationalization efforts, and the expansion of entrepreneurial education are giving rise to an expanding entrepreneurial ecosystem in St. John's. The university facilitates opportunities across all mixed embeddedness scales. On a macro scale, universities offer their host city benefits internationally through transnational connections and business relations, which their international graduates facilitate. On a micro-scale, the contributions of international students extend far beyond tuition dollars as they rent, shop, employ, and live locally, shifting local economic and demographic trends.

Third, our findings also explore some of the challenges that international student entrepreneurs face in a non-core region. Enrolling in university is often stressful for students; however, our paper demonstrates that international students feeling the “pull” of entrepreneurship face a plethora of stressors outside of academic performance. Isolation from family, navigating the immigration system, cost of living and tuition, acquiring entrepreneurial investment, in addition

to the ongoing process of owning a business were all stressors emphasized by participants. While the university and entrepreneurial ecosystem in St. John's expand international student entrepreneurs' opportunity structures in some ways, cultural barriers, discrimination, and limited qualified labour are identified as major challenges. These findings demonstrate the need for future longitudinal research on international student entrepreneurship to analyze the lengths of business ownership, the stability of these ventures, their links to geopolitics and global and national markets, and their long-term survival post-graduation. Although gendered barriers did not emerge as a theme in our dataset, this may stem from the gender imbalance of entrepreneurs in our sample and research is needed on the experiences of women international student entrepreneurs.

Fourth, our research underscores how the neoliberalization of immigration policy in Canada involves an increasingly "narrow" focus on labour market calculations and the growing influence of non-state actors in the immigration arena, including HEIs and the private sector (Dobrowolsky 2011; Flynn and Bauder 2015). The COVID-19 pandemic has illustrated the insecurity of international student mobility and HEIs that rely on their tuition dollars for revenue generation. HEIs across Canada are strained, and Memorial continues to feel the squeeze of declining public funding (CBC 2020). One entrepreneur in our study likened these cuts to a river drying up:

I think the decision-makers need to come down to the grassroots level and see what's actually driving [this]...If you see a river that flows through different places and you just assume and ignore the source of the river, if you cut the source off, eventually everything is going to dry up. To me, [the university] is that source to the province.

If internationalization is to be a dimension of a sustainable post-pandemic future in non-core regions, then public policies must recognize the wide range of benefits that international students bring to Canadian HEIs and the Canadian economy more broadly.

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