GRADUATE STUDENTS' ASSOCIATION
UNIVERSITY OF CALGARY

A MERITORIOUS ALBERTA ADVANTAGE

A brief of the full UCGSA white paper

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White Paper in Brief:

- Graduate students are essential for universities to meet their two core missions: research and teaching. They are also economic actors and respond to incentives, meaning they will be attracted to jurisdictions with high stipends, especially when adjusted for cost-of-living.
- Graduate student funding in Canada broadly, and Alberta more specifically, is significantly below the levels offered by international competitors. This is due to a combination of funding cuts to university operating budgets, low scholarship values and opportunities, and limited funding from the private sector.
- Given the fiscal difficulties the province of Alberta faces, we propose an alternative funding model for graduate students that can make Albertan graduate programs more internationally competitive: three tiers of research excellence scholarships, based on the tripartite structure currently used by the federal Tri-Council granting agencies, that additionally reward students for conducting research in collaboration with, or applicable to, local businesses and not-for-profits.
- Taking conservative estimates of the amount of economic activity these scholarships should generate, as well as the savings they should create by lowering the necessity of graduate students accessing financial aid, there is a clear path to making these scholarships revenue neutral.
- Given the importance of graduate students in Canada's innovation ecosystem, and the key relationships they build between universities and the private sector, these scholarships will not just make Alberta's graduate programs more competitive—they will make Alberta's *economy* more competitive, too.

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Introduction

Our proposal calls for a graduate student funding stream based on multiple tiers of research-excellence scholarships, administrated in a similar manner to the Canadian Graduate Scholarships distributed at the federal level—i.e., by independent experts, divided into separate funding organizations (one for the natural sciences and engineering, one for the social sciences and humanities, and one for medical research). By improving the competitiveness of this province's graduate programs, our proposal will also improve the competitiveness of Alberta's economy more broadly, increasing the economic security of everyone who calls Wild Rose Country home.

What is a graduate student, anyways?

They are, in brief, a vital component of the day-to-day operations of universities and key contributors to the innovation ecosystem. The financial and reputational strength of universities depends on graduate student labour; and, in turn, graduate students depend on university finances and reputation to complete their studies, build human capital, and navigate the workforce.

The majority of research and teaching—the two core functions of a university—are now performed by graduate students. Student research projects, academic employment as research assistants, and/or participation in laboratories all help drive breakthroughs in foundational and practical knowledge, while their work as sessionals, teacher's assistants, and mentors ensure that new generations of scholars are equipped with the skills and tools needed to thrive in a complex world. Graduate students are also integral in forging close connections between universities and industry, with multiple studies showcasing how graduate students support technology transfers, the development of intellectual property, and the commercialization of novel research. This is all while graduate students are starting families, caring for dependents, and building a nest-egg. We face all the costs of your typical Albertan, plus the addition of tuition, textbooks, laboratory equipment, and mandatory non-instructional fees (MNIFs).

Those costs matter. Graduate students are economic actors, just like everyone else, and we respond to incentives—again, just like everyone else. If presented with two options—one with a high likelihood of poverty and the other with a promise of financial security—graduate students will, all things being equal, overwhelmingly choose a stable paycheck. Even graduate students with high-risk tolerances will be weary to risk poverty or social seclusion if it is clear that other, more financially lucrative options are available. This is where Alberta's post-secondary system runs into trouble: our low pay, plus the unique combination of costs that we face, mean that the most financially secure move is

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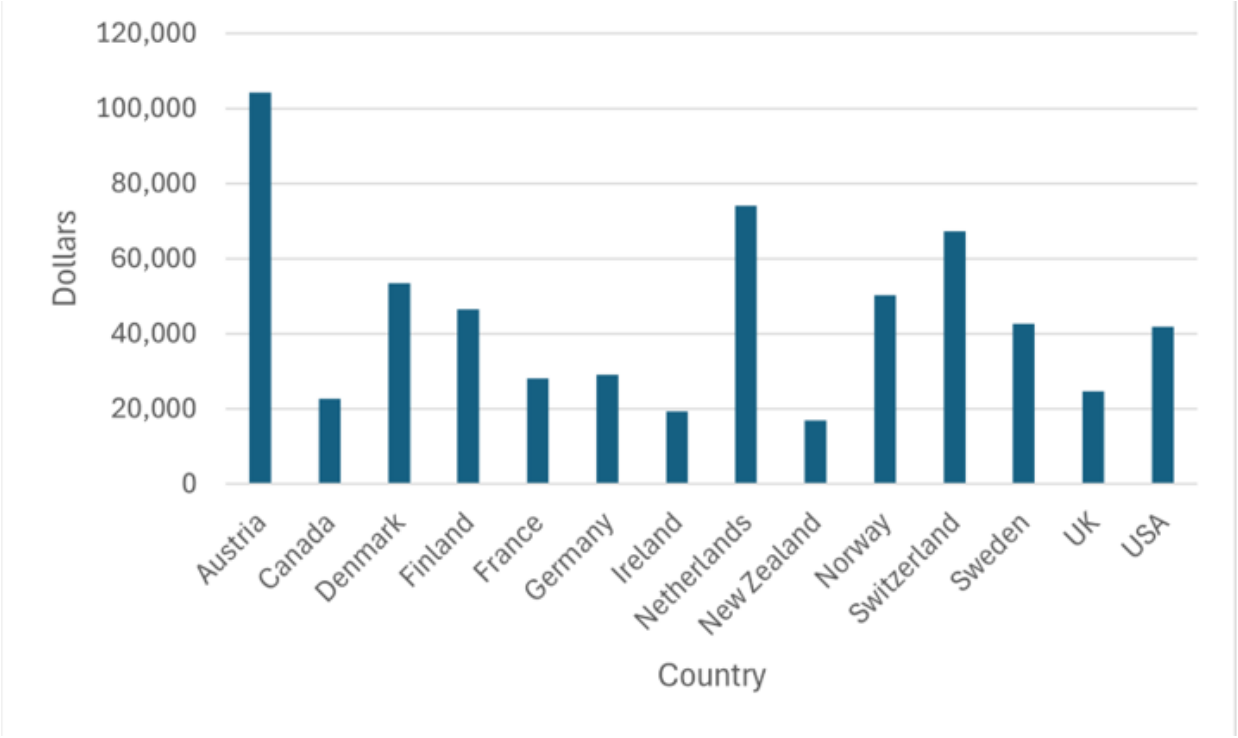
to study elsewhere. Indeed, when looking at international comparisons, graduate students would have a more difficult time searching for countries with *worse* pay potential than Canada and Alberta.



The current state of graduate funding in Alberta

As Parts 3 and 4 of this white paper show, Albertan universities have been devastated by budget cuts—at a time when other jurisdictions, such as the European Union, are calling for significant funding increases—and Canada as a whole lags almost every developed country in the world in average graduate student stipends, whether in nominal terms or adjusted for cost-of-living. These developments occurred before President Trump's tariffs rocked global markets and his post-secondary policies started driving prominent scholars out of the country; now, increasing funds to attract and retaining top talent has become a strategic priority, but seemingly not for Canada or Alberta. These developments also contribute to the internationally low levels of graduate students, on a per capita basis, in Canada**.** While Canada outperforms its peers in terms of ensuring a steady supply of students for polytechnics and colleges, there is a clear deficit of graduate students relative to the United States and the rest of the OECD**.** Alberta appears to suffer from a particularly acute leaky pipeline, as we trail other large provinces like Quebec, Ontario, and British Columbia in the number of graduate students per capita.

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Jurisdiction	Bachelor's	Masters	PhDs
Newfoundland	13.4%	5.2%	0.7%
PEI	18.5%	6.0%	0.8%
Nova Scotia	19.7%	6.6%	0.9%
New Brunswick	16.3%	4.5%	0.6%
Quebec	18.1%	6.8%	1.1%
Ontario	23.7%	8.7%	1.2%
Manitoba	20.4%	4.8%	0.7%
Saskatchewan	18.3%	4.7%	0.8%
Alberta	***21.7%***	***6.1%***	***0.9%***
British Columbia	22.7%	7.9%	1.1%
Canadian Average	*21.3%*	*7.4%*	*1.1%*
OECD Average	*18.9%*	*13.9%*	*1.3%*

Decreasing operating grant funding and internationally low average stipend levels are connected. Because graduate students play such a key role in research and teaching, operating grants are *the* most important mechanism for funding graduate student labour. Currently available sources of external funding—such as scholarships from the federal government or funding from the private sector—run into a number of problems. In terms of federal research grants, while *Budget 2024* increased the value of Canadian Graduate Scholarships (CGS), these provide funding for only a small contingent of active students. In terms of the private sector, the lack of funding for graduate students is due to a much more fundamental issue.

Endogenous growth theory, a family of leading economic theories on the causes of economic growth, predict that investing in general human capital and fundamental research is too risky of an endeavour for profit-maximizing firms. The benefits of knowledge cannot be fully internalized by a firm, since knowledge is not a pure private good; and general human capital is intended to help workers succeed in multiple contexts, which means any investment a firm makes could end up benefitting a competitor, should one of their employees change jobs. The end result is that businesses will gladly commercialize existing research, but are unlikely to invest in the core of the innovation ecosystem absent government assistance, leaving research-intensive universities heavily reliant on provincial operating grants. Cuts to operating grants will mean cuts to the capital pool used to compensate graduate students, which means cuts to graduate stipends. Thus can we see why Canada is falling so far behind.

The lack of funding available for graduate students does not just impact the so-called Ivory Tower. Endogenous growth theory also identifies human capital and innovative technologies as one of, if not *the*, most important drivers of productivity improvements—and, consequently, of generating

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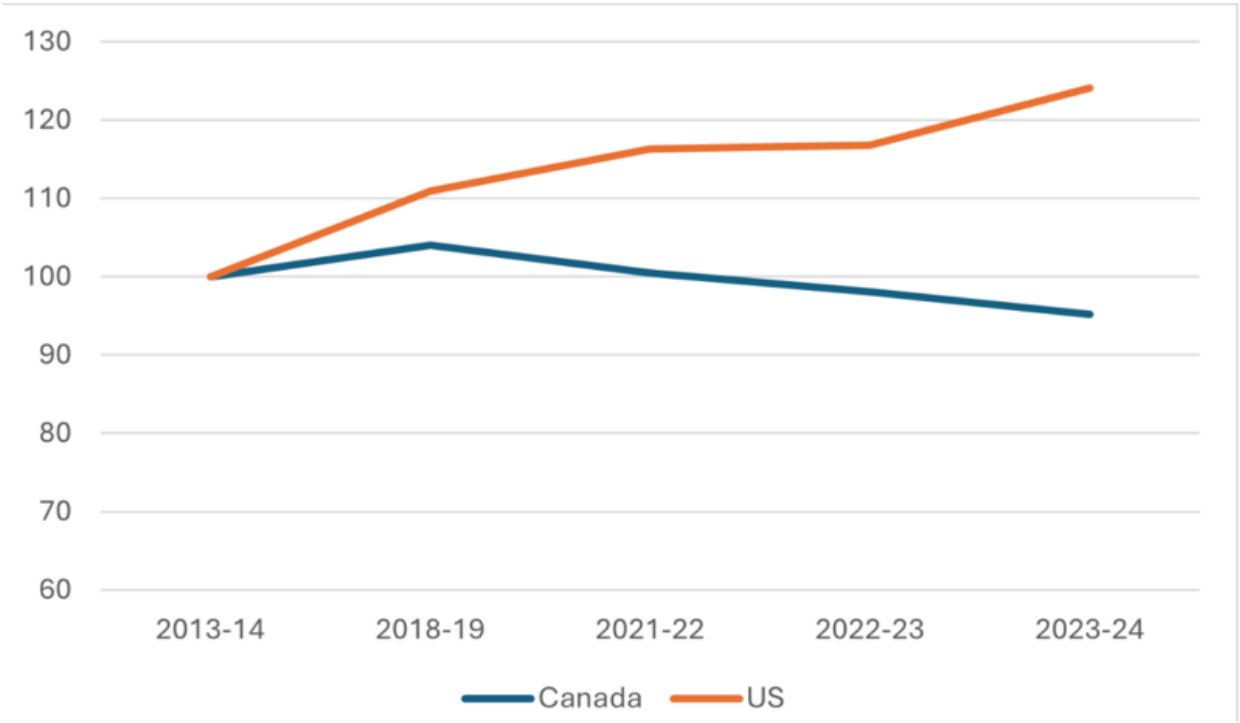
economic growth. As we show throughout our white paper, economists, businesses leaders, and policy analysts of various stripes all identify graduate students as essential components of the innovation ecosystem. This means that the global competition for graduate students is also a competition for building an economy that can weather international shocks (like trade wars or financial market instability), resist hostile overtures from much larger states, and provide its people an increasing, and *secure*, standard of living. If graduate student stipends fall far below international standards—if there is an overwhelming incentive to study *elsewhere*—then Canada's economic vulnerability will only get worse. This may sound like a grandiose claim, but our white paper goes to great lengths to show that it is nonetheless true. Graduate students are not a niche resource—their fingerprints touch almost every part of the economy—and if one needs any further proof, note that increases to graduate student funding and professional development formed part of the *CHIPS and Science Act*, a national security-focused bipartisan bill that aimed to shore up America's strategic advantages against China.[1,2]



(take from Higher Education Strategy Associates: https://higheredstrategy.com/lagging/)

[1] https://cgsnet.org/press-releases/cgs-celebrates-chips-and-science-act-signed-into-law/
[2] https://www.economist.com/special-report/2023/03/06/taiwans-dominance-of-the-chip-industry-makes-it-more-important

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Provincial governments must play a central role, thanks to their constitutional jurisdiction over education. However given the uncertainty currently shrouding the globe, we recognize that limited government must be shared among many worthy projects, such as revamping infrastructure, improving healthcare, and protecting our public K-12 educational system. We also recognize that funds are particularly limited in Alberta: our fiscal framework and limitations on deficit spending tightly constrain how much additional tax revenue the government can collect and how deep into the red the government may go. Consequently, the University of Calgary Graduate Students' Association has worked to develop a funding model that fulfills the following criteria:

1. Increases the number of graduate students covered by external funding;
2. Meaningfully increases the stipends of Albertan graduate students, *including* international graduate students;
3. Incentivizes high-quality and transformative research amongst graduate students;
4. Leverages and further rewards graduate students who, in the course of their studies, partner with industry and the not-for-profit sector; and
5. Provides this funding in a revenue-neutral way.

We believe the following model does exactly that.

The Model

UCGSA proposes the creation of a merit-based, research excellence scholarship system that puts external funding directly into the hands of students. It consists of **three tiers,** with the top tier rewarding the best and most innovative research proposals from thesis-based master's or doctoral students. We purposefully included international students so as to make Alberta stand out from other jurisdictions, including research grants at the federal level, as most governments restrict access to prestigious scholarships to domestic students only. The value of the awards at each tier would amount to a significant increase in graduate student stipends, with the value of the top tier **rivalling the prestigious CGS scholarships awarded by the Tri-Council granting agencies**. Importantly, the total number of awards would cover **31% of all thesis-based students (international and domestic) and 20% of all eligible students**, a substantial number given how tightly constrained the current availability of scholarships is. This covers the first three criteria.

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Tier	Value	Number Awarded	Percentage of Successful Applicants
Master's			
1	$7,000	2,102	Top 25%
2	$13,000	420	Top 5%
3	$17,500	84	Top 1%
Doctoral			
1	$9,500	1,532	Top 25%
2	$18,000	306	Top 5%
3	$24,000	61	Top 1%

The exact details of how these scholarships ought to be administered will undoubtably be an ongoing process, but there are a few points we highlight in this white paper. **The first is that neutral, expert panels are a must**. These experts do not necessarily have to come exclusively from academia—business leaders and practitioners in the not-for-profit sector can and should provide input—but the creation, and administration of, merit-based scholarships must be done at arms-length from partisan offices. We also recommend that, should this proposal be adopted, the provincial government copies the tripartite format of the Tri-Council granting agencies. That is to say, **create three separate granting streams keyed to the three overarching categories that almost all research falls into:** one of the social sciences and humanities, one for the natural sciences and engineering, and one for medical research. Additionally, we provide specific recommendations on how to enhance the number of university-industry (and university-not for profit) interactions through these scholarships. Those recommendations, as shown below, are informed by academic studies that investigate how graduate students are already driving these interactions.

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Study	Mechanism	Recommendation
Ponomariov (2008); Boardman and Ponomariov (2009); Thune (2009); Thune (2010)	Graduate students connect professors/university to private industry through work experience.	Increased funding support should naturally increase university-industry interactions, especially if it fosters positive student/supervisor or student/institution relations
Boardman and Ponomariov (2009)	Graduate students perform research that is easily commericalizable by business.	Increased funding support should naturally increase university-industry interactions, especially if it allows graduates students to concentrate more on research.
Ponomariov (2008); Boardman and Ponomariov (2009)	Graduate students enhance research capacity because they are better able to trouble shoot research projects than professors or private industry	*Include criteria that rewards students for collaborating with professors to either aid their own commericalization efforts or their partnerships with not-for-profits.*
Slaughter et. al. (2002); Santos et. al. (2020)	Graduate students drive knowledge transfer between universities and industry.	*Include criteria that rewards students for explaining their projects in a way that's accessible to a non-expert audience.*

Second, we emphasize—in line with our submission to the Standing Committee on Science and Research (SRSR) study on the proposed capstone research organization[3]—that graduate students should be included in the decision-making bodies attached to these funding streams. Graduate students have a unique perspective on the challenges any funding stream might face, and they certainly have a greater understanding of what graduate students need than individuals who have not been a student for years. Finally, ensuring that equity-deserving groups are consulted in the creation of these scholarships is important for maximizing accessibility, itself a key component in ensuring that the innovation ecosystem draws from as many voices as possible.

[3] https://gsa.ucalgary.ca/wp-content/uploads/2024/03/UCGSA-Brief-to-the-Standing-Committee-on-Science-and-Research-Capstone-Project-1.pdf

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In order to further incentivize transformative research, as well as leverage already existing graduate student relationships with the private and not-for-profit sector, we also propose a number of suggestions for how the expert panel might score "merit." The first is to incentivize interdisciplinary research. While the tripartite funding model is an efficient means of evaluating research proposals, it should not come at the expense of crosspollination amongst different fields. Ensuring that merit criteria *rewards*, and not *inhibits*, interdisciplinary research will help ensure that the most impactful research is supported—and, from there, made available to everyone. The second suggestion, in line with Criteria #4, is to suggest that students are rewarded for research proposals with commercialization plans or which contribute to the mission-statements of not-for-profits. As we show in this paper, not only will this help directly connect graduate students with businesses and not-for-profits, but will likely help **crowd in private funding**, easing the fiscal burden faced by the province. We caveat this suggestion, though, by emphasizing that commercialization potential or fidelity to a not-for-profit's mission statement **does not imply that research funding should be tied to labour market outcomes**. We want to preserve the entrepreneurial potential of both universities and graduate students, and that requires allowing student researchers to help reorganize the production process in novel ways (ala Schumpeter) or discover new production opportunities, as in Israel Kirzner's conceptualization of an entrepreneur.

Our model is costed for a five-year period, using assumptions on current enrollment numbers and projected enrollment growth. In order to make the proposal revenue neutral, and thus fulfill Criteria #5, we further made conservative assumptions about the return on investment of graduate education (using an impact assessment conducted for the University of Alberta) and assumed any economic activity generated by these grants would be taxed at 10% (the minimum tax bracket at the time of writing). Since these scholarships would noticeably raise the average stipends of graduate students in Alberta, additional savings could be pulled from decreased demand for welfare services, allowing the government to prioritize aid for more low-income Albertans rather than having them compete with graduate students for limited funds. There could, in fact, be savings from student financial aid as well, though as UCGSA.03[4]—a policy statement in our policy library about student loans and financial aid—makes clear, cuts to non-repayable grants have led to severe underfunding for students in need.

A path to revenue neutrality

More positively, if these scholarships crowd in additional private funding—as studies suggest they can, and which should be incentivized if the merit-criteria includes rewards for commercialization

[4] https://gsa.ucalgary.ca/wp-content/uploads/2024/03/UCGSA.03-Financial-Aid-and-Student-Loans-Policy-Final-Draft-2025-26-Update.pdf

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plans—then the final cost of the scholarships can be partially supported through private funding. All told, **this means there is a clear path to revenue neutrality**, even under conservative assumptions. And if we relax these assumptions—particularly the level of savings the government receives thanks to higher scholarship amounts—then regardless of how large the graduate student cohort gets in Alberta, these scholarships should help *expand* the provincial government's revenue base, without requiring tax increases to stimulate this revenue growth.

The table below shows exactly this revenue-neutral path. In the "conservative estimate," we show the deficit between the total cost of the scholarship—which includes the direct cost (i.e., the money spent on scholarships) of the program with indirect, administrative cost—and the economic revenue generated from *just the direct cost*, with the assumption that the added activity will be taxed at 10%. In the fully-costed savings estimate, we take the savings generated from the *direct cost only*—based on estimates from the Federal Reserve of Boston, adjusted for the fact that Alberta lacks a sales tax—and subtract them from the *total* cost. In this fully-costed scenario, the savings and additional economic activity generated by the scholarships add substantial revenue to the government over a five year period.

Year	Total Cost (Direct + Indirect)	Conservative Revenue Generated	Fully-Costed Savings Rate	Fully-Costed Savings	Difference (Conservative Estimate)	Difference (Fully-Costed Estimate)
2025/26	$53,669	$10,304	$1.50/$1.00	$64,403	-$43,365	***+$10,734***
2026/27	$59,036	$22,699	$3.00/$1.00	$141,867	-$36,337	***+$82,831***
2027/28	$64,939	$24,937	$3.00/$1.00	$155,853	-$40,002	***+$90,914***
2028/29	$71,433	$27,430	$3.00/$1.00	$171,438	-$44,003	***+$100,005***
2029/30	$78,576	$30,173	$3.00/$1.00	$188,583	-$48,403	***+$110,007***

The future is a foreign land: geopolitical uncertainty and Canada's "Patent Productivity Paradox"

In turbulent times, any proposal from an advocacy group that asks the government for money should demonstrate how their proposal positively, and directly, impacts the lives of everyday citizens. In addition to benefits the Albertan economy accrues from graduate student human capital and research activities, we also consider how this proposal can solve Canada's "Patent Productivity Paradox." Put simply, Canada should be generating substantially more intellectual property (IP) than it currently does based on the amount of research conducted at universities. The main bottleneck that explains this paradox is that the commercialization process—where university research becomes a consumer good—

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does not lead to Canadian firms generating intellectual property (IP). On the contrary, Canadian university research very frequently gets turned into IP for foreign-owned firms. While this is a net benefit to the world at large, for a country that is trying to kickstart its laggard productivity levels, this is a serious problem.

Some of the potential solutions identified by commentators, such as requiring Canadian universities to partner with Canadian firms or raising the costs for universities to sell their IP to foreign-owned firms, are overly protectionist and would very likely introduce inefficiencies into capital markets. By contrast, increasing the number of graduate students who partner with Canadian firms can be done with minimal disruptions, especially if these scholarships are used to create incentives for graduate student/local firm interactions. Given that graduate students are already a key linkage between firms and universities, the more graduate students that work with local firms, the more likely universities *as a whole* will partner with local firms. And since these scholarships will hopefully increase the amount of research and technology transfer that occurs thanks to graduate students, we should hopefully see both the *percentage and total amount* of IP held by Canadian firms increase.

The table below lays out our proposed methods for using these scholarships to increase graduate student/local firm interactions. We recommend a combination of the **second and third** methods, as we believe these will be the least disruptive to the labour market.

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Method	Pros	Cons
Require graduate students work with local firms	• Simplest approach; • Regulatory in nature—no additional funding needed from provincial government.	• Will create labour market distortions, which could impact human capital generation and market adaptability; • Restricts freedom of choice for graduate students; • May lead to funding problems for universities if lucrative contracts between staff (graduate students) and foreign firms are restricted.
Incentivize private firms to donate to scholarships by giving them immediate access to graduate student talent	• Increased private share of funding for scholarship model; • Increased competition for graduate student talent amongst Canadian firms; • Increased R&D funding for Canadian firms; • Labour market distortions likely milder than previous method (attempts to stimulate competition rather than restrict it)	• Increased private involvement could incentivize less risky research, if used as substitute for public funding.
Institute a "locally made" bonus to scholarship value	• Greater funding for graduate students; • "Carrot" approach likely less disruptive to labour markets; • Easy hook for any marketing campaigns	• Greater expense to government.

Our proposal should help increase the competitiveness of Alberta's graduate programs, post-secondary system, and economy as a whole with no additional charge to taxpayers. But we also recognize that this proposal cannot solve all of the system's woes. Course-based students, for instance, are as integral to universities as thesis-based students are, but crafting research scholarships around the particulars of a course-based program is difficult. We propose a number of possible ways of

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including course-based students in this scholarship model, but emphasize that a broader conversation around classwork and degree expectations is necessary. Additionally, we do not claim that these scholarships will completely eliminate student precarity. Only a systemic increase to funding and the development of infrastructure to support high levels of minimum funding, regardless of school or program, will ensure that no graduate student is at risk of falling into poverty, homelessness, or hunger. That being said, we believe this proposal goes a long way to providing an alternative and robust strategy for increasing graduate stipends, and from there, making Alberta a more attractive place for graduate students to study.

Recommendations

As such, our proposals in this paper are:

1. Create a three-tiered, merit-based, scholarship program that rewards domestic and international thesis-based graduate students for research excellence:
    a. A first tier, that rewards the top 25% of master's and doctoral students with a scholarship valued at $7,000 and $9,500, respectively;
    b. A second tier, that rewards the top 5% of master's and doctoral students with a scholarship valued at $13,000 and $18,000, respectively;
    c. A third tier, that rewards the top 1% of master's and doctoral students with a scholarship valued at $17,500 and $24,000, respectively.
2. Structure the administration of these scholarships in a similar manner to that of the federal Tri-Council granting agencies:
    a. One stream, administered by neutral experts, for the social sciences and humanities;
    b. One stream, administered by neutral experts, for the natural sciences and engineering;
    c. One stream, administered by neutral experts, for the medical sciences.
3. In the creation of merit criteria, ensure that, among other criteria recommended by subject-matter experts:
    a. Students are rewarded for research projects that align with research demand from the private sector;
    b. Students are rewarded for research projects that help not-for-profits fulfill their mandates;
    c. The above does not mean the merit of research projects are tied to labour market outcomes or undermine the entrepreneurial potential of universities.

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4. In order to save administrative costs and create best practices for commercializing research, draw from Mitacs as either consultants to the scholarship program or by connecting the scholarship program to the Mitacs network;
5. In the creation of merit criteria, ensure that students are rewarded for interdisciplinary research.
6. In the creation of merit criteria, ensure that equity-seeking groups are adequately consulted, to maximize accessibility and the diversity of voices within the innovation ecosystem.
7. Collaborate with course-based students to effectively integrate their programs into the research scholarship program, or to reform the evaluation of coursework to reward excellence in non-thesis based programs;
8. Ensure that graduate students sit on the ultimate decision-making bodies of each granting stream, in order to preserve the graduate student perspective on any governance questions, and:
    a. That rules are in place to mitigate any conflicts of interest that may arise from graduate students sitting on these bodies, so that graduate students do not have to make a choice between serving their profession and having access to external funding.
9. Ensure these scholarships result in an increase in research commercialization by:
    a. Incentivizing private businesses to invest in the model on the condition that they receive priority access to graduate student research talent and human capital;
    b. Provide a “locally made” bonus to graduate students whose work with local businesses as part of the industry engagement section of the scholarship merit-criteria.

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