Submission to Consultation on Scientific Research and Experimental Development

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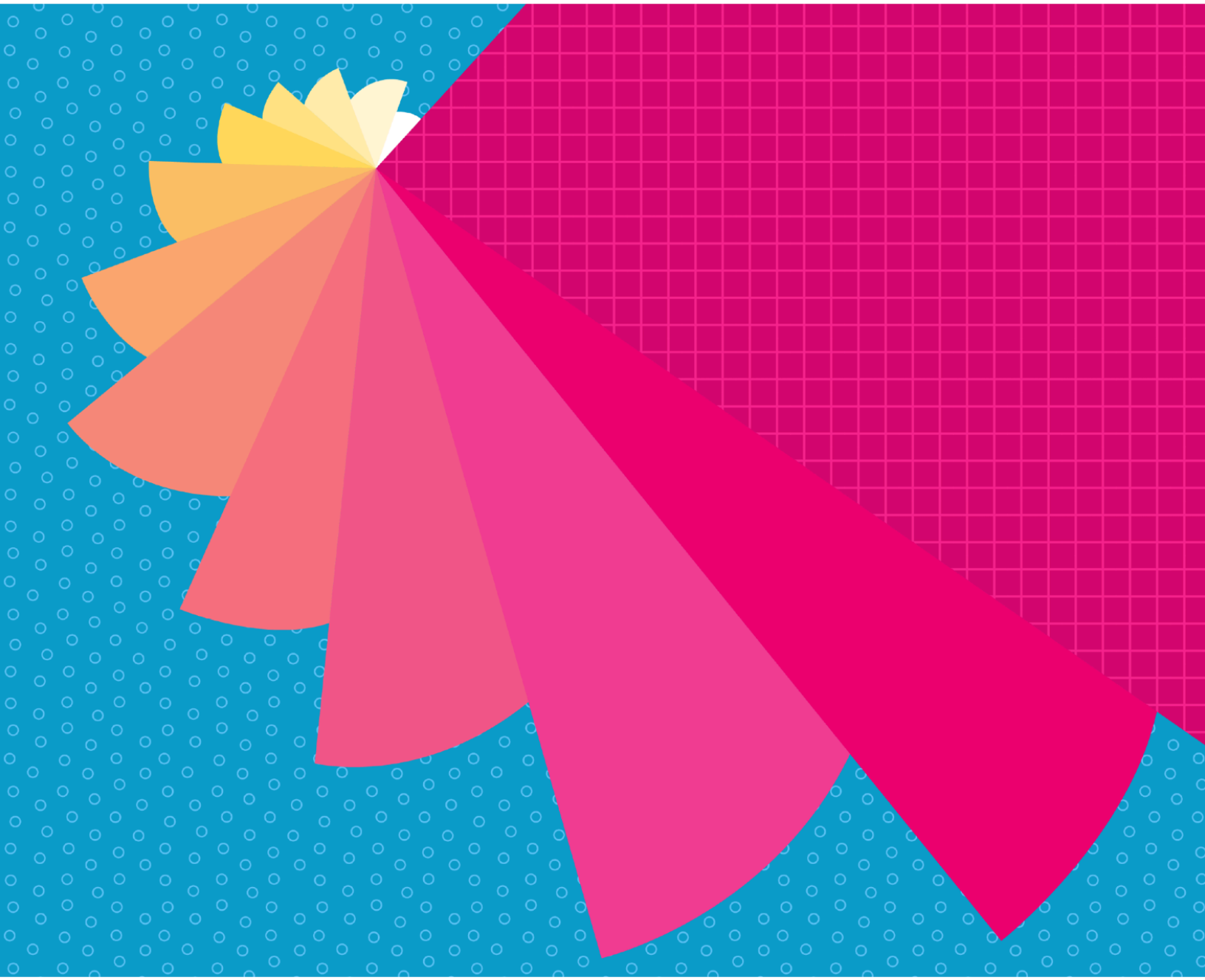

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Executive Summary

For a developed country such as Canada, frontier innovation is often the only pathway to increased productivity. As a result, our leadership must place considerable attention on effective government policy, both direct and indirect, that encourages private sector investment in innovation. For Canada to secure its long-term prosperity, we need a business environment that encourages competition, broad investment in innovation, domestic innovation retention, and for the gains from innovation to benefit all those who live in Canada.

This brief is the Dais' response to a consultation initiated by Finance Canada to review the country's signature innovation support program: the Scientific Research and Experimental Development Tax Incentive (SR&ED). The consultation is seeking comments on two issues:

1. Cost-neutral changes to SR&ED to ensure its maximum utility in encouraging private spending on innovation; and
2. Consideration of a "patent-box regime" to be introduced alongside the SR&ED tax credit.

Our review of evidence, as well as the research we have conducted, shows that:

1. **Innovation activities, including research and development and patents, have a positive impact on firm growth:** By analyzing data that covers all businesses in Canada, we demonstrate the positive revenue and employment effects of a company engaging in innovation activities. Incentives like SR&ED are consequently important in encouraging more innovation activity.
2. **Small firms face greater challenges in early commercialization of their innovation activities:** The largest firms (most prominently, companies in the 99th percentile of revenue) are more effectively able to capitalize on their own innovation activities, while smaller firms, despite larger tax benefits, see lower commercial returns to research and development (R&D) support.
3. **The existing patent regime provides significant financial incentives for firms:** Firms in Canada experience high levels of employment and revenue growth upon filing patents, and while our patenting lags behind peer jurisdictions, we do not see signs that the existing patenting system is the reason for this lag.

Given this evidence, our proposed changes to the SR&ED program are meant to align incentives such that when an entrepreneur is deciding between investing in the early commercialization of a proven technology and investing in further marginal refinement of that technology, they are not deterred from doing so by artificially lower prices of investing in marginal improvements to that same technology.

We recommend:

1. Expanding the eligibility activity in the enhanced rate portion (that targets Canadian-controlled small and medium enterprise activities) to include market research, sales promotion, and patent application that is specifically tied to the project under which SR&ED is being claimed;
2. Capping the total amount of expenses claimed under these expanded costs proportionate to the total amount of SR&ED credit claimed by the firm; and
3. Increasing the total cap on enhanced expenses claimed to accommodate the wider set of eligible expenses.

Canada's innovation policy approach is at an inflection point, with programs being phased out or awaiting investment, while others are in startup or in development. A reformed SR&ED could align incentives and reduce inefficiencies, in particular by reducing payments to intermediaries (such as consultants that help companies maximize their SR&ED claims), making the tax credit an even more important feature of Canada's innovation policy toolkit. As a result, we believe the government should be open to a revenue non-neutral expansion of the credit. If the government remains committed to revenue neutrality, then we would recommend the claim rate be reduced as it broadens to a wider set of eligible expenses.

With regards to the second question, providing adequate direct support and indirect incentives for Canada to protect its intellectual property (IP), of which patent is one, is critical. While a patent-box regime (where companies get preferential tax treatment for profit that is tied to a specific patent) may modestly increase the incentive structure for protecting and retaining IP, we are not certain that the benefits of a patent box will outweigh its costs, given evidence from other jurisdictions that have implemented the policy. The available evidence points towards the policy's inability to raise innovation activity in the long run, while creating market distortions that may further exacerbate market concentration. We believe federal investment may be better directed towards a redesigned SR&ED as proposed above.

Introduction

In a world facing the coming impacts of climate change and an aging population, our economy needs to do more with less. To do this, we rely on innovation, a process that generates new ideas that use existing resources to create material improvements over existing products and processes. Innovation is key to growing Canadian productivity, and our economy. Governments worldwide use various policy instruments to support domestic capacity to create innovation, and crucially, to gain economic benefit from innovations.

Broadly, innovation support policies can be classified in terms of two approaches: direct policies and indirect policies. Direct policies are programs where governments directly offer grants, loans, and contributions toward specific innovation objectives. An example of direct innovation policy in the US was Operation Warp Speed, which saw the American government directly invest in the creation of an mRNA vaccine to tackle the COVID-19 crisis. Canada's recent announcement of support for increased AI compute capacity is another.

The other approach is indirect innovation policy.[1] These policies see governments being agnostic about innovation, offering incentives for private individuals and companies to engage in innovation activities (often synonymous with research and development). Canadian spending on innovation supports has historically largely fallen into this second group, particularly with its signature Scientific Research and Experimental Development (SR&ED) Tax Incentive Program.

The Dais has called for a broader assessment of the impact of innovation policies in Canada, including the trade-off between direct and indirect policy instruments. We are pleased to share our analysis and perspectives as part of this review of SR&ED.

In this submission, we seek to address the two questions posed by Finance Canada:

- What are the current gaps, and proposed cost-neutral changes to the SR&ED tax credit to ensure the program better targets the needs of innovators?
- Can a patent-box regime make Canada more competitive for developing, commercializing and retaining ownership of IP, and how would it compare with the SR&ED program?

We discuss the evidence on the impacts of patent-box regimes on domestic and international tax jurisdictions and provide insight into adjustments of the SR&ED programming. We propose an alternative to the patent-box regime aligned with the

[1] Pierre Mohnen and Jorge Niosi, "Effectiveness of Direct and Indirect R&D Support," in *Innovation Systems, Policy and Management,* ed. Jorge Niosi, (Cambridge: Cambridge University Press, 2018), 53-78.

evidence to promote the protection and commercialization of successful R&D activities of scalable domestic IP assets.

The SR&ED program overview

Canada has an international advantage with our highly impactful research and talent development.[2] [3] However, Canada's comparative advantage in foundational innovation is juxtaposed with weak firm investment and adoption of frontier technologies, and lower-than-average worker productivity and firm competition in domestic markets.[4] The SR&ED program is Canada's largest innovation program, accessed by over 20,000 firms and providing nearly $4 billion annually in refundable tax credits and lower tax rates for R&D related expenditures.

Evidence of SR&ED's economic benefits shows positive market spillover effects of R&D, leading to increased innovation and IP generation for the domestic economy. While the program effectively increases R&D activities for smaller firms, the rate of return remains relatively low compared to larger enterprises. Kim & Lester's [5] analysis suggests that aligning or lowering subsidy rates while providing more substantive direct support to small firms through programs such as the Industrial Research Assistance Program (IRAP) improves the cost-effectiveness of SR&ED's economic impact.

Similarly, further insights from Lester[6] investigating SR&ED's impact on commercialization efforts after IP and patent creation remain lacklustre, particularly for small firms. Commercialization of IP assets is far higher among larger firms, despite higher tax rate exemptions and tax credits available to smaller firms. Aligning tax subsidy rates to commercialization impacts has been a recommendation for program cost-effectiveness.

The policy bias towards small firms is captured in SR&ED's 2014 policy change to the provision of refundable tax credits for R&D activities among small firms, and has since increased R&D spending among small firms engaged in innovation. However, the

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[2] "OECD Science, Technology and Innovation Scoreboard," – OECD, Accessed April 9, 2024. https://stip.oecd.org/stats/SB-StatTrends.html?i=NORMCIT_X&v=3&t=2007,2021&s=CAN,FRA,DEU,ITA,JPN,GBR,USA&r=3 .

[3] "OECD Science, Technology and Innovation Scoreboard - OECD." Accessed April 9, 2024. https://stip.oecd.org/stats/SB-StatTrends.html?i=TP_TTXEM&v=3&t=1981,2022&s=CAN,FRA,DEU,ITA,JPN,GBR,USA&r=3

[4] Carolyn Rogers, "Time to Break the Glass: Fixing Canada's Productivity Problem," Bank of Canada, 2024, https://www.bankofcanada.ca/2024/03/time-to-break-the-glass-fixing-canadas-productivity-problem/.

[5] Myeongwan Kim and John Lester, "R&D Spillovers in Canadian Industry: Results from a New Micro Database," *CSLS Research Report 2019-02* (October 23, 2019), https://doi.org/10.2139/ssrn.3469865.

[6] John Lester, "Tax Support for R&D and Intellectual Property: Time for Some Bold Moves," C.D. Howe Institute, 2022, https://www.cdhowe.org/sites/default/files/2022-07/E-Brief_330_0718_0.pdf.

increased small-firm spending is generally found to be comprised of a company contracting other third-parties to conduct R&D, as opposed to building R&D talent in-house. Agrawal et al[7] also finds targeted approaches are effective for stimulating small-firm R&D, but do not lead to increased commercialization or profitability.

We believe that this is due to the specific constraints faced by small firms at a particularly crucial stage of innovation — the marginal point at which companies can see the same benefit between investing in early commercialization activities and investing in further refinement of their product. The current SR&ED tax incentive specifically excludes commercialization activities, such as market research and exploration expenses. As such, at this critical juncture, SR&ED distorts the relative costs between such investments, leading small firms to underinvest in commercialization activities. Larger firms tend to have access to a larger pool of financing, making this trade-off less impactful.[8]

Table 1: Impact of raising R&D expenditure by one percent on firm revenue in Canada[9]

Firm size by revenue	**% Increase in revenue**
25th percentile	**0.4%**
50th percentile	**0.3%**
75th percentile	**0.5%**
90th percentile	**1.8%**
99th percentile	**12.7%**

To understand how firms of different sizes (and thus different access to financial resources) take advantage of R&D, particularly in their ability to commercialize innovation, our previous work analyzed the changes in a company's revenue that can be attributable to an increase in R&D expenditure, using tax filing data for all enterprises in Canada.[10] Our

[7] Ajay Agrawal, Carlos Rosell, and Timothy S Simcoe, "Tax Credits and Small Firm R&D Spending," National Bureau of Economic Research, May 2019, https://www.nber.org/papers/w20615.
[8] Viet Vu and Steven Denney, "Scale the Gap: Exploring Gender Ownership and Growth Experiences for Canadian Firms," *Brookfield Institute for Innovation + Entrepreneurship*, 2021, https://brookfieldinstitute.ca/scale-the-gap/.
[9] This table is a partial reproduction of Table 17 in Vu and Denney, Into the Scale-up-verse (2021). It is a result of quantile regression on the universe of all Canadian businesses with a valid Business Number between 2000 and 2016. The dependent variable is the logged real revenue value. The primary independent variable is logged real R&D expenditure that a business reports (whether or not that expenditure was claimed for SR&ED). The estimates are broadly interpretable therefore as % changes. All estimates are significant to the 0.1% level.
[10] Steven Denney and Viet Vu, "Into the Scale-up-Verse: Exploring the Landscape of Canada's High Performing Firms," *Brookfield Institute*, 2021, https://brookfieldinstitute.ca/wp-content/uploads/BII-IntotheScaleupverse-Final-1.pdf.

study found that while there is an economic benefit to spending on R&D across businesses of all sizes, those benefits are concentrated among the largest firms, as these firms are much more likely to successfully commercialize innovation and IP assets than smaller firms.

The findings of our study, summarized in Table 1, show that for companies below the 75th percentile (in terms of revenue, which corresponds to companies reporting less than $3.87 million annually), a one percent increase in their R&D spending is only associated with on average, a 0.4 percent increase in total revenue recorded. However, for companies at the 90th percentile ($11.2 million), a one percent increase in R&D spending was associated with a 1.8 percent increase in revenue. Finally, for companies in the 99th percentile of revenue ($104.6 million), a one percent increase in R&D spending was associated with a 12.7 percent increase in revenue.

SR&ED, given its design and focus on R&D, does not currently address this core early commercialization challenge faced by small firms. This is evident in the significantly higher rate of IP asset commercialization among large firms, despite smaller firms receiving more substantial tax reliefs and credits.

Changes in policy, such as the 2014 shift towards refundable tax credits for small firms, increased their R&D expenditures. Yet, this did not proportionately boost commercialization or profitability. Moreover, tax data reveals that smaller companies see a notably lesser increase in revenue from R&D investments compared to their larger counterparts. These insights are aligned with our proposed changes to SR&ED, which aim to improve how R&D activities translate into commercial success among smaller firms.

Recommended changes to SR&ED

Our proposed changes to the SR&ED program are meant to specifically align incentives for this marginal group, which ensures that when an entrepreneur is deciding between investing in the early commercialization of a proven technology or incremental improvements in their product through R&D, they are not deterred from doing so from artificially lower prices of investing in marginal improvements to that same technology. Specifically, we propose making the following changes to the list of eligible costs for the enhanced portion of SR&ED:

1. Make “market research”, “sales promotion”, as well “patent application” eligible costs under the enhanced portion of SR&ED, in cases where expenses associated with these activities are directly tied to research projects for which R&D expenses are being claimed. Yet we further recommend these three cost categories remain ineligible under the regular rate for larger and non-Canadian-controlled firms.
2. For the total amount of expenses claimed under these new costs (that are currently classified as not directly related to prosecution of SR&ED), limit the

amount that can be claimed proportional to the total amount of SR&ED credit claimed (e.g., one third);

3. Raise the total amount that can be claimed under the enhanced rate to accommodate the wider expense eligibility (e.g., to $4 million).

We believe the government should be open to a revenue non-neutral expansion of the credit. If the government remains committed to revenue neutrality, then we would recommend the claim rate be reduced to between 25 and 27 percent as it broadens to a wider set of eligible expenses.

We favour changes to SR&ED that incorporate all of these conditions, for the following reasons:

1. **They integrate with existing administrative system**: We believe that our proposed changes do not significantly alter the existing process used in claiming SR&ED tax credit, as companies already have to document R&D spending to be tied to a specific innovation project.
2. **They ensure the tax credit focuses on innovation, as opposed to general business expenditures**: By ensuring documentation requirements, we limit the amount through which companies will use the tax credit to claim costs under routine operations of the business.
3. **They target innovation and ready-to-market technology:** By tying the amount claimed under market research, sales promotion, and patent protection to the company's total R&D spend, we specifically target commercialization spending at companies and for technologies that are at the margin of being market-ready without further distorting incentives outside these firms.
4. **They reduce cost barriers to innovation commercialization:** Reducing the upstart costs of sales promotion and patent application will allow smaller firms with lesser cash flows to transition from research activities into commercialization efforts, including the protection of IP.

Patent box regime

Another area of government consultation is focused on is the potential of a patent box as a complementary policy to the SR&ED program. A patent box allows preferential income tax treatment for firm net income tied to products incorporating patents that are developed and held within the tax jurisdiction. The specific form of patent box under consideration incorporates the Organisation for Economic Co-operation and Development (OECD) principle surrounding a nexus approach to patent-box strategy, which means that

the holder of the specific IP must have played a significant role in developing it.[11] The policy justification for such a regime stems from the belief that Canadian firms, while participating in R&D activities, do not have sufficient incentives to retain IP assets (such as patents) in Canada.

The patent box approach has shown clear benefits to regions with established and successful R&D ecosystems (such as Boston, Israel, and the San Francisco Bay area).[12] Yet we believe that the extent to which a patent-box regime will introduce net new economic value in Canada remains uncertain and in some cases could be a detriment to domestic R&D activity.[13]

British Columbia's International Business Activity (IBA) program is a domestic example of patent-box regime ineffectiveness in spurring IP commercialization.[14] This initiative began in 2008 and provided multinational corporations with approximately $140 million in tax exemptions, which included international patent business income and losses. The program had little impact on IP creation, but was found to have contributed significantly to foreign investment in Vancouver real estate until the program ended in 2018.[15]

Examples also prevail in other jurisdictions. In fact, researchers evaluating innovation policies have ranked the patent box last in terms of effectiveness, concluding its effects to be a net negative (their findings are reproduced in table 2 below).[16] A more recent review also largely confirms these findings. [17]

[11] OECD, *Action 5: Agreement on Modified Nexus Approach for IP Regimes,* 2015, https://www.oecd.org/ctp/beps-action-5-agreement-on-modified-nexus-approach-for-ip-regimes.pdf.
[12] Dan Breznitz, *Innovation in Real Places: Strategies for Prosperity in an Unforgiving World*, (Oxford: Oxford University Press, 2021).
[13] Nancy Gallini and Aidan Hollis, "To Sell or Scale Up: Canada's Patent Strategy in a Knowledge Economy," *Institute for Research on Public Policy*, 2019, https://irpp.org/research-studies/to-sell-or-scale-up-canadas-patent-strategy-in-a-knowledge-economy/.
[14] "International Business Activity Act," British Columbia Accessed April 2, 2024, https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/04049_01#section17.1.
[15] Dan Breznitz, *Innovation in Real Places: Strategies for Prosperity in an Unforgiving World*.
[16] Nicholas Bloom, John Van Reenan, and Heidi Williams, "A Toolkit of Policies to Promote Innovatio Alexander Israel Silva-Gaméz, Silvia Mariela Méndez-Prado, and Andrés Arauz, "What's Happening with the Patent Box Regimes? A Systematic Review," *Sustainability* 14, no. 18 (2022).
n," *Journal of Economic Perspectives* (2019), https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.33.3.163.
[17]

Table 2: Innovation policy toolkit (Reproduced from Bloom, Van Reenan & Williams, 2019)[18]

Policy	Net benefit	Time frame	Effect on inequality	Quality of evidence	Conclusiveness of evidence
R&D tax credits	+++	Short run	↑	High	High
Skilled immigration	+++	Short to medium run	↓	High	High
Trade and competition	+++	Medium run	↑	High	Medium
Direct R&D grants	++	Medium run	↑	Medium	Medium
Universities: STEM supply	++	Long run	↓	Medium	Medium
Universities: incentives	+	Medium run	↑	Medium	Low
Mission-oriented policies	+	Medium run	Unknown	Low	Low
Patent box	Negative	N/A	↑	Medium	Medium
Intellectual property reform	Unknown	Medium run	Unknown	Medium	Low

While a patent-box regime may increase the incentive structure for filing patents, we are not certain that a patent box will be a net benefit to Canada's policy approach.

[18] The table represents Bloom, Van Reenan and Williams' best estimate of the evidence at the time of writing. It is worth noting that while a number of new studies have come out on patent-box regimes (particularly out of the UK and Europe), it is our judgment that it has not shifted the overall conclusion of the net benefit of the policy.

In the following sections, we expand on our reasoning to demonstrate why the costs of a proposed patent-box regime may outweigh the benefits and would be better allocated toward other reforms, including those through SR&ED as outlined above, as well as direct support and education for filing patents.

Patents already provide preferential revenue generation treatment

At its core, a patent is a compromise. Patents allow innovations to exist in the public domain, and for new technologies to be built on top of existing ones. In return for making the specifics of a particular innovation available to the public (and to provide sufficient financial incentives to create such innovation), the patent-owning firm is allowed to legally operate in a time-limited monopoly environment, where only the patent-holding firm can commercialize the technology.

For example, in the same work where we examined the impact of R&D on firm growth, we assessed the growth impact of a firm holding a patent. We demonstrated that firms experience positive employment and revenue benefits when they first receive a patent, and in the year in which they file subsequent patents. That is, the current patent regime provides significant financial incentives for companies, and any additional credits will likely operate at the margin, making the evaluation of its costs compared to benefits crucial.

To this effect, this analysis also shows the relationship between the total number of patents held by a company and employment or revenue growth. The analysis found that the value of additional patents does not appreciably impact a scale-up firm's (companies that grow their operation rapidly) employee growth or revenues, as observed under "Patent Volume" row in Table 3.

Table 3: Impact of patenting activity on firm employment and firm growth in Canada[19]

Firm growth	Patent characteristics	Impact on firm size
In employment	First time a firm files a patent (trigger)	**12.9%**
	Whenever a firm files a patent (switch)	**24.2%**
	Total number of patents held (volume)	0.1%
In revenue	First time a firm files a patent (Trigger)	**67.3%**
	Whenever a firm files a patent (switch)	**116%**
	Total number of patents held (Volume)	0.7%

This suggests that adding a patent-box regime would not change the fundamental benefit of holding a patent for Canadian firms. It may add marginal benefits to the firm and in some cases encourage retention within Canada, but as we explore below, may also create additional market disruptions.

Potential for worsening patent thickets, at the cost of other forms of IP

A modern issue in intellectual property strategy is the existence of patent thickets. A patent thicket exists when there is a complex and substantial body of existing patents that a new innovator has to investigate prior to the development of new technology to ensure that no infringement of prior patents takes place.[20] This is particularly salient in modern technology, where a single product may have thousands of components, creating potential overlaps with existing IP assets.

How does the proposed new patent-box regime impact patent thickets? By increasing the likelihood that a lower quality technology is patented. This happens as the increase in

[19] This table is a partial reproduction of Table 10 in Denney & Vu (2021). It is a result of a series of Ordinary Least Square regression on the universe of all companies with a valid Business Number in Canada between 2000 and 2016. Patent data was obtained from the PATSTAT database. Trigger refers to treating a company's first patenting event as a level shift. Switch refers to a dummy at the firm-year level, with a value of 1 in the year that a firm patents. Patent volume refers to the total number of patents held by a firm in a particular year. Employment refers to the average monthly PD7 forms submitted by employers in a given calendar year, and revenue refers to the total revenue recorded by the firm in a given calendar year. Bolded numbers are significant to the 0.1% level. Unbolded numbers were not significant at the 5% level. As both employment and revenue numbers are logged, it can be pseudo interpreted to represent % responses.

[20] Nancy Gallini and Aidan Hollis, "To Sell or Scale Up: Canada's Patent Strategy in a Knowledge Economy," *Institute for Research on Public Policy*, August 27, 2019, https://irpp.org/research-studies/to-sell-or-scale-up-canadas-patent-strategy-in-a-knowledge-economy/.

benefits afforded by patents distorts the incentives offered to entrepreneurs to commercialize their intellectual property. The decision to patent a particular innovation is strategic, since patenting is a costly process. A firm will only choose to patent a technology if the benefit outweighs the cost. If the cost exceeds the benefit, a particular firm may instead choose to keep the innovation a trade secret, and commercialize it directly (which has a cost in the risk of IP leakage where no recourse is available).

A patent box increases the benefit of patenting, and thus, more innovations may be patented that otherwise would not have. This in turn worsens patent thickets. In the medium run, this dynamic will increase the cost of patenting (as the costs to ensure against patent violation also increases). Which effects dominate in equilibrium depends on the degree to which the patent thicket worsens, with the resulting equilibrium not necessarily increasing the degree of patenting. There is empirical support for this claim, where a patent box seems to have driven an increase in"low quality patents"[21] (based on a quality index that combines multiple metrics, including if a patent is cited by many other patents).

This is harmful when such benefits distort incentives for innovators to develop and commercialize other forms of intellectual property. Particularly given the recent rise in prominence of intangible capital in Canada, such crowding out of other forms of IP may end up harming the Canadian innovation ecosystem.

Inclusion of unneeded patented feature in products to benefit from the tax regime

One criticism of the current SR&ED incentive concerns the strategic nature with which firms approach maximizing the benefit that they can derive from the tax credits. The emergence of "SR&ED consultants" has become synonymous with the inefficiency that exists within the program. This risk is also present in any patent-box regime. We do not see the mere fact of companies seeking to maximize their benefit from the program as a drawback, but the associated incentives for companies to strategically benefit from the patent box regime could be.

To benefit from preferential tax treatment, companies must be able to prove that a particular amount of revenue can be attributed to a patent. Consider an incumbent firm with an existing patent. The firm enjoys preferential revenue recognition, which they incorporate as a component in their primary product. The incumbent then considers investing in a potential product improvement. However, any product improvement that deviates from the inclusion of the patented component will mean that the company loses

[21] Anker Albert and Are Kjetså Hole, "The Effect from Taxes on the Location of Patents," *Masters Thesis - Norwegian School of Economics*, 2021, https://openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/2775409/masterthesis.pdf?sequence=1.

out on the preferential tax rate for revenue associated with selling that product. This decreases the incentive for the firm to invest adequately in specific types of innovation. Companies may also hesitate to license and incorporate patented components from downstream companies, for fear of losing out on the tax rate due to the "nexus" argument.

Patent boxes may disproportionately benefit larger multinationals

Governments should also consider the impact of a patent-box regime in achieving its objective to protect the domestic innovation economy. One criticism of the original patent-box regime was that it fostered negative tax competition amongst nations, that any short-term gains realized from companies locating their patents in a particular jurisdiction are offset by eventual responses by competitor jurisdictions, with the ultimate geographical distribution of patents remaining unchanged. This is a particular concern for Canadian companies as they often find higher economic value in commercializing their IP in a comparatively larger economy (e.g., the US), rather than domestically. Available evidence on patent boxes shows that they largely fail to protect domestic innovation, even in cases where a "modified nexus" approach has been adopted that remains the preferred approach to address the negative tax competition issue.[22]

Broadly, a "modified nexus" approach aims to limit tax avoidance strategies by large multinationals that have wide latitude in where to book the revenue that they record. Various jurisdictions have different levels of permissiveness regarding their modified nexus approach. In Canada, the province of Quebec recently shifted from a wider modified nexus approach, where a firm can benefit from patent box treatment if they have any SR&ED tax credit claim in the province, to a narrower definition of a modified nexus, where companies can only benefit from patent box treatment if they can demonstrate that the revenue is the direct result of SR&ED activities that happened in the province.

The latter likely creates undue administrative burden for smaller businesses and reduces patent box's uptake, while a more permissive approach disproportionately benefits larger multinationals with multiple research offices that already claim SR&ED tax credit. As such, even in a modified nexus approach that sought to prevent negative tax competition, the resulting equilibrium would likely benefit large multinationals, leaving the core concerns of a fair competitive environment for all firm sizes unresolved.

[22] A modified nexus approach to patent-box regimes is an idea where a company can only benefit from a patent-box-like tax credit in a locale if they also conduct R&D activity in the same locale.

Conclusion

For Canada to secure long-term prosperity, we need a business environment that encourages competition, supports broad investment in innovation, and ensures that the gains from innovation benefit all those who live in Canada.

To do so, the Government of Canada must rely on a wide array of policy instruments, both direct and indirect. In this review, we suggest changes to a key indirect innovation policy program: SR&ED. We specifically point towards the challenges that companies poised for growth face in commercializing technology, and how the current design of the tax incentive distorts needed investment in commercialization. As such, our recommendations target this particular margin, to ensure founders can focus on protecting and selling their innovations, and growing their businesses.

We also examined the proposed introduction of a patent-box regime, weighing it against available evidence. While the policy appears attractive, our review suggests that the program would likely only have a modest impact on retaining IP in Canada, and one that would come with a high cost. To be successful, IP strategy and policy must not focus on just one type of IP—in this case, patent—but all forms of IP, such as trade secrets (that dominate the digital economy). An abundance of research shows that the majority of innovation is not patented.[23] This means that we must look beyond tax policies in solving Canada's IP retention challenge: that includes ways to address trade imbalances, national and corporate security, patent trolling, and talent retention. Without a comprehensive strategy and policies to address the issue of IP, we risk creating an unfair business environment that allows a few to benefit, without a broader contribution to Canada's innovation ecosystem.

We believe that the government should prioritize refining SR&ED, an existing policy tool that has a clear evidence-based rationale. Ensuring this focus allows for higher potential impacts to be reached from changes to the SR&ED program, as opposed to spreading fiscal and policy resources across another sub-optimal policy tool.

[23] Roberto Fontana et al., "Reassessing Patent Propensity: Evidence from a Dataset of R&D Awards, 1977-2004," *Research Policy* 42, no. 10 (2013): 1780–92.