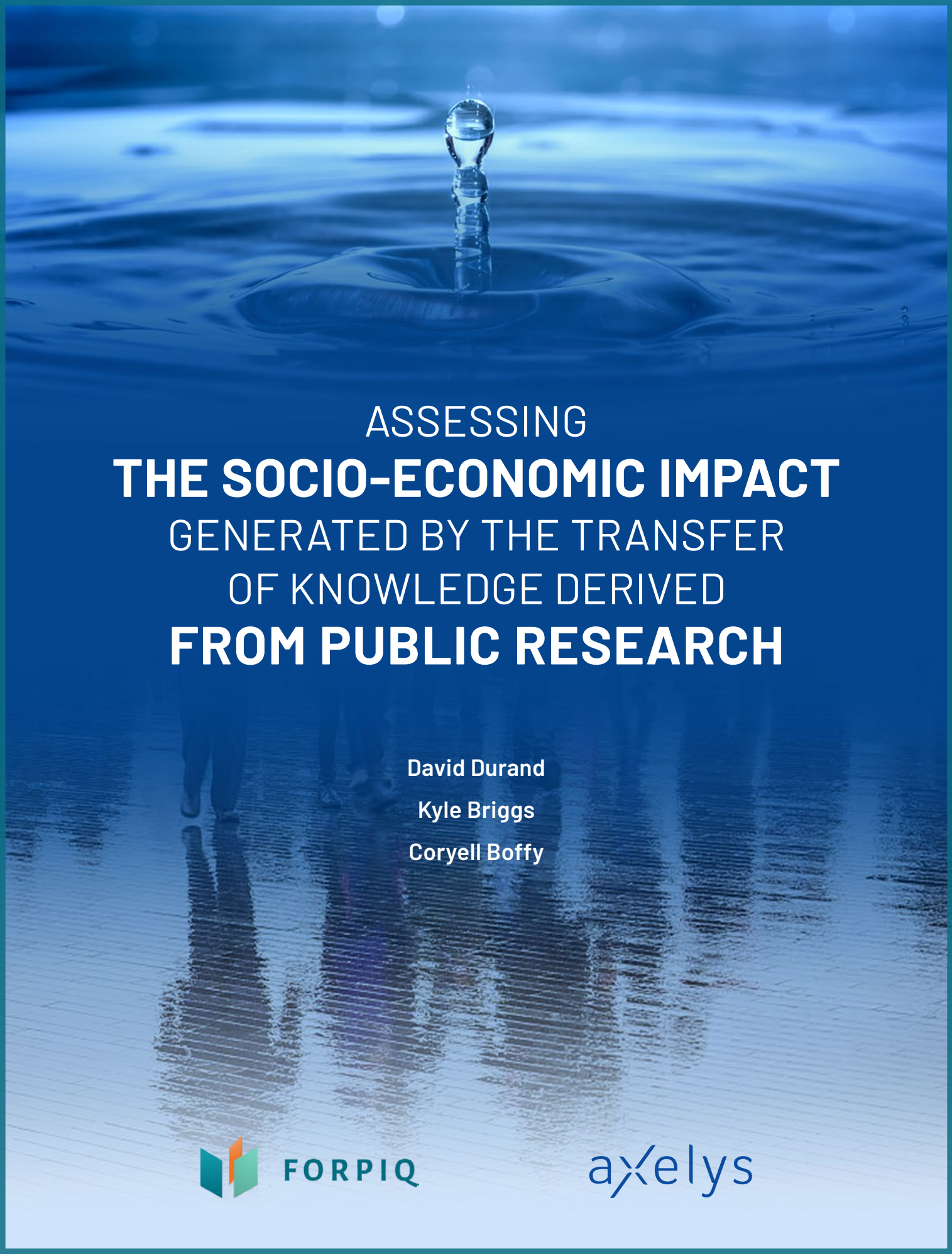

ASSESSING
THE SOCIO-ECONOMIC IMPACT
GENERATED BY THE TRANSFER OF KNOWLEDGE DERIVED
FROM PUBLIC RESEARCH

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ABOUT FORPIQ

Forum international de la propriété intellectuelle-Québec (FORPIQ) is Montreal, Quebec, Canada based not-for-profit organization founded in 2001 by several IP practitioners emanating from renowned law firms and organizations (i.e., IPIC, LES, AIPPI, FICPI). It offers programming and advocacy in both official languages to the business and innovation ecosystems across Canada as well as both the federal and provincial governments requiring additional IP education on various topics. Since July 2024, FORPIQ has become an observer member to the World Intellectual Property Organization (WIPO). For more information, please consult www.forpiq.com.

ABOUT AXELYS

Axelys is a non-profit organization responsible for developing and transferring innovations stemming from public research in Quebec. It contributes to the province's economic and social prosperity by accelerating the maturation and deployment of inventions, expertise, or high-potential processes to turn them into innovations that have the potential to improve the world in which we live. It also contributes to the creation of science-based companies stemming from public research. For more information, please visit www.axelys.ca.

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EXECUTIVE SUMMARY

Significant investments, benefits still difficult to measure

Canada invests heavily in public research. However, the resulting economic and societal benefits remain difficult to measure and are often underestimated. Intangible assets (IA) and intellectual property (IP) resulting from research are, however, strategic drivers for innovation, economic competitiveness, and the country's sovereignty.

Incomplete indicators

Traditional indicators, such as the number of patents or licensing revenues, capture only a limited portion of the value actually created. A large part of this value is instead manifested through:

- the creation of innovative companies,
- the generation of highly skilled jobs,
- the attraction of investment,
- the development of solutions addressing economic and societal challenges.

Tracking the trajectory of knowledge

To better assess the impact of research, it is necessary to track the trajectory of IAs and IP, from their creation in research settings to their use by businesses and end-users. This also involves establishing a more coherent framework for governance and data collection to better document the use and impacts of these assets.

Toward more harmonized governance

The document recommends strengthening Canada's approach to managing IA and IP arising from publicly funded research, notably by:

- clarifying funding agencies' expectations regarding governance and accountability;
- improving mechanisms for collecting and sharing data on the use of IA and IP;
- providing greater support for commercialization and transfer capabilities.

Better transforming research into value

Such an approach would help better document the value creation associated with public investments in research and strengthen Canada's ability to transform its scientific discoveries into sustainable economic and societal benefits.

MEASURING SOCIOECONOMIC VALUE CREATION THROUGH MOVEMENT OF RESEARCH KNOWLEDGE ASSETS

INTRODUCTION

Universities have historically been driven by three pillars: education, research, and contribution to society. In recent years, universities are under increasing pressure to include innovation as part of this third pillar, demonstrating the economic and social impact of their research. This is a challenge: despite being an explicit part of the mission, funding for universities has historically been focused almost entirely on education and research, with little incentive for innovation and research commercialization. This has been limiting tech transfer activities in Canadian universities, with various reports noting challenges getting intangible assets (IA), including intellectual property (IP) relating to research technologies out of the lab and into commercial development. At the same time, present geopolitical challenges highlight the connection between economic sovereignty, security, and prosperity with IA, particularly as it relates to securing benefit from emerging technology (Durand & Briggs, 2025a).

Many organizations have pointed to the apparent disconnect between the high level of investment Canada makes in research and the lack of economic activity it achieves from the resulting papers (Chernoff, 2019) and IA/IP portfolios. Issues that contribute to this include:

- poor retention of domestic control over IA/IP assets, with recent research pointing out that in some cases, a majority of IA/IP arising from publicly funded research finds its way abroad;
- Fragmented IA/IP governance; and
- Underinvestment in commercialization, especially in the pre-revenue phase of commercial operations involving research IA/IP.

While these issues have been the subject of much debate (Hinton et al., 2023; NCFA Canada, 2024), the fact that debate on the extent and impact of the issue can exist at all clearly highlights an urgent need for improved data collection practices with respect to long-term access to IP assets arising from publicly funded research, harmonized approaches to IA/IP governance, and risk-tolerant investment in pre-revenue commercialization attempts (Briggs et al., 2025a, 2025b; Durand & Briggs, 2025a).

This presents Canadian universities with an unprecedented challenge at a time when university budgets are already stretched thin by changes to international student caps.

Addressing these issues requires that we overcome several challenges.

In particular, while all involved acknowledge that IA/IP is critical, there is no consensus on how to assign value to its impact (both economic and societal). This makes it difficult both to assess impact and to develop IA/IP governance frameworks intended to improve it. In a geopolitical context in which IA/IP and emerging technologies are key contributors to economic security, and where the global community uses the Sustainable Development Goals as yardsticks by which to measure progress, not all value can be measured in dollars. In Canada, we have a problem that precedes even thinking about how to measure these sources of value; namely, that funding agencies do not provide guidance to universities on what data must be collected to do so. In other words, not only do we not have a coherent framework with which to measure the value of our investment in research, we do not even collect the data that would be needed to apply it were we to develop one.

The question of valuing and measuring impact is not a trivial challenge (Achim et al., 2024; Gashe et al., 2024; Rusu-Tanasă, 2015). In this work, we explore the question of how the economic and social impact of IP arising from publicly funded research can be assessed. We suggest that the impact of IA/IP should be considered to have many components beyond monetary return, and that any framework seeking to assess them must be sensitive to the long timescales involved in bringing research to market. Components of value obviously include sales revenues from products that incorporate elements of the IA/IP in question and the value of jobs created for the purpose of monetizing it, but should also include spillover

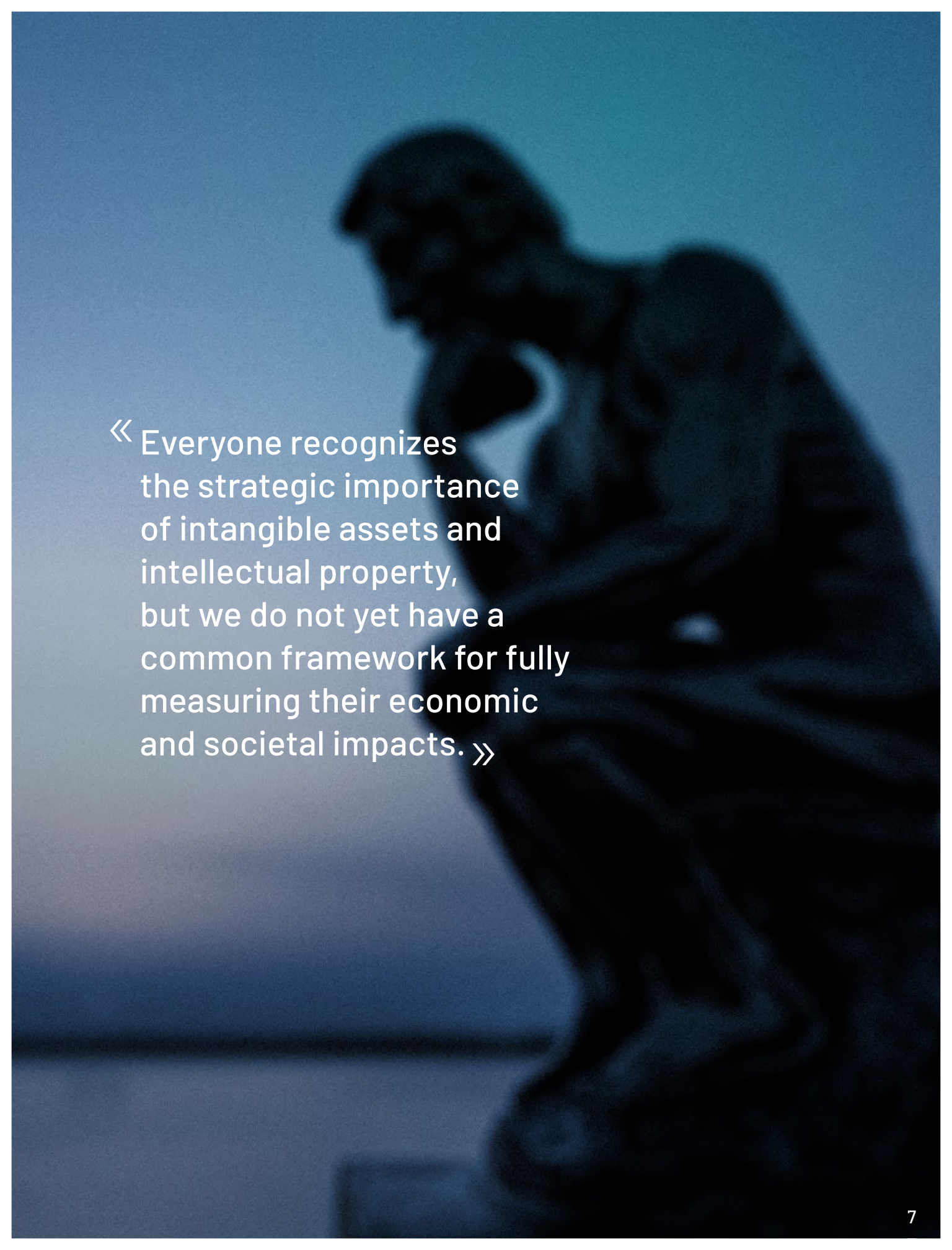
effects created by commercialization or societal adoption efforts. These can include:

- long-term strategic and security value of IA/IP assets that remain in domestic control;
- improved support for major governmental projects and missions;
- attraction of choice foreign direct investment;
- domestic development and retention of talent;
- contributions to social wellbeing and societal goals, including the SDGs; and
- pressure for incumbent firms to innovate that arises from increased competition.

While these are easily listed, it is much harder to both measure their impact, and to connect that impact to particular pieces of IA/IP. In this work, we suggest a means through which this is possible in the case where a new company - a startup - is formed specifically to monetize or otherwise operationalize IA/IP, a situation which arises commonly when a startup is created from a research institution to valorize the results of that research.

We review current inadequate means by which IA/IP is (or is not) assigned value, both in the context of the accounting processes of the individual firms that control it, and in the context of the economy at large. We argue that research IA/IP that has yet to be brought to markets or people represents a unique opportunity to properly estimate the economic impact of IA/IP, and that technology emerging from publicly funded research can be used as the basis for this improved impact assessment. To this end, we suggest a governance and data collection framework through which the economic impact of IA/IP in the Canadian (and indeed, any) economy can be evaluated.

The core of our argument revolves around the idea that it is the movement of IA/IP (from ideas in the lab to companies or nonprofits) and its transformation (from intellectual property assets like patents into seasoned entrepreneurs whose first opportunity was predicated on the existence of that IA/IP) that enables societal value to be created from the IA/IP arising from publicly funded research.


« Everyone recognizes
the strategic importance
of intangible assets and
intellectual property,
but we do not yet have a
common framework for fully
measuring their economic
and societal impacts. »

1

CURRENT METHODS FOR VALUING INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY

1.1 The defensive and strategic value of IA and IP

IP is a negative right, offering not a source of revenues in and of itself, but rather the ability to prevent another from generating revenue using the protected asset. For this reason, IA/IP is often acquired by firms for purposes other than revenue generation. For example, patents may be acquired not as the basis for new product lines, but as a means to assure a freedom to operate (FTO) in a particular domain or to provide ways to restrict that of others. Large firms in particular often acquire IA/IP as a deterrent to infringement claims, providing both a threat of mutually assured destruction and a collection of assets through which to settle infringement claims should they arise. Clearly this strategy has value, but because it is based on preventing a costly lawsuit rather than generating actual revenues, its value to the firm is largely hypothetical.

The issue of valuing IA/IP, including for purposes of collateralization, is further complicated by the fact that accounting standards do not recognize or capture intangible assets before they are part of a business combination (or purchase) (Durand, 2024; Maverick, 2025; WIPO, 2025).[1] Revenues generated from products or services that incorporate elements covered by IA/IP assets are not directly attributable to particular IA/IP assets (nor are fractions of revenue streams, in case of products that incorporate multiple intangible assets), since there exists no widely accepted or consistent standard that guides how such revenues should be attributed to specific IA/IP assets.

On the other hand, typical IA/IP licensing practices operate at odds with this restriction. Particularly where royalties are concerned, it is common practice for revenues arising from products that incorporate elements derived from a particular IA/IP asset to be used as the basis for royalty calculations, and fractional attribution of revenue streams to products that incorporate multiple IA/IP assets are commonplace in defining revenues for the purposes of royalty calculation. There is simply no standard for doing so.

Transactions between large technology firms involving IA/IP can provide some clue as to the average assessed value of IA/IP assets, but averages are not all that useful when considering an asset class for which the majority of the utility arises from a minority of assets in the long run, and this is a poor proxy for the potential for value creation in the long run. IA/IP that is acquired for the purpose of preventing the operation of competitors is stagnant, and unlikely to actively generate societal value in the creative sense: it will not be the basis for new products, nor will it provide an opportunity to train a new entrepreneur through an attempt to valorize it. This is the core of the reason that the American Bayh-Dole Act requires that publicly funded IA/IP be licensed to small companies where possible: given the costs involved, small companies are much more likely to be acquiring an IA/IP asset for the sake of building a new revenue stream than as a defensive asset.

1.2 Blind spots in the economic evaluation of IA and IP

Given this lack of standard, the narrow scope of revenue generation as the basis for value estimation, and the fact that transactions involving IA/IP among incumbent firms are often not connected to subsequent use of those IA/IP assets to create new product and services, licensing revenue or revenue arising from sales of IA/IP between firms are poor metrics through which to assess the value of intangible assets.

Given difficulties assigning value to IA/IP assets at the level of individual firms arising from the broad range of use cases and IA/IP strategies, we turn instead to macroeconomic considerations. Here, there exists a substantial body of research that attempts to assign value to IA/IP at the level of a domestic economy, not through assessment of the positive contribution of individual IA/IP assets but through the damage caused by IA/IP theft and destruction. A report by the Australian Institute of Criminology in 2025 showed an estimated $12.5B in economic damage arising from IP theft, representing approximately 0.6% of GDP, and "tens of billions of dollars" in prevented damage annually (Morgan & Voce, 2025). The impact of IP theft on the American economy is estimated at anywhere from $255B-$600B, or 1%-5% of GDP (Dennis C. Blair & Huntsman Jr., Jon M., 2017). While a useful

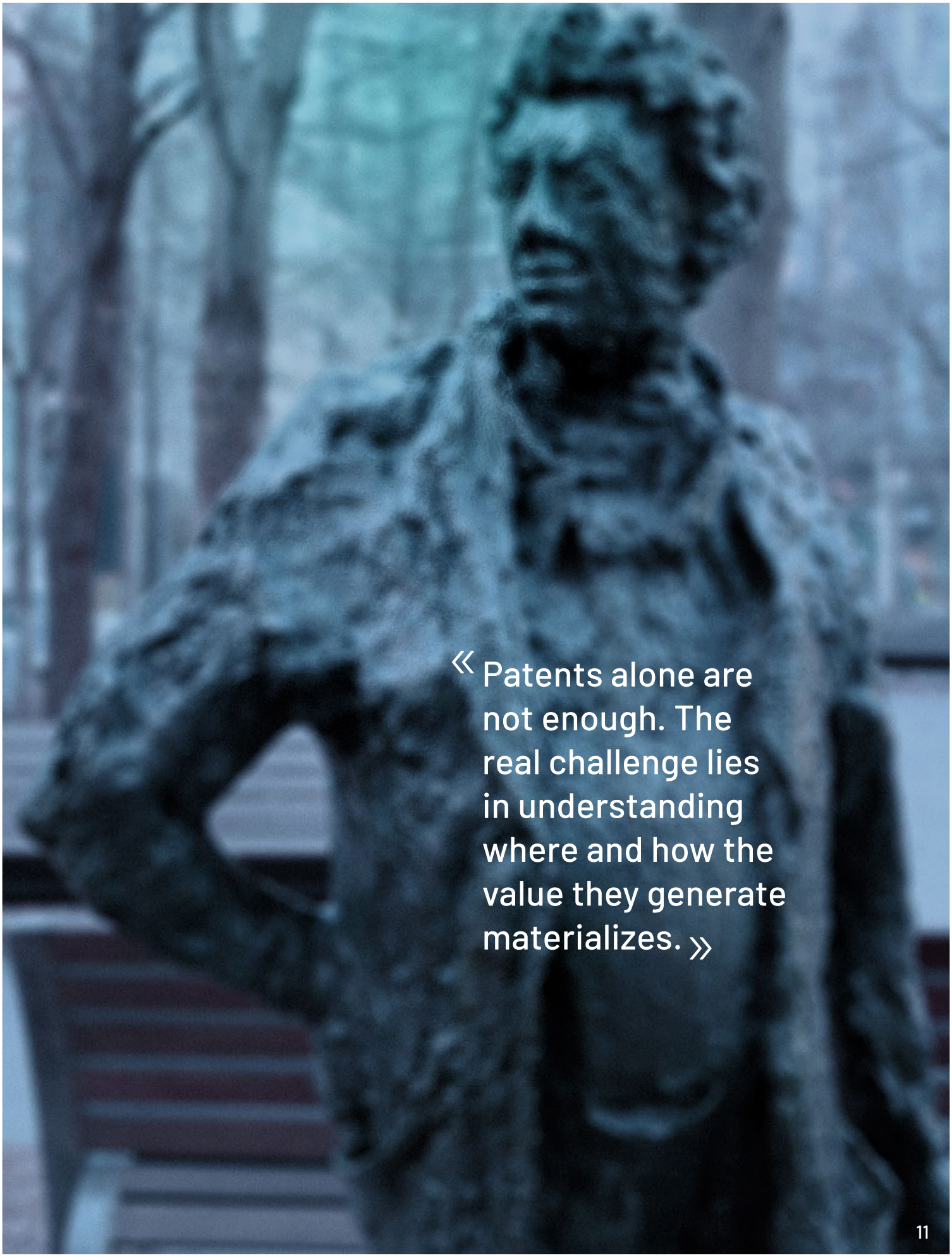
1. See also commentary here.

point of calibration to make clear that IA/IP is of economic importance and that its loss has a material impact on economic well being, these reports do not evaluate the positive contribution of IA/IP that is not destroyed, and they similarly do not assess the net economic impact of IA/IP over which control is transferred through legitimate means.

Canada has achieved consensus on the fact that the issue of loss of control of IA/IP exists and that it is significant, but to date, no assessment has argued convincingly exactly how significant or attempted to assign a dollar value to the extent of the problem. While we will not complete this task in this work, we will present a data collection framework that, if enacted, will allow this to be done in the future once sufficient data is collected.

While many authors have pointed to the number of patents arising from Canadian research that end up under foreign control, the actual dollar value of the impact remains vague. As noted above, the value of IA/IP is a highly asymmetric distribution in which a minority of intangible assets provide most of the value, which means that "number of patents" is a poor proxy for value. This focus on discussing patent numbers as opposed to attempting to track long-term value creation from those patents has resulted in a misplaced debate that has made little progress in recent years.

While Canadian universities reported just $170,000 in licensing revenues per $10,000,000 spent on research in 2023 (Novac & Miner, 2023), as discussed above, this represents only a fraction of the value of IA/IP and is only loosely connected to economic activity arising from the IA/IP in question. However, with a careful rethink of how universities and other publicly funded research institutions report on long-term use of and access to the IA/IP that arises from their research, these institutions can become powerful tools for properly estimating the economic impact of IA/IP.



« Patents alone are not enough. The real challenge lies in understanding where and how the value they generate materializes. »

2

A FRAMEWORK FOR ESTIMATING THE ECONOMIC VALUE OF INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY

IA/IP arising from publicly funded research that is licensed to startups for commercialization or implementation presents a unique opportunity to better estimate the value of individual IA/IP assets, provided proper data collection practices are mandated by funding agencies and enforced as a condition of future funding. There are several reasons that research-based startups are uniquely positioned to be the basis for this value assessment.

2.1 Linking research to impact: Startups at the heart of evaluation

In cases where the firm in question is a startup created specifically to exploit an IA/IP asset, which is typical of university spinout companies, the entirety of their economic activity is attributable to the existence of the IA/IP. This economic activity is not limited to revenue generation, but includes license fees and taxes paid by the startup and its employees, export revenues, and spill-over effects such talent retention, increased competition, and contributions to societal goals or missions.

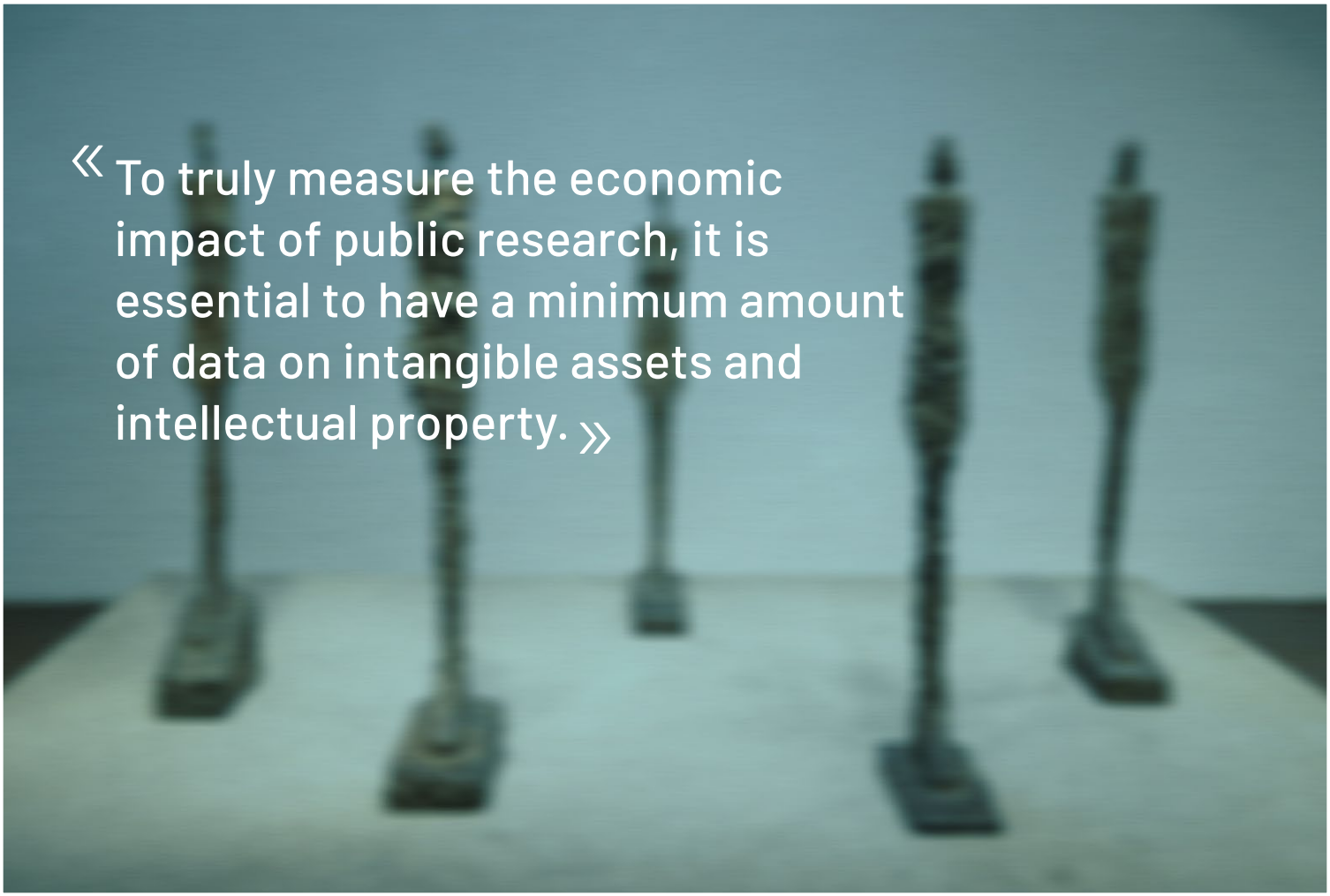
Startups usually only license or acquire IA/IP that they intend to use as the basis for creating a new product or service, but the impact goes much farther. The act of building a startup, regardless of the outcome of the attempt, is a highly valuable opportunity for training and retaining experienced entrepreneurs, a scarce resource in Canada.

There is precedent for this approach. The UK has their Spinout Registry, managed by the Policy Evidence Unit for University Commercialization & Innovation (UCI) that tracks performance and progress of spinout companies in order to report on their economic impact. Registration of spinouts is mandatory, as is subsequent data collection. A report released in 2020 on the impact of the UK Innovation & Science Seed Fund (UKI2S) on an earlier cohort of spinout companies found that spinouts had a significant impact on job creation, noting that "[t]he jobs created are highly skilled, high-wage jobs with an average annual salary of £47,000; the UKI2S cost per additional job created was under £40,000" and that the economic value of spinout activity was extraordinarily high: "for every £1 of investment from UKI2S there has been a return of £7 of GVA" (UKI2S, 2020).

Considered through the lens of companies that are created specifically on the basis of a single IA/IP portfolio, assessing the economic impact of IP becomes much simpler, at least for the subset of IA/IP that underlies the existence of firms created to monetize it. Conversely, this strategy of attributing all economic value created by such a startup to the IA/IP portfolio provides a direct means by which to estimate the value destroyed by the loss of domestic control over IA/IP assets, and to assign an opportunity cost to IA/IP assets that are licensed or licensed or sold to large firms but either not subsequently monetized or monetized as part of a larger portfolio that makes direct attribution of economic activity difficult. In other words, in addition to being the key to bringing disruptive, research-based innovations to market, purpose-specific startups arising from tech transfer from Canadian research institutions provide the basis for improving how we assess the economic impact of IA/IP, and a way to connect research inputs to research outputs.

2.2 Making the value of IA and IP transfer measurable

All that is required to enable an econometric assessment of the value of the movement of IA/IP is to mandate sufficient data reporting to allow tax authorities data from Canadian licensees of research IA/IP to be cross-referenced against specific IA/IP assets arising from, for example, publicly funded research. This also has the effect of decoupling our proposed economic impact assessment from any related accounting standards at the level of individual firms. In the conclusion to this article, we suggest specific metrics that should be collected.


« To truly measure the economic impact of public research, it is essential to have a minimum amount of data on intangible assets and intellectual property. »

3

ASSESSING THE SOCIETAL IMPACT OF INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY

« *Not all impacts are measured in dollars* » (Alvino et coll., 2020).

3.1 Existing frameworks for assessing societal impact: findings and limitations

While this statement is valid, it is difficult to find an impact framework that encompasses all types of impacts, economic and non-economic, at the different scales previously mentioned and with common indicators. Many players have tackled the challenge, but through different lenses.[2] A robust framework to assess the societal impact of research, and related IA/IP assets, still needs to be finetuned for the Canadian context.

On the international front, countries have developed and currently use the 17 Sustainable Development Goals (SDGs), its 169 targets and 234 unique indicators as a way to measure national and international progress to complement traditional GDP-based measures and support assessment of value creation beyond GDP. Many research funding agencies, including Canada's Tri-Councils and provincial funders such as the FRQ in Quebec, operate at national and subnational levels and have implemented some type of SDG evaluation in their activities. This methodology provides research funding agencies the ability to roughly evaluate the impact of their funded research while also helping Canada reach our SDG goals.

University ranking organizations such as the Times Higher Education also made it a central framework for their global university impact rankings. Universities that rely on domestic and international student enrollment and research grants for funding pay close attention to these rankings, and some have started to use the SDGs to monitor research portfolios and societal impacts, mostly concentrating on their research and education pillars, but in general, the contribution of research-based innovation and arising IA/IP assets to SDGs is not systematically collected in Canada. One exception might be Axelys: the Quebec-wide research valorization agency has systematically been collecting SDG data on valorization projects since 2024. They use this framework to qualify the potential impact areas of their portfolio, while recognizing the limits of using the UN-backed framework as the only societal impact framework for project or IA/IP assets. While it provides a general sense of the potential impacts of a portfolio, the international/national level indicators rarely provide relevant project-level indicators. SDGs are mostly relevant at the macro level.

3.2 The results-based approach

Outcomes-based frameworks may provide a better evaluation at the project or sum-of-projects level, acknowledging that research commercialization is high risk and that high failure rates among individual projects are acceptable as long as aggregate impact is positive. For example, the UK developed the Research Excellence Framework (REF),[3] that aims to provide indication of research excellence, ensure accountability for public investment, provide evidence of the benefits of research investments, and serve as a basis for block-grant capital allocation. Universities must periodically (every 5 years) submit impact case studies, mixing quantitative and qualitative approaches, to obtain part of their university funding. At the aggregated level, the UK has now identified impact pathways that stem from research.[4] In this framework, impacts are measured at the use case level and can be aggregated. Most importantly, this sends a clear signal to research institutions: they must measure and demonstrate societal impact, at the risk of losing some funding. Impact as a responsibility of research funding is incentivized, even if measured in a heterogeneous manner.

2. See for example:
- SDGs (worldwide initiative), here;
- Common Approach to Impact Measurement, here;
- Social Value Canada, here; and
- International Sustainability Standards Board, here.

3. The REF website can be found here.
4. See interesting results here.

3.3 The cost-benefit approach

For a more homogenous way of measuring societal impact, the case of Portugal Social Innovation is interesting.[5] This is a government initiative aimed at promoting social innovation and stimulating the social investment market in Portugal. While social innovation has been at the core of their mandate, they have mostly done so by trying to translate social innovation projects into financial value. Building on the realization that it was impractical to try to measure and aggregate different types of societal impact measures from a diverse range of projects, all with different outcomes and benefits, they decided to focus on social innovation projects that could be translated into additional economic benefits or cost-savings measures. While this approach found a certain level of success in Portugal, mostly because the government was trying to use the social economy as an alternative to mainstream social services and develop a social investment market using tailored financial instruments (eg: social bonds), the approach also had its drawbacks. High administrative complexity, regional disparities in resource allocation in favor of more developed areas in comparison to underdeveloped ones, time delays, etc. were associated with the financialization of societal impact.

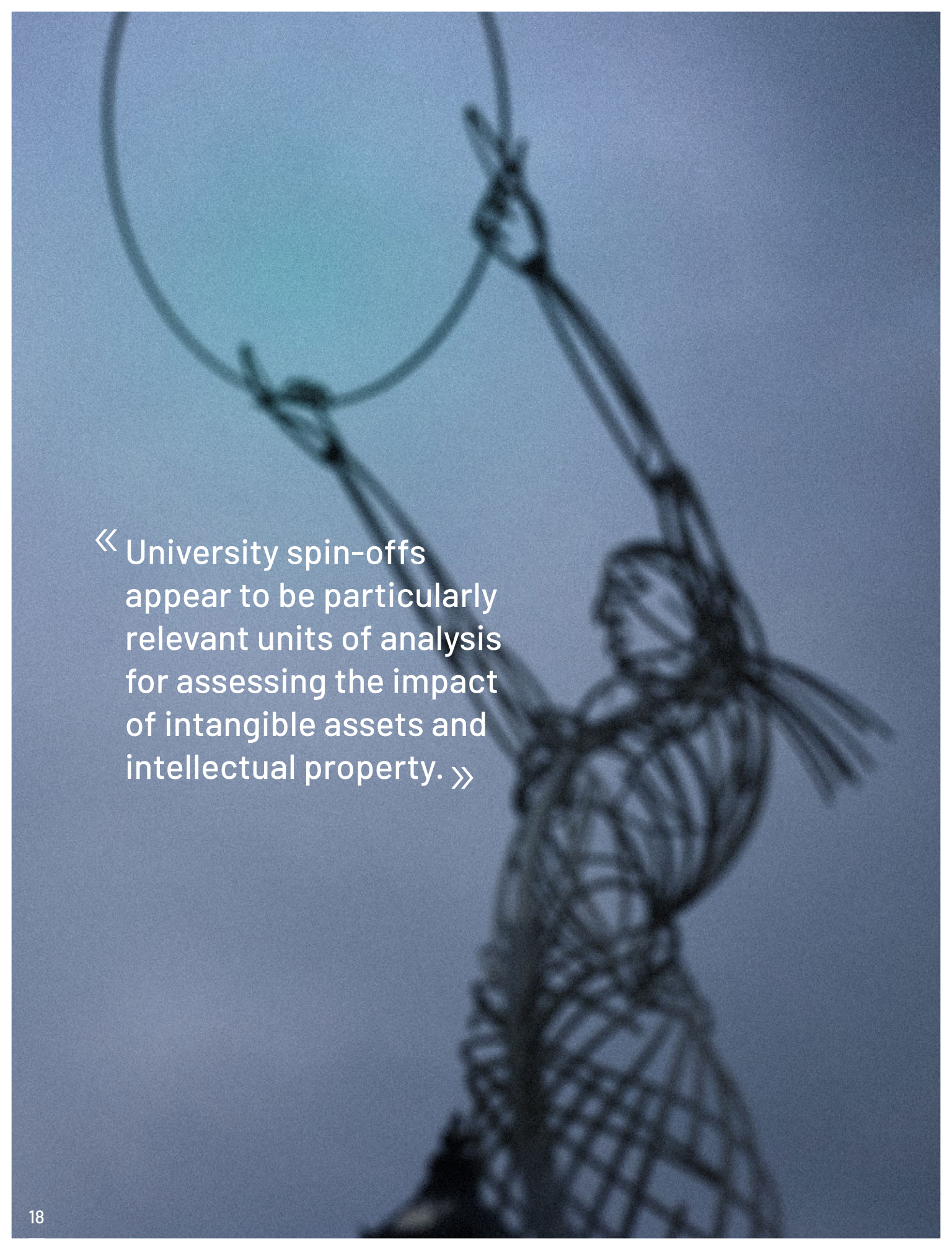
3.4 Approaches based on materiality

If we look at the financial sector, one of the ways institutions consider societal impacts is through risk management or the ESG (Environmental, Social, and Governance) lens. According to these frameworks, societal impact is defined by "materiality". For proponents of "single materiality" (those that prefer to look at how society and the environment may affect the financial performance of an organization), the societal value of IA/IP assets comes from a lower risk on the firm's bottom line. For supporters of "double materiality" (those that prefer to look both at single materiality + how company operations impact society and the environment), value of IP assets become strategic assets that can affect financial and non-financial strategic objectives. These standards, while pertinent to project-level and institutional level stakeholders, are difficult to understand and implement, especially for smaller operations. Adequate training and resources would be required to bring the ecosystem to the necessary competence level.

As we've seen above, there are multiple ways to evaluate the societal impacts of research, of IA/IP assets and more generally of inputs' contribution to outputs and benefits. Among the multiplicity of approaches, an interesting idea developed in Canada is the Common Approach to Impact Measurement.[6] The Common Approach "helps to create interoperability of impact measurement by knitting together existing standards, tools, methods and data". As such, it could provide a good framework to evaluate societal impacts of IA/IP while remaining flexible enough to include other frameworks that work for different actors.

Regardless of the specific framework used, the lesson detailed above applies: when a startup is created specifically to create value from an IA/IP asset, it is possible to attribute downstream impact of that entity to the existence of the IA/IP asset in question. University spinouts, therefore, are uniquely suited to be the basis for valuation of the impact of IA/IP.

5. See here.
6. See here.



« University spin-offs appear to be particularly relevant units of analysis for assessing the impact of intangible assets and intellectual property. »

4

GOVERNANCE AND DATA COLLECTION

4.1 A lack of data on IA and IP licensing activity

Currently, while it is possible to track ownership of patents that are assigned to new owners through databases like PatSnap, most IA/IP transactions occur in the form of licenses that are typically under non-disclosure agreement (NDA) and are not typically made public. The standard practice employed by most Canadian post-secondary institutions of licensing under an NDA when licensing to industry has been the basis for pushback against provision of data to the federal government on the ground that doing so would violate NDA obligations. This problem was made clear by a recent attempt by Statistics Canada to conduct a survey on licensing activity from post-secondary research IP. Many universities were unable or unwilling to provide the required information. The report produced by StatsCan was published and available for only a few weeks before being withdrawn following criticism based on the incompleteness of the data that went into it. The fact that effectively all resulting economic activity will take place behind an NDA, and that StatsCan is unable to collect actionable data as a result, makes it impossible to estimate the economic activity resulting from these licenses.

This highlights an urgent need to track not just licensing activity, but the long-term results of those licenses, backed by a mandate to provide this data that makes future funding conditional on compliance.

4.2 Strengthen data collection on the use of IA and IP

To create conditions in which we can use research startup activity as the foundation on which to assign economic and societal value to IA/IP assets, we must first update the data collected by research funding agencies on use of IA/IP arising from the research they fund. Adopting the above approach requires that we mandate collection and reporting of licensing and assignment activity; that we collect, aggregate, and report data on the companies that license the IA/IP; and that we track the career trajectories of the people involved. In other words, it requires that we track both the movement of IA/IP, and the transformation it undergoes in the course of that movement, as IA/IP is turned from ideas, into papers and patents, and finally into products, services, and entrepreneurial talent.

5

RECOMMENDATIONS

5.1 Toward a harmonized approach

There is no single solution to the challenges above. Canadian innovation funding and data collection practices are fragmented and do not work together effectively. To address these challenges, we must first harmonize the approach to both licensing and data collection. While we do not recommend directly importing policy that works elsewhere (Briggs et al., 2025a; Durand & Briggs, 2025b), an approach inspired by the success of the American Bayh-Dole Act should be adapted to the Canadian context.

5.2 Clarify expectations regarding the governance of IA and IP

Specifically, we recommend that public funding agencies develop cohesive guidelines on governance of the IA/IP arising from the research they fund (De Baere & Maine, 2017), guidelines that should include a mandate to collect and report on access to IA/IP, among other indicators.

5.3 Beyond data collection: Structuring accountability

However, it is clear that asking for data is not enough. It must be mandated, or at the very least made a condition of future funding. This in turn requires we ensure that license agreements and NDAs are compatible with that downstream reporting requirement, for example by requiring explicit carve-out for disclosure of required data, or by making it a legal requirement under funding agreements that in turn causes the required data to fall under the standard carve-out for legally required disclosures that all such agreements should have as a matter of course. These required disclosures should be sufficient to make research IA/IP assets traceable at the level of individual patent families or other licensed IA/IP portfolios over the long term, giving funding agencies visibility into what entities, domestic and foreign, have access to these IA/IP assets; any revenue streams from products, services, or sublicenses in which they are incorporated; and the details of the sale or subsequent sub-licensing. Appendix A provides a starting point for a complete set of metrics needed to enable estimation of the economic value created by research IA/IP, drawing on previous work by the authors (Briggs & Durand, 2025).

Precedent exists elsewhere for this data collection. The Bayh-Dole Act in the United States, for example, has strict reporting requirements for the IA/IP licensed by academic institutions to the private sector.[7] In the UK, the Spinout Register[8] provides a centralized platform for reporting on commercial activity arising from university spinouts. Canada should learn from these examples and enact similar frameworks for required data collection, adapted to the Canadian context.

Such data could in principle be cross-referenced with tax data held by Canada revenue agency[9] to create aggregated and anonymized but highly valuable reports on economic and societal activity arising from specific IA/IP assets.

5.4 Harmonize, standardize, and fund the governance of IA and IP

While harmonized IA/IP governance and an associated data sharing framework would be tremendously valuable, they are only feasible with appropriate funding. Canadian tech and knowledge transfer offices (TTOs/KTOs) are underfunded relative to the size of the IA/IP portfolios they manage, and only through appropriate resourcing will the above recommendations be actionable. Major inefficiencies exist that can be addressed through harmonized IP governance and policies, wider-use of express licenses (SAIL[10] and others), and other measures that would reduce time spent negotiating licenses in favor of time spent collecting performance data. These licenses also provide a platform through which to deliver the suggested data collection mandate and are a vehicle through which to ensure that licensing activity results in demonstrable "benefit to Canada" (Matthews & Rice, 2022).[11]

7. See, for example, requirements under the US Department of Agriculture, here, the iEdison system for harmonized Bayh-Dole reporting, and the reporting requirements of the SBIR program, here.
8. See details of the Spinout Register here.
9. For example, through data existing sharing agreements. Additional details are available here.
10. See the SAIL website, here.
11. We note that this is a nebulously defined concept, with various agencies building in a variety of mechanisms to require Canadian recipients of government funding (see here, for example) and to penalize or block loss of control over companies and IP.

5.5 A Call to Action

With a cohesive governance and data collection framework in place, as outlined in our first four recommendations, universities and other publicly-funded research institutions become more powerful actors to measure the societal and economic impact of IA/IP and demonstrate the value creation for Canada. But more is required. Government policy-makers should invest in cross-cutting research that can demonstrate this impact at an aggregate level; and use it to guide and influence future social, environmental, cultural and economic policies and programs for Canada.

CONCLUSION

Once a cohesive data collection framework is in place, backed by harmonized IA/IP policy guidance across research funding agencies, Canada can begin the process of collecting the data that will allow it to assess the value of IA/IP assets. Regardless of how it is done, however, we must recognize that the value of IA/IP arises from its movement and transformation, and that there is no point to investing in creation of IA/IP if we do not invest proportionally in transforming it into the products, services, processes, and organizations that generate economic and societal value, while developing highly skilled people that will contribute to economic and societal wellbeing.

APPENDIX A

Metrics to collect to enable assessment of the impact of research IP (Briggs & Durand, 2025).

To collect at time of licence execution:

1. Technology sector
2. Licensee country of control
3. Time between negotiation initiation and licence execution
4. Any fees, royalties, equity, or convertible debt considerations
5. Any valuation caps, discounts, or anti-dilution provisions present in the license
6. Whether there exists a pre-negotiated path to IP ownership transfer
7. Is the company a spinout or an external startup?
8. Is the PI of the lab in which the research was conducted involved with the licensee?
9. Are any students or postdocs from the lab in which the research was conducted involved with the licensee?

To collect at the moment ownership of the IP is transferred, if applicable:

1. Time delay between licensing and ownership transfer
2. Total dilutive capital raised to date, if applicable

To collect quarterly (or annually) for 10 years or until no longer relevant:

1. List of all entities with access to any of the licensed IP for commercial use (e.g. through sublicensing),
    a. Country of control of the parent company of same
2. Total revenues from products and services that incorporate the IP, and source (country)
3. Revenues and source (country) arising from sublicensing of the Technology
4. Any new financing into the company, including
    a. Close date,
    b. Type (debt, equity, crowdfunding, etc),
    c. Valuation, if applicable,
    d. Post-money cap table,
    e. Number of employees
5. A list of new jurisdictions have IP relating to the Technology been filed
6. A list of jurisdictions in which have IP protections been lost, and why?
7. Amount of new spend on IP protection-related costs

To collect on Liquidity Event (M&A, IPO, etc.)

1. Type of liquidity event (IPO, acquisition, closure, etc.)
2. Country of control over the Technology following the event
3. In the event of the acquisition, did the acquirer agree to continued data collection?

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