

SEIZING THE OPPORTUNITY: BUILDING THE TORONTO REGION INTO A GLOBAL FINTECH LEADER



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Executive Summary

Across the globe, the financial services industry is being transformed. Established financial companies are using new and emerging technologies to find more effective ways of doing business and more efficient ways of serving customers. Tech-driven start-ups are striving to establish themselves in an industry traditionally characterized by larger institutions. Consumers are seeking faster, more convenient and transparent services.

Much of this transformation and upheaval is the result of the growth of the fintech sector, which is leveraging new technology (such as artificial intelligence and big data) in an effort to design and deliver the financial services solutions of the future.

This report analyzes the fintech ecosystem that continues to develop within the Toronto–Kitchener–Waterloo corridor (what we will refer to as “the Toronto region,” or simply “the corridor”). It establishes a benchmark framework to compare this ecosystem with others around the world.

The report also explores emerging trends in the sector and the impact of the existing regulatory and policy environment—and makes recommendations for how the Toronto region can establish itself as a global leader in fintech.

FINANCIAL SERVICES IN THE TORONTO REGION



#2 Largest Financial Center
in North America



250,000+ workers

TECHNOLOGY INNOVATION IN THE TORONTO REGION



#2 Tech Sector
in North America



\$14B+ Equity Value

Fintech Ecosystem Market Scan

Over the past several years, the Toronto region fintech ecosystem has continued to grow. Interest in the sector remains high among entrepreneurs, investors, established financial services companies and governments.

Broadly speaking, the ecosystem boasts a number of strengths, including:

- a strong core of financial institutions;
- top-tier research facilities at local academic institutions;
- a strong talent base; and
- relatively low business operating costs compared to other global fintech ecosystems.

Globally, however, the Toronto region ranks in the middle of the pack in fintech ecosystems, alongside Hong Kong and Berlin, although the pack is heavily skewed towards a few large centres. It lacks the maturity and experience of Silicon Valley, the highly attractive investment climate of New York and the established government support of the United Kingdom and Singapore.

The Toronto region ecosystem risks falling further behind as other established and emerging fintech hubs move to seize a global leadership position in this important industry. This could undermine the competitive strength of Canada's financial services industry as a whole.

TORONTO REGION FINTECH SPACE



140+ FINTECHS



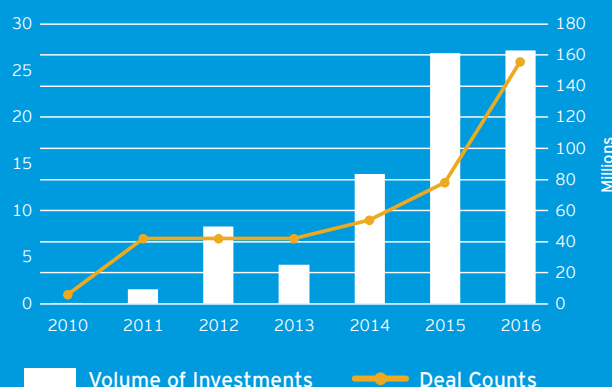
10 VENTURE CAPITAL FIRMS



10 INCUBATORS/ACCELERATORS

DEALS & INVESTMENTS

Pre-IPO Fintech Equity Investments in the Toronto Region



Fintech investments have been on an upward trend and the funding climate is improving

Observations from leading and emerging fintech hubs

In our global scan of leading and emerging fintech hubs, we observed certain characteristics that contribute to a hub's rapid development and its ability to establish a competitive advantage:

- **Openness:** Governments of leading and emerging fintech hubs are strategically creating a collaborative, supportive and secure environment that incentivizes innovation from fintechs and financial institutions alike. Some have a central fintech function—a “champion” for the sector—or a formal panel to advise the government on fintech matters.
- **Proximity:** In leading fintech hubs, strong collaboration among ecosystem participants—fintechs, venture capitalists, researchers and financial institutions—is apparent. This tight interaction leads to a more entrenched and productive culture of innovation and measured risk-taking.
- **Awareness:** In the fintech world, a hub's global reputation and its outreach to other hubs (often to establish partnerships) can help attract both business and investment and lead to the successful export of services.

Technology Trends

Technology is the foundation of fintech. The commercialization of new or improved technology is what drives innovation in the financial services sector and the fintech ecosystem. The Toronto region benefits from the presence of top-tier research facilities at highly regarded academic institutions.

Currently, the Toronto region ecosystem demonstrates particular strengths in web & mobile development and big data & analytics. These two capabilities have been fundamental to the success of companies in the Toronto region to date. Looking forward, the region has recently attracted strategic investments in other emerging technologies: blockchain, cybersecurity, quantum computing and

artificial intelligence (AI). Our interviews with the region's fintech stakeholder groups found a growing optimism regarding AI in particular. There is a belief that the Toronto region fintech ecosystem has the potential to achieve a comparative global advantage in the development and deployment of AI to the financial services sector.

Regulatory and Policy Environment

Here in Canada, the current regulatory framework in financial services, as it applies to technology, is widely viewed by fintechs as antiquated, cumbersome and a significant impediment to innovation and growth. Navigating the regulatory maze can be expensive and time consuming for fintech start-ups. Many fintech start-ups have difficulty even in determining which legislation applies to their activities and which regulators have jurisdiction over them. Traditional financial institutions may also regard the existing regulatory framework as unduly restricting technological innovation.

A flexible and responsive regulatory environment is essential for fintechs to take off and thrive and for traditional financial institutions to test innovative technologies. A balance therefore needs to be found that preserves the traditional role of regulators (to protect consumers, investors, the capital markets and the broader financial system) while creating a more modern and responsive framework that encourages innovation among start-ups and traditional players. Government policies should also reflect that balance while not inadvertently creating barriers to attracting and retaining talent.

For instance, some fintech centres around the world have adopted a “regulatory sandbox”—in which an emerging fintech company can test its business model for a limited time without having to run the full gauntlet of regulations or a financial services company can try out a new technology without being bound by the usual regulatory restrictions. This approach may encourage innovation and collaborative partnerships and allow fintechs and traditional players to get new ideas to market more quickly and at a lower cost.

Recommendations

The Toronto region fintech ecosystem faces a range of challenges. There is a pressing need to develop a clear, consistently implemented, policy-driven Canadian fintech strategy that focuses on fostering innovation among all participants in the ecosystem.

This report makes the following recommendations related to openness, proximity and awareness to help close the gap on the global leaders in fintech:

Openness:

1. Governments need to develop and articulate a clear fintech strategy to align and prioritize efforts to drive the collective growth of the fintech ecosystem. Elements of this strategy should include identifying specific priority areas (e.g. by financial services offerings, technology niches and talent), aligning public sector support to incentivize innovation, and establishing an industry-led panel to advise on all matters related to fintech.
2. Governments also need to modernize regulatory frameworks to reflect changing business models, technologies and priorities. Other countries are taking aggressive steps to modernize regulations and drive evolution and innovation in their financial services industries. In Canada, the goal of both governments and sector participants must be to create the kind of long-term conditions that benefit all participants in the ecosystem, from fintechs to financial institutions, venture capitalists and researchers.
3. The fintech sector and policymakers must create the opportunities and conditions that will attract and retain top talent with “high-demand” skills in emerging technologies (e.g. blockchain, big data & analytics and artificial intelligence) or talent with experience in quickly growing and scaling fintech companies. The region must do this to drive innovation and remain competitive on the global stage.

Proximity:

4. Closer and more frequent engagement and collaboration among fintech start-ups and well-established financial institutions and venture capital firms are needed. Our global survey found a strong connection between growth and innovation, on the one hand, and a spirit of collaboration on the other. Cooperation works better than conflict.
5. The Toronto region needs access to sophisticated funding at the seed-level and local later-stage (series B and beyond) growth funding. Sophisticated seed-level funding can help guide founders through the early stages of development by refining their product and capturing a foothold in the market. There is also a need for local venture capital firms that provide later-stage funding and help fintech founders to rapidly grow and scale their companies globally whilst keeping their headquarters in the Toronto region.
6. Governments, universities and businesses alike need to do more to encourage the commercialization of research. The real-world application of groundbreaking research is what launches businesses, creates jobs and grows our economy.

Awareness:

7. The Toronto region must dedicate efforts to raise its profile on the global stage, as well as to establish effective cooperation agreements with other global hubs to support the export of the region's start-ups and to attract foreign start-ups into the region.

In financial services, the status quo will not prevail. New and more powerful technologies will inevitably bring change and disruption. Fintech is on track to become an influential and ultimately dominant force in financial services—to the extent of effectively shaping the sector going forward.

It will best serve our region, our province and our country if our own local fintech sector, in partnership with existing financial services companies, is at the forefront of this transformation.



Introduction

Since 2010, more than US\$50 billion has been invested into almost 2,500 fintech start-ups globally.¹ These companies apply innovative technologies to deliver new or improved products and services to consumers and financial institutions. While mature in some financial services offerings and increasingly mainstream in others, fintech start-ups are redefining the ways in which we store, save, borrow, invest, move, spend and protect money.²

In the Canadian context, the Toronto–Kitchener–Waterloo corridor (which will be referred to as “the Toronto region,” or simply, “the corridor,” in this report) is considered a top innovation hub. The rise and global adoption of financial technologies present an opportunity for the corridor to further its innovation and growth, in both the fintech ecosystem and in the overall financial services sector.

The purpose of this report is to assess the current state of the Toronto region fintech ecosystem—including identifying key ecosystem participants and influencers, and the ecosystem’s key strengths

and frictions—and provide recommendations to improve its competitiveness on a global scale.

Methodology

The report consists of five main sections: (1) a market scan of the Toronto region fintech ecosystem, (2) an overview of the technology trends that are enabling fintech start-ups within the region, (3) an analysis of the regulatory and policy environment in Canada and in the corridor, from the perspectives of the region’s fintech and financial institution ecosystems, (4) a global ranking of fintech hubs, and (5) a summary of key findings and recommendations on positioning the Toronto region as a globally competitive fintech hub.

The analysis, findings and recommendations in this report are based on both primary and secondary research, as well as Accenture’s proprietary FinTech Hub Benchmarking Model. Our primary research consists of a series of interviews and survey questionnaires with fintech participants and

influencers in the corridor. Over the course of our research, we conducted 39 interviews with fintech founders (7) and management personnel (4), executives at financial institutions (7), incubator or accelerator founders (3) or management personnel (1), executives at venture capital firms (4), representatives from financial services related public agencies or regulatory bodies (6), professors at local academic institutions (2) and a technology boot camp founder (1), and other satellite participants (4), including industry associations, nonprofit organizations or professional service firms. Additionally, we received three written statements from financial services public agencies or regulatory bodies. Moreover, we leveraged survey questionnaires to a wider audience to facilitate findings from the corridor's fintech founders.

For our secondary research, we analyzed data from both publicly available and proprietary

sources—such as CrunchBase, CB Insights and Accenture's fintech database—to identify overall ecosystem trends, such as the historical funding climate and year-over-year fintech growth rate. Findings in our secondary research helped to provide additional context on the current state of the Toronto region fintech ecosystem and complemented our primary research.

Throughout this report, we define fintech start-ups as business entities that have the following characteristics: (a) private companies created after the year 2000 and in operation at the time of this report and (b) their main business models leverage technology to offer financial products and/or services that complement or compete with products and/or services provided by financial institutions in the market today (e.g. banks, trust companies and insurance firms). Additionally, all monetary values in this report are quoted in USD, unless otherwise stated.



Part 1. Toronto Region Fintech Ecosystem Market Scan

In this section of the report, we highlight the findings of our Toronto region fintech ecosystem market scan, including an overview of key participants (e.g. fintech start-ups, venture capital firms, financial institutions and incubators or accelerators) and influencers (e.g. government agencies and financial-services-related regulatory bodies, universities and other academic institutions)—see Figure 1 for a high-level overview of their interactions within the ecosystem.

Fintech start-ups

Fintech start-ups are participants in the fintech ecosystem, and they contribute to the growth and innovation of the overall financial services sector through new or improved products or services. In the Toronto region, an increasing number of fintechs are entering the market, aiming to renew the financial services sector and add value to retail consumers, corporations and financial institutions.

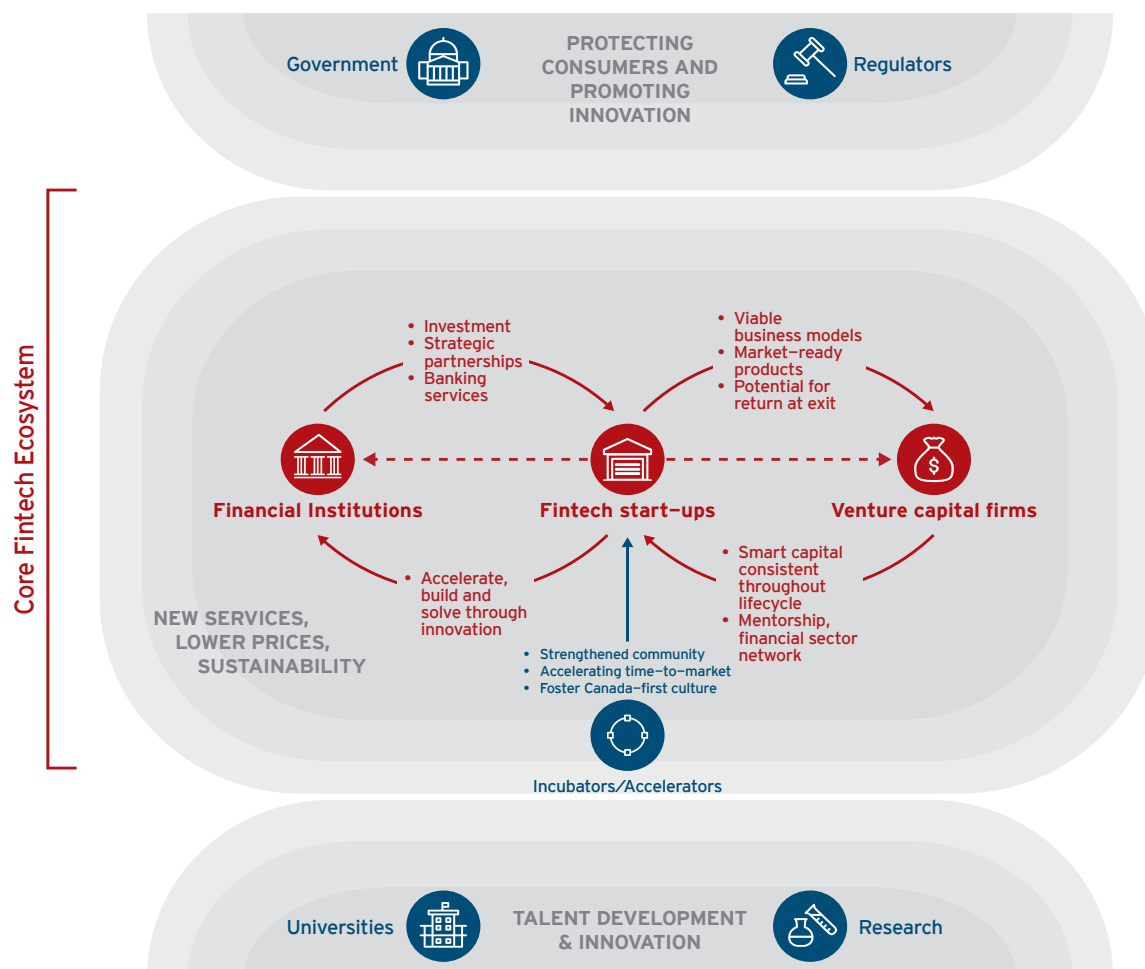
In this section, we provide our findings and analysis of the corridor's fintech start-ups.

Market scan

Our market scan identified 141 companies in the Toronto region that fit our criteria of a fintech start-up (see Appendix A for a full list of all fintech start-ups and our selection criteria). Since 2012, the region has seen an accelerated growth in the number of fintechs; for instance, more than half of the identified fintechs were founded in 2012 or later (see Figure 2).³ The Toronto region experienced the highest growth in 2014, with 23 fintechs being founded that year and remaining in operation today.

Within the corridor, the majority of the fintechs can be considered small companies and in the early stages of development. For example, in our survey with fintech founders, over one-third of respondents indicated that their start-ups have between one to nine employees, and close to 25 percent of respondents indicated a company size

Figure 1: Fintech ecosystem – Overview



Notes: Accenture analysis on fintech ecosystem participants and their interactions within the ecosystem.

of 10-49 employees. Additionally, according to publicly disclosed information, only six fintechs in the corridor have raised more than \$40 million in funding.⁴ Although small in size, the general trend is that the existing fintechs and new entrants are experiencing growth as they continue to commercialize their technologies, secure capital and establish greater collaboration with financial institutions and other ecosystem participants and influencers.

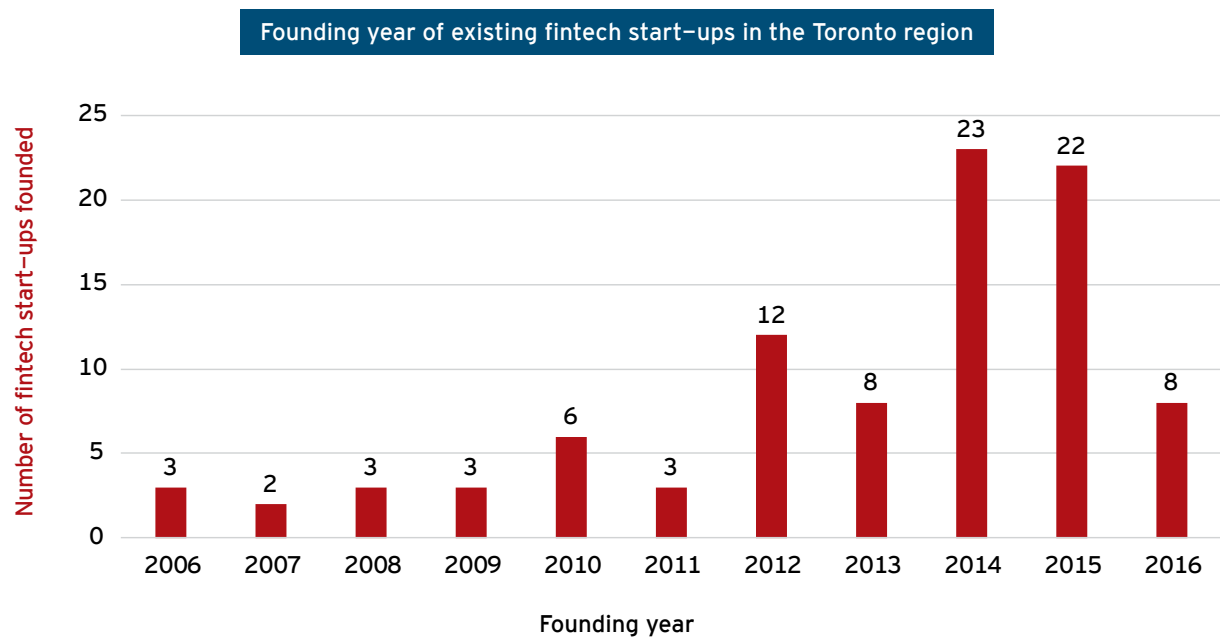
Moreover, in our conversations with fintech founders, many expressed an aspiration to expand into international markets, especially the United States, as it provides a large base of potential customers.

Few Toronto region fintech start-ups have established a global presence. Consequently, from

a fintech activity perspective, the Toronto region trails global leading fintech hubs, such as Silicon Valley, New York and London; for example, as a percentage of global fintech deals by value, from 2010 to 2015, the Toronto region fintech ecosystem represented 1.5 percent while the other hubs commanded 22.9 percent, 10.8 percent and 4.2 percent, respectively (see Part 4 of the report for a global benchmarking of Toronto region fintech ecosystem).

Collectively, the more than 140 fintech start-ups in the Toronto region cover virtually all financial services offerings, with the highest concentration in payments and capital markets (see Figure 3).⁶ Emerging areas include back-office and lending services, while relatively underserved areas include insurance and risk.

Figure 2 – Founding year of existing fintech start-ups that are headquartered in the Toronto region.⁵

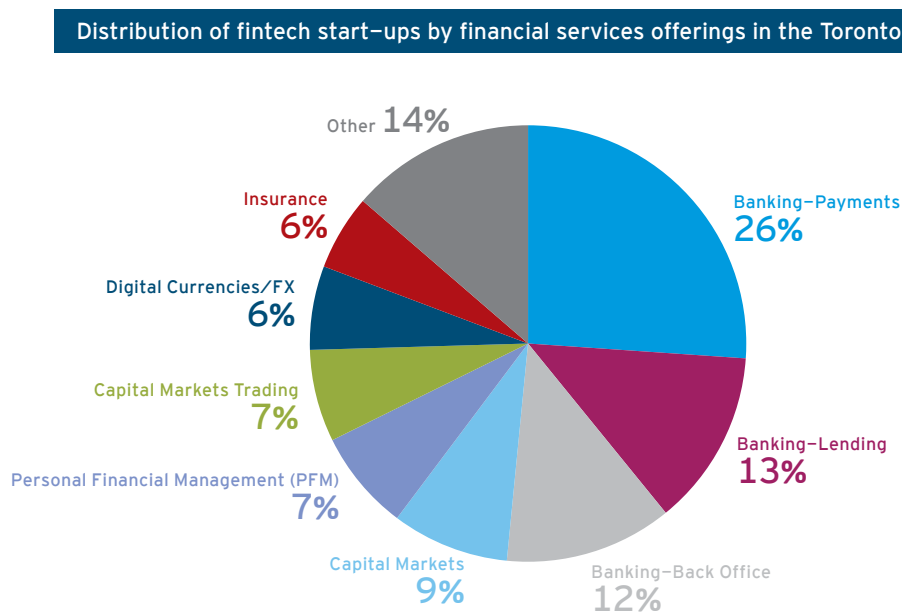


Source: Accenture analysis on CrunchBase and CB Insights Data.
Notes: Please see Appendix A for a full list of these fintech start-ups. The analysis focuses on fintechs that have publicly disclosed their founding year (count: 98). The Figure includes the number of fintechs that were founded in 2006 or later to highlight growth trends. Between 2000 and 2006, a total of five fintechs were founded and they remain in operation at the time of this report.

Furthermore, a large portion of fintechs are in the early rounds of financing. Based on publicly disclosed information of 44 fintechs in the corridor, more than half have raised less than \$5 million, with a greater number of them raising only \$1 million or less (see Figure 4).⁸ This finding is reflected in our global fintech benchmarking

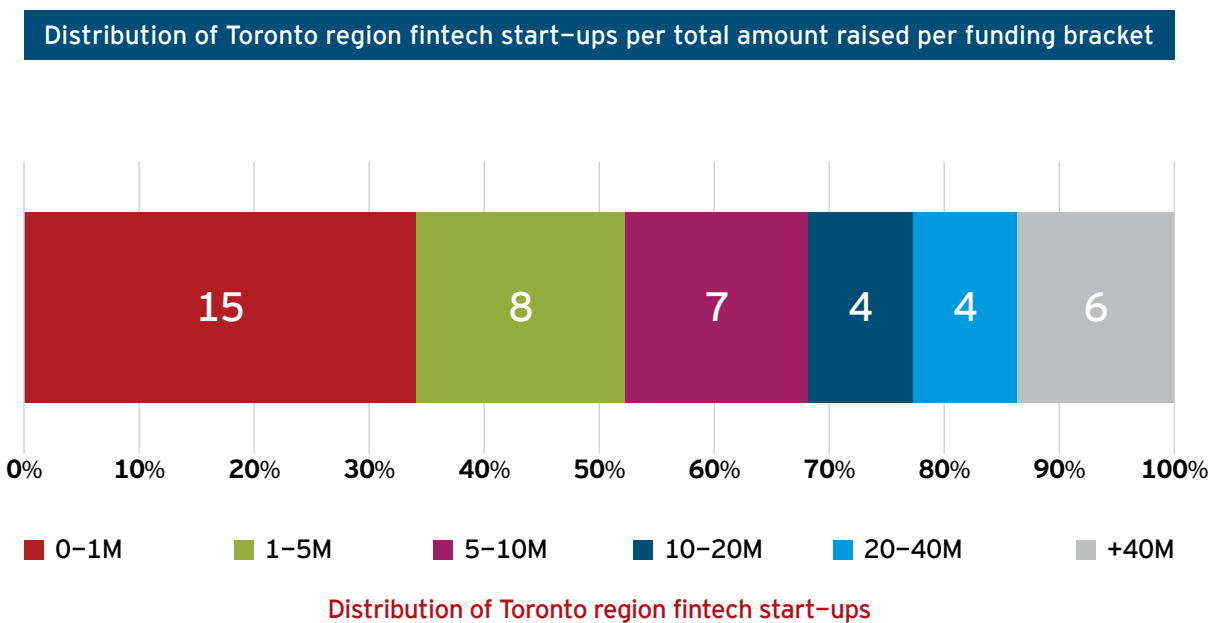
model, where the Toronto region fintech ecosystem significantly lags behind leading international hubs, in terms of fintech investment value and the number of deals (see Part 4 of the report for a global benchmarking of Toronto region fintech ecosystem).

Figure 3: Distribution of fintech start-ups by financial services offerings in the Toronto region⁷



Source: Accenture Analysis on CrunchBase and CB Insights Data.
Notes: Please see Appendix A for a full list of these fintech start-ups.

Figure 4: Distribution of Toronto region fintech start-ups by total financing raised (based on publicly disclosed information)⁹



Source: Accenture analysis on CrunchBase Data.

Moreover, we identified 25 fintechs that we believe are heading the pack within the corridor’s fintech ecosystem (see Figure 5)¹⁰; our selection criteria are as follows: (a) fintechs that have publicly disclosed more than \$500,000 in equity financing and (b) fintechs that have received considerable national media coverage for their products or services. In recent years, several leading fintechs from the region have begun gaining international recognition; for example, League, Securekey, Overbond and Wealthsimple made it to the 2016 FINTECH 100 list.¹¹

Figure 5: Leading fintech start-ups in the Toronto region¹²

Leading fintech start-ups in the Toronto region

Source: Accenture analysis on CrunchBase and CB Insights Data.
 Notes: Please see Appendix A for our selection criteria and a brief description of these fintech start-ups.

Common Themes

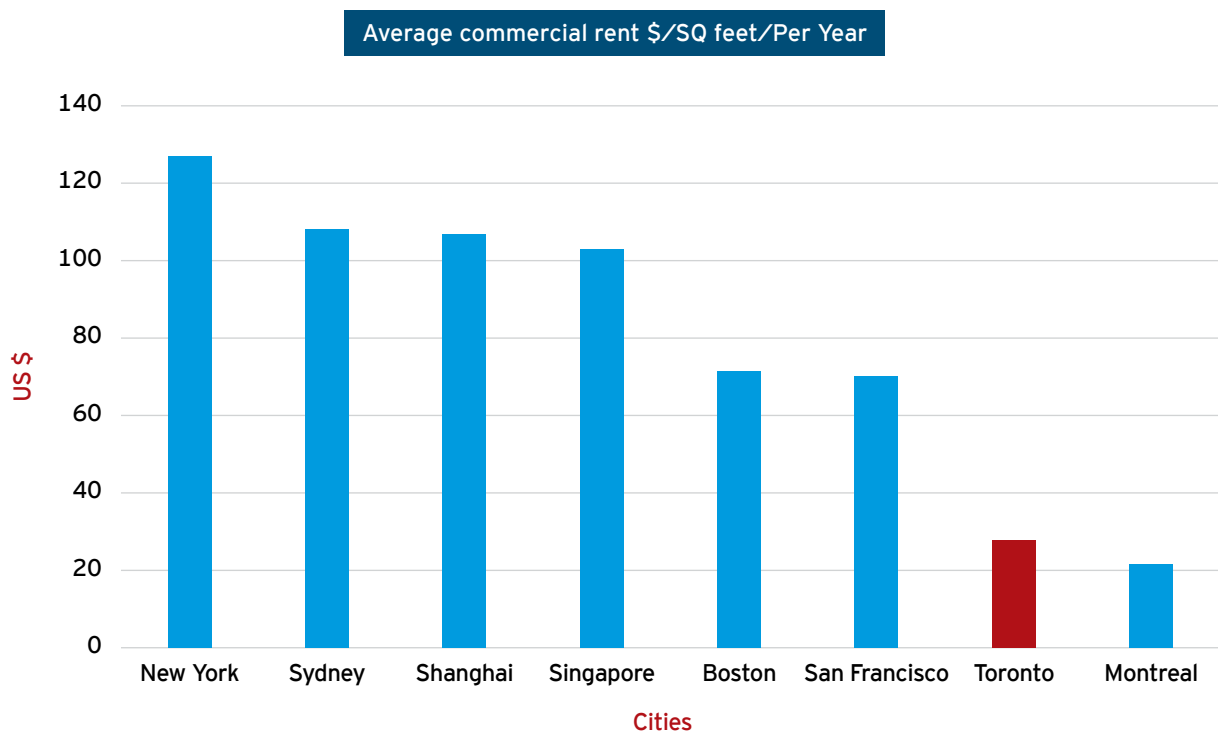
Operational advantages over other fintech ecosystems

Our research indicates that a primary operational advantage that the Toronto region offers is a cost-effective environment to start a company. For example, the corridor’s software engineers earn roughly half of what their peers make in Silicon Valley (~\$55,000 vs. ~\$120,000).¹³ Additionally, the average commercial rent in the Toronto region is less than half of what it is in other global fintech hubs, such as New York, London and Silicon Valley (see Figure 6). Throughout our interviews, fintech founders consistently expressed their sentiment that a relatively more affordable talent pool and real estate cost is a top operational factor that attracted them to headquarter their start-ups in the region. In one conversation with a founder who secured initial funding from US investors but has since set up headquarter in the Toronto region, the entrepreneur hypothesized that if the start-up had been based in Silicon Valley, it would likely have gone under due to the Valley’s high operational costs and cash-burn.

Moreover, Toronto region’s talent availability, renowned research facilities and ecosystem proximity were also identified as appealing factors for fintech start-ups. For example, several globally recognized academic institutions (e.g. University of Toronto and University of Waterloo) located in the region produce a large number of technical and functional talent each year. Additionally, top-tier research teams at local universities drive the development of emerging and innovative technologies. Furthermore, the strong core of financial institutions in the region provides engagement and research commercialization opportunities.

Incidentally, our findings concluded that the majority of the corridor’s fintech founders selected the Toronto region as their primary base of operations because it is where they chose to live. This finding suggests that although the corridor offers some operational advantages, its strengths may not be differentiated enough to attract foreign fintech start-ups.

Figure 6: Average commercial rent US\$/sq. feet/per year¹⁴



Source: Cushman & Wakefield 2014

Collaboration with financial institutions is improving, but challenges remains

When the fintech ecosystem started to gain growth momentum in 2012 (see Figure 2), fintech start-ups were perceived as new entrants into the financial services sector who aimed to disrupt incumbent players; therefore, the engagements between start-ups and financial institutions were more competitive in nature. Since then, the culture has shifted towards a more collaborative approach. Today, signs that fintechs and financial institutions are working together to identify win-win engagement opportunities are growing. For instance, a partnership between the two participants may lead to a win for the bank as the institution adopts the fintech's innovative technology to serve its customers, while a fintech may receive industry mentoring and access to the bank's customer base. In 2016, several notable partnerships between the corridor's fintech start-ups and financial institutions were created (see Figure 7 for examples of these partnerships).

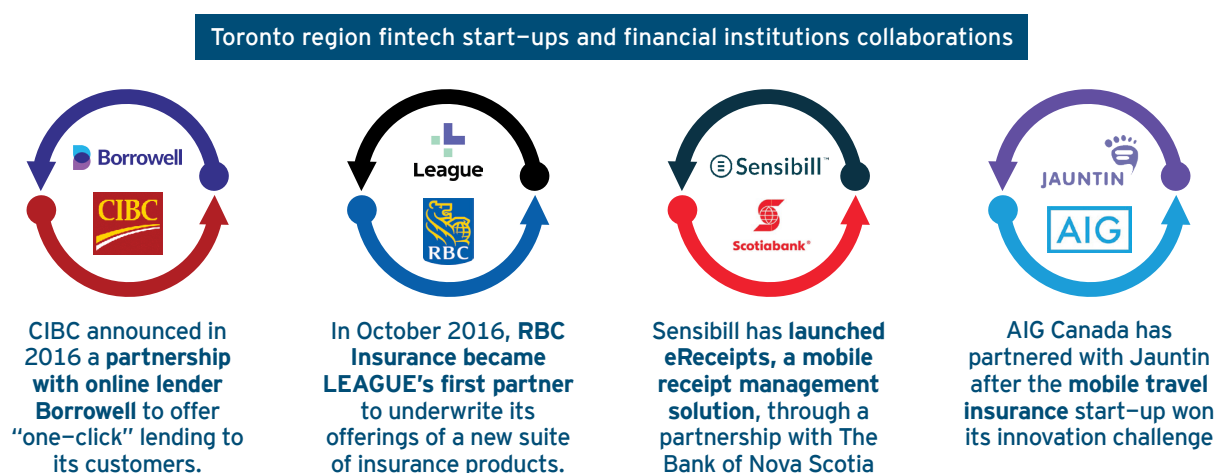
Throughout our conversations, fintech founders indicated that the overall engagement model with financial institutions is improving. For example, financial institutions are streamlining their engagement processes by creating dedicated innovation segments that provide a central point of contact to engage with fintechs and coordinate with internal departments. Additionally, financial institutions are engaging with innovators and inviting qualifying fintechs to create proofs of concept that align with the institution's strategic objectives; if the proof of concept is successful, the institution may provide mentoring and resources

to help the fintech build out the product and accelerate the go-to-market process.

Despite the notable partnerships and progress, the more fintech-friendly engagement models are early in their development phase, and collaboration with financial institutions remains difficult. This sentiment was expressed consistently throughout our interviews and in our survey questionnaires with fintech founders, where 63 percent of respondents indicated high levels engagement challenges. These challenges include the following:

- **Lengthy procurement process:** Financial institutions have complex and lengthy procurement processes which take multiple fiscal quarters to finalize a deal or partnership. Some of the challenges that were shared include navigating through multiple organizational stakeholders, approvers and formal and informal policies. For fintech start-ups, being engaged in a procurement process often represents a significant investment, both monetary and temporal. If the deal is not successful, the unrealized returns could be fatal to the start-up, as the process consumes much of their resources; a start-up's limited resources may also restrict it from engaging with other financial institutions or opportunities in parallel.
- **Difficulty in identifying decision-makers:** Major financial institutions have large and complex organizational structures, with multiple lines of business and shared services organizations. Consequently, it is difficult to identify from the outside a single governing body that is

Figure 7: Examples of partnerships between the Toronto region's fintech start-ups and financial institutions



specialized and dedicated to making fintech-related decisions.

- **Demanding contract terms:** During deal discussions, there are occasions where financial institutions seek strong terms such as exclusivity terms with fintech start-ups. Such deals are seen as unfavourable for fintechs as they can significantly restrict their potential for growth in the local market, forcing them to look elsewhere for customers and partners, such as foreign financial institutions. Furthermore, financial institutions can sometimes demand various intellectual property and derivative rights, which may decrease fintechs' ability to develop their services offerings. These deals can be detrimental to the overall ecosystem if they signal to fintechs and investors that it is difficult to establish effective partnerships in the Toronto region.
- **Balancing risk:** Canada, in general, has a relatively risk-averse culture; from the financial institutions' perspective, engagements or partnerships with fintechs represent several areas of risks, such as in brand image (i.e. if the fintech's technology does not live up to customer expectations or if the start-up's product development stops or folds) and in data and security concerns. Such risks, when not measured with appropriate balance, hinder potential collaboration between fintechs and financial institutions.

As the number of fintech and financial company collaboration grows, the engagement models between these participants are expected to mature and improve, resulting in more streamlined procurement processes and confirmation of security and regulatory requirements. The success of these engagement models will be critical to developing a thriving ecosystem.

Talent is growing, yet remains inexperienced

The Toronto region offers a skilled pool of technical and functional talent, such as developers and financial services professionals; however, it is important to see it from the context of fintech start-ups at different stages of funding. For well-funded and relatively developed companies, the corridor's talent presents an appealing operational

factor. Comparatively, as most Canadian fintech start-ups have relatively less funding, they face recruiting challenges due to a lack of understanding, in the local market, of how compensation packages are composed for start-ups. For example, founders in the region indicated that when they recruit in the local market, individuals often opt for a higher base pay rather than a lower base plus equity compensation package (i.e. talent prefers stable pay as an employee to being an owner in the company), although the equity package may lead to a much more lucrative payday in the long run. A preference for higher base pay (vs. equity compensation) holds two implications for fintech start-ups that are looking to expand their teams. One, start-ups will face stronger competition from larger companies, as more established organizations can likely offer top talent higher base pay. Two, in the Toronto region, where the average fintech is in the early stages of development, offering higher base pay to secure talent can put constraints on the start-up's cash flow. Interestingly, founders pointed out that in other leading hubs such as Silicon Valley or New York, individuals clearly understand the value of equity compensation. The difference between preferences could be a combination of risk tolerance and overall ecosystem maturity—in highly mature start-up hubs, individuals have seen successful exits and personal wealth that was derived as a result; in the Toronto region, few large exits have occurred.

Attract experienced talent that can grow fintech companies rapidly

Once a fintech shifts into a company seeking to expand and grow quickly, it becomes imperative for the company to identify, attract and retain leadership talent that has the experience of growing small companies into medium-sized organizations and eventually larger companies. Fintechs at this stage are typically well-funded and venture-backed. The fintech founder and leadership work with their venture capital firm on this challenge. In our interviews with both the fintechs and venture capital firms, we learned that "high-growth" talent is rare in our market and many of the Toronto region's fintechs and venture capital firms are looking globally for this talent.

As the fintech ecosystem matures and becomes strong (i.e. more fintechs and more growth), this talent will develop locally as it has in all the other mature ecosystems.

Key findings

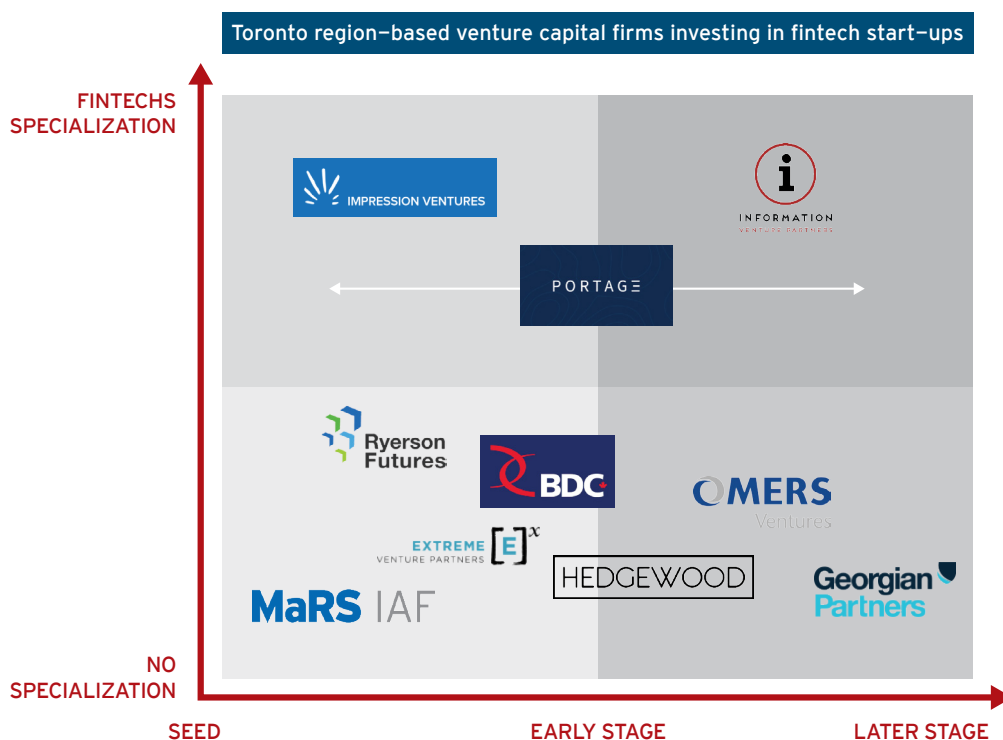
- Overall, the Toronto region fintech start-ups are in the early stages of development, relative to those from leading global fintech hubs. The region offers some operational advantages, driven primarily by lower operational costs and the strong presence of financial institutions and renowned academic institutions. However, these advantages are relatively undifferentiated as the majority of fintech founders base their start-ups in the Toronto region because it is where they chose to live.
- Collaboration between fintech start-ups and financial institutions is improving, but challenges remain, particularly when working within the enterprise functions (e.g. procurement, security) of major financial institutions.
- Talent is a key ingredient for the Toronto region fintech ecosystem to develop and prosper. The region must create compelling opportunities to attract and retain the talent needed.

Venture capital firms

Venture capital firms are participants in the ecosystem. They provide (1) capital and financing to fintech start-ups, (2) executive experience and mentorship for the founders, (3) assistance with identifying and attracting top talent to grow the company exponentially and (4) industry relationships to assist with sales and product development. These contributions help position portfolio start-ups to develop and commercialize their products or services, grow their user base, increase their revenue and scale their operations. In return, venture capital firms expect a return as a multiple of their monetary investment; the multiple varies based on the start-ups' business model and funding stage, with riskier investments commanding high multiples.

In recent years, the Toronto region's funding climate has improved; however, the increased availability of fintech-focused venture capital funds and later-stage funding options (i.e. series B and beyond) would be beneficial for the overall ecosystem's growth.

Figure 8: Venture capital firms in the Toronto region, by sector and investment-round specialization



Notes: Toronto region-based venture capital firms that have invested in Toronto region fintech start-ups.

Market scan

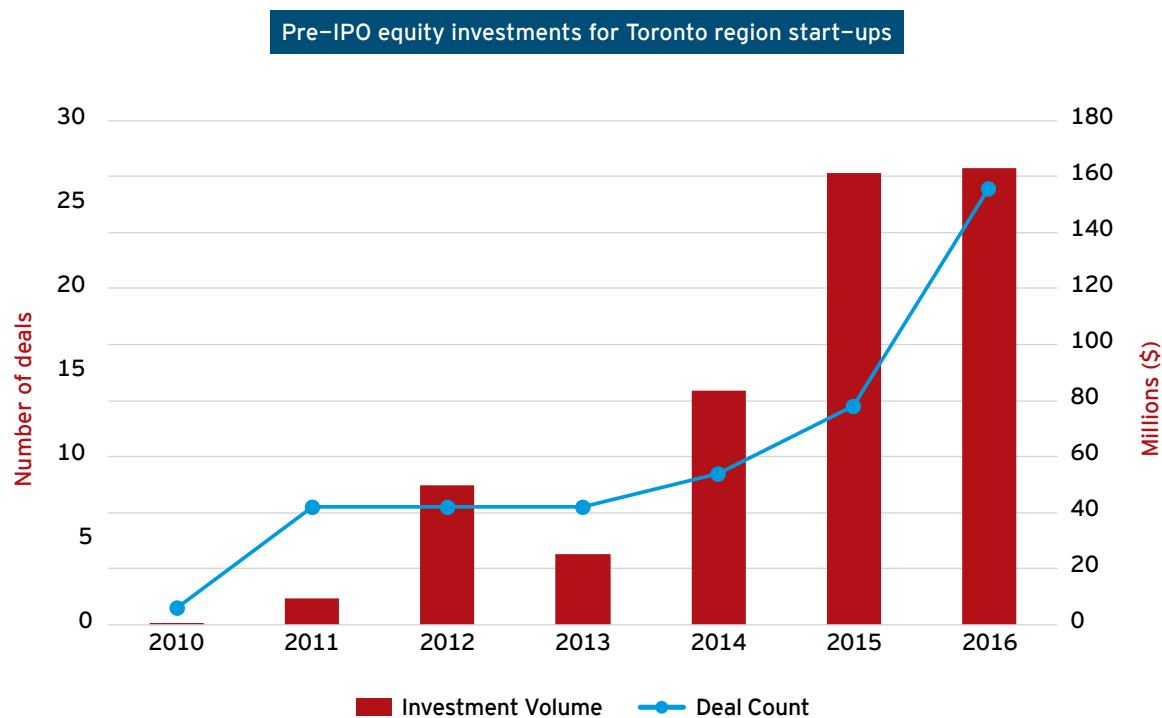
In our scan of the fintech funding landscape in the Toronto region, we restricted our focus to direct equity investments in the form of angel or venture capital. At the time of this report, we identified 10 local venture capital firms that have made publicly disclosed investments in fintech start-ups; we mapped these firms by sector and investment round specialization (see Figure 8).

In the past several years, the Toronto region experienced an improved funding climate, as seen by a significant increase in the volume of pre-IPO equity financing in fintechs, in terms of both value and the number of deals (see Figure 9). For instance, in 2014, there were nine pre-IPO equity investment deals with a total value of \$83.7 million; in 2016, the number of deals nearly tripled to 26 while the total deal value nearly doubled to \$163.8 million.¹⁵ Comparatively, in terms of pre-IPO equity financing in the last six years, the Toronto region fintech ecosystem has been one of the fastest-growing fintech hubs in the world (see Figure 10). Also, while the global fintech market experienced a 47 percent drop in financing activities in 2016 due to political uncertainty and

“cooled off fintech hype,”¹⁶ the Toronto region fintech ecosystem saw a 1.2 percent increase.¹⁷ It is worthwhile to note that although the corridor achieved high levels of fintech investment growth from 2010 to 2016, the region grew from a much smaller base when compared to global leading hubs; for example, from 2010 to 2016, the Toronto region attracted close to \$500 million in pre-IPO equity investment, while Silicon Valley, New York and London attracted \$10.2 billion, \$3.9 billion and \$2.2 billion, respectively.¹⁸

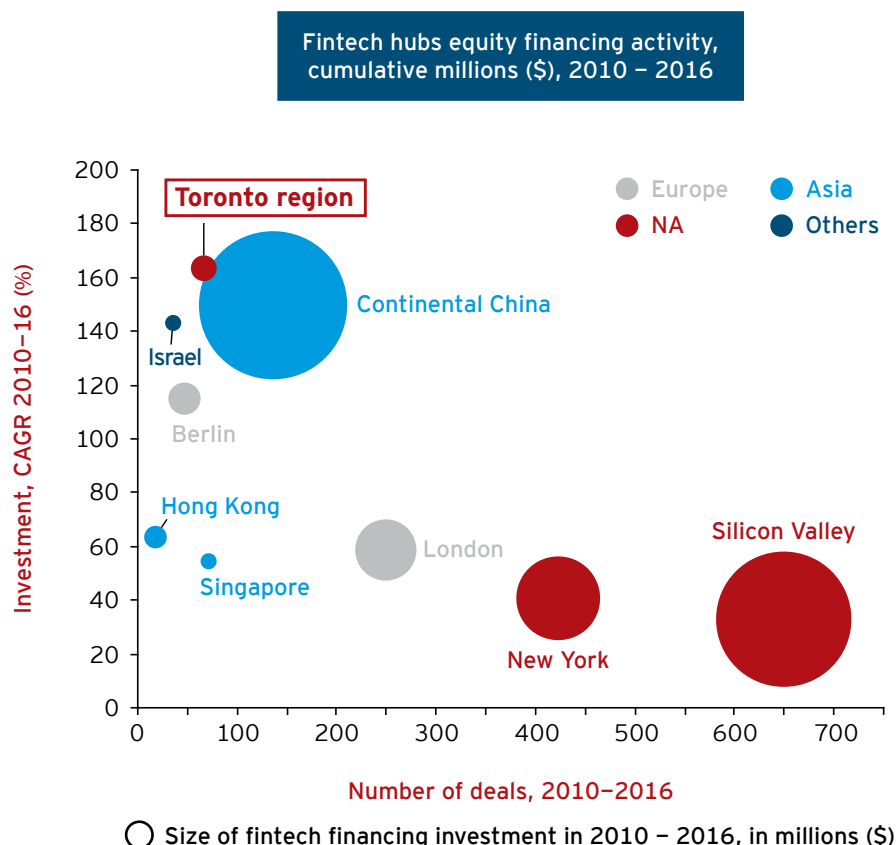
Additionally, the region’s fintech financing market has evolved from predominately consisting of angel funds to a greater availability of seed and early-stage financing rounds (see Figure 11). In our conversations with local fintech founders and executives at venture capital firms, our interviewees commented that seed and series A financing options are reasonably accessible within the corridor. Furthermore, several fintech-focused venture funds emerged in the region in the past few years, namely, Portag3, Impression Ventures and Information Venture Partners. Compared to traditional seed funding in the corridor circa 2010 to 2012, where capital was usually provided by a network of wealthy angel investors who may

Figure 9: Pre-IPO equity investment in Toronto region fintech start-ups¹⁹



Source: Accenture Analysis of CB Insights Data.
Notes: Yearly volume of equity financing (Pre-IPO Angel, Seed, Series A+ and Private Equity) for fintechs currently operating in the Toronto region.

Figure 10: Fintech start-ups equity financing activity globally²⁰



Source: Accenture analysis of CB Insights Data.

Notes: Annual volume of equity financing (Pre-IPO Angel, Seed, Series A+ and Private Equity) for fintechs currently operating in the Toronto region.

not necessarily have industry experience and knowledge, fintech-focused venture capital funds are likely to drive greater business impact for their start-ups through mentoring and business connections, in addition to financing. Going forward, positive signs of continued funding climate improvement in the region can be found. For instance, the recent launch of the Canadian Business Growth Fund will likely drive additional investments in the corridor's fintech ecosystem in the future. The Fund is backed by major banks and insurance companies, with CAN\$500 million in initial commitment and plans to grow to CAN\$1 billion in the next decade.²¹ The aim of the Fund is to provide funding and mentoring to Canadian small to medium-sized business.

Despite the positive trends in the local funding landscape, our interviewees pointed out that the availability of series B and later-stage funding within the corridor is inadequate, often leading start-ups to explore international markets, notably the United States, to seek the capital needed

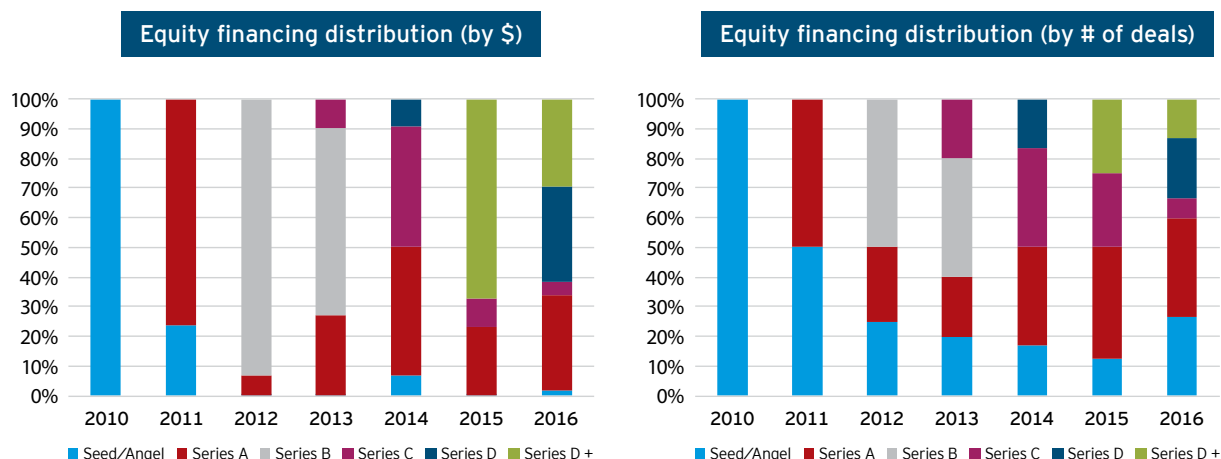
to scale their businesses. This deficit could be a hindrance to the local fintech ecosystem; for instance, international venture capital firms may encourage portfolio companies to incorporate or relocate their start-up to outside of the region to secure funding and focus on other markets (e.g. Silicon Valley).

Common Themes

Later-stage funding needs to increase locally

In the Toronto region, only a few later-stage funds (i.e. series B or later) exist. It is generally understood amongst fintech stakeholders that when local fintechs with a strong product-market fit and proven monetization model are looking for investment to scale their operations, they need to seek funding outside of Canada and look to international markets, notably the United States. This trend, or necessity, for the more established start-ups to secure funding from elsewhere poses

Figure 11: Distribution of financing stages for fintech start-ups in Toronto region²²



a hindrance to the ecosystem's growth because such fintechs may relocate their headquarters from the Toronto region to another location, at the behest of the investing venture capital firm. Slack is an example of a notable Canadian start-up that moved to Silicon Valley. In our conversations with fintech founders, many of them shared this perspective when seeking funding; US investors regularly asked them if they would be open to incorporating in Delaware and moving their headquarters to the United States to secure funding and develop their businesses.

Based on Accenture's global observations, a strong local presence of venture capital firms and successful start-ups is critical to establishing and nurturing an innovation cluster and its growth, as well as fostering robust collaboration models between all ecosystem participants, including the financial services institutions. In order to retain innovative and scalable start-ups within the region, more later-stage funding is needed.

Conservative risk tolerance remains in venture capital

Despite the growth of the available financing capital, many stakeholders believe the Toronto region appears to be more risk averse—this may in part be, because of our relative lack of experience in this space when compared to the leading regions; for instance, based on available data—as a percentage of a number of deals of all sizes and types regarding global fintech activity from 2010 to 2015, the Toronto region represented a mere

one percent of global deals in absolute terms, while leading global fintech hubs such as Silicon Valley and New York each commanded 16 percent and 10 percent.²³ The fintech sector is inherently riskier due to the external factors and strong regulatory and consumer environment; thus, investors may have not yet adjusted and are slow to invest, resulting in a lower number of deals in the region.

Key findings

- The funding climate in the Toronto region fintech ecosystem is improving but still lacks significant growth capital sources. Going forward, the increased local presence of established venture capital firms and the availability of later-stage funding will be critical to growing the corridor's fintech ecosystem.

Financial institutions

Financial institutions—banks, insurance companies and asset managers that operate in the Toronto region are participants in the fintech ecosystem and play a critical role.

Market Scan

Canadian financial institutions have begun their journey of embracing digital innovation and are adopting emerging technologies and solutions. It was not too long ago that financial institutions may have viewed fintechs as competitors to their business, now these very same institutions' innovation journey is focused on engaging with the fintech ecosystem and identifying opportunities to collaborate.

The new engagement model has led to several partnerships to materialize. In the last couple of years, financial institutions have actively begun partnering with incubators and accelerators, collaborating on new products and services as well as purchasing products and services from fintechs (see Figure 12 for examples of these partnerships). The new “solution lab” model is still in its early trial period but promises to meet the standards set by other fintech hubs worldwide—such as London and New York—regions where there are mature fintech collaboration spaces that have been scaled and are core to the innovation ecosystem.

Common Themes

Growing internal support for fintechs

Through a renewed innovation mandate, financial institutions are investing in efforts to create an environment that is friendly to digital innovation and fintechs. Financial institutions are implementing new functions dedicated to innovation and collaboration with fintechs with the intent of increasing agility and time to market. Business line and technology leaders are proactively engaging with fintechs to bring their strategic objectives to fruition quickly.

A demanding negotiation environment

In our interviews with the Toronto region's fintech founders, there was a collective agreement that in certain situations, some financial institutions

could display a negotiating approach that is not conducive to forming a successful partnership for both parties. Recalling several interactions, fintech stakeholders mentioned that financial institutions sometimes proposed contracting terms such as exclusivity rights for a product or technology, stringent intellectual property rights and unlimited liability requests which impeded the fintech's ability to grow and innovate. From the financial institution's perspective, the fintech's inexperience in navigating their standard contractual terms makes effective engagement difficult.

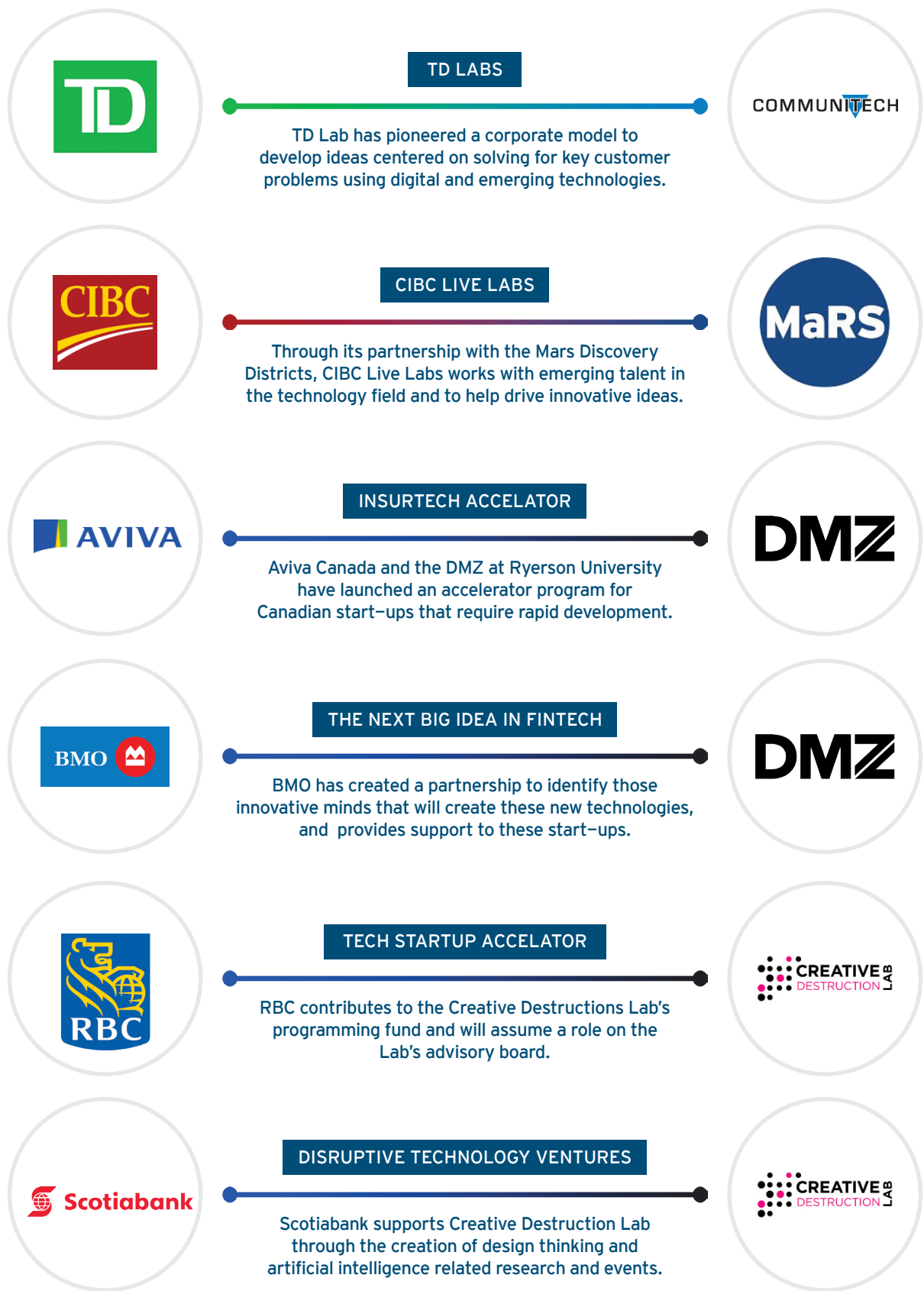
Interestingly, fintech founders, partners at incubators and executives at venture capital firms all commented that each major financial institution has a different level of “friendliness” towards fintechs which guides the fintech approach, timing and engagement models with the financial institutions.

It is important for financial institutions to recognize that the fintech ecosystem is small and that their actions in this space can impact their brand within the very community they are aiming to partner with. If institutions are perceived as open to collaboration, their brand and network may lead them to emerging and leading fintech start-ups. Should a successful partnership be formed, it could help the institution achieve strong results in driving and growing its innovation agenda. Therefore, ensuring that partnerships are negotiated in a way that enhances the growth of individual fintechs in the region will be an important building block for creating a strong, more vibrant ecosystem.

Difficulty in finding the right fintechs

In our discussions with innovation leads in financial institutions, they identified concerns in finding suitable fintech partners who have the right products or services that align with the institution's strategic objectives. In their view, most regional fintechs either remain unable to understand the main challenges of financial institutions or do not have the necessary scale to provide the required level of service. Once engaged with financial institutions, fintechs may still face additional challenges in supporting enterprise-grade services while offering security and regulatory compliance.

Figure 12: Examples of partnerships between financial institutions with incubators or accelerators



Financial institutions are critical to driving overall ecosystem growth

While some have shared that fintech activity in the region is a litmus test for growth and innovation in the financial services sector, it is important to note that financial institutions play an instrumental role in the innovation cycle by bringing benefits to Canadian customers at scale. For example, through effective collaboration between financial institutions and fintech start-ups, the banks and insurers provide start-ups with valuable mentoring and guidance (e.g. product-market fit feedback, navigating through the regulatory environment, go-to-market strategy, etc.), access to resources (e.g. company data and technology tools or platforms, etc.), and financing (e.g. investment or revenue stream), which help to place the start-up in a better position to succeed. In return, successful fintech start-ups help the financial institutions to advance and accelerate their innovation agenda, which may lead to, for example, improved customer experience or efficiency gains.

Financial institutions have both strong resources and business cases to support and work with fintechs. From the perspectives of the Toronto region fintech ecosystem and the overall financial services sector, it cannot be understated how important the role of the financial institutions is, in terms of driving innovation and growth. In a highly competitive globalized economy, where countries such as China, the United Kingdom, Singapore and Australia are placing emphasis on financial services innovation, it is likely the global financial services industry will change around Canada if we do not match the pace.

Key findings

- Financial institutions are critical to driving the collective and shared growth of the fintech ecosystem and the overall financial services sector. By being effective partners with fintechs, these institutions can further advance their innovation agenda, support the local economy and business community and signal a positive business environment to the international community.

Incubators and accelerators

Incubators and accelerators are participants in the fintech ecosystem as well as in the broader technology ecosystem. These participants provide a series of resources to fintech start-ups, including but not limited to physical office space, business mentoring, structured and guided programs aimed at developing and commercializing innovative technologies.

Additionally, these participants are characterized by their strong affiliations with higher-learning institutions, provide research inputs and business advice during the technology development and commercialization phases of the company. In recent years, with the growth of the fintech and the overall start-up ecosystem in the corridor, an increasing number of incubators and accelerators have sprung up in the region. These organizations have a market-driven focus. For example, the Creative Destruction Labs at the University of Toronto is an accelerator with a focus on commercializing and accelerating growth in specialized technology areas (i.e. machine learning); the Cookhouse Lab innovation centre specializes in the insurance industry. See Figure 13 for a list and brief description of incubators and accelerators in the Toronto region.

In addition to organic, local growth, global accelerator programs, such as 500 Start-ups and Plug and Play Tech Centre, are seizing the opportunity in the Toronto region start-up ecosystem by widening their coverage. For instance, several local fintech start-ups and Canadian financial institutions from the corridor have joined or started collaborating with Plug and Play, including Nuco, TD Bank and Sun Life Financial.

Figure 13: List of incubators and accelerators in the Toronto region

Name of incubator or accelerator	Description
Decentral	Home to tech start-ups and entrepreneurs that focus on disruptive and decentralized technologies.
Communitech Hub	Supports tech companies at all stages of their growth and development - from start-ups to rapidly-growing mid-sized companies and large global players.
Cookhouse Labs	Cookhouse Lab gives insurers the creative place to think out of the box, invent and shape the future of insurance. It is a test kitchen in which insurers collaborate with each other and combine organizational knowledge with other 'ingredients' such as innovation experts, legal counsel, designers and entrepreneurs to create the customer experience of tomorrow.
Creative Destruction Labs	An accelerator based at Rotman School of Management, University of Toronto. The program is best suited for massively scalable, deep-science, technology-based ventures that have the potential to transform the social, industrial, and economic landscape.
DMZ at Ryerson University	Houses 450 individuals working for 80 companies. Founded in 2010, it's open for public application and has produced such notable alumni as medical photo sharing app Figure 1.
MaRS Discovery District Fintech Hub	Connects the financial services sector with start-ups developing next generation technology in emerging payments, financial services, peer-to-peer transactions, alternative lending and crypto-currencies.
OneEleven	Empowers a community of data-driven entrepreneurs and small businesses to succeed by providing workspace, community, and accessible services.
Next Canada	NEXT Canada is a national non-profit charity with a focus on increasing national prosperity through innovation and entrepreneurship. The organization grew out of The Next 36, a program founded in 2010 by a group of visionary business leaders and academics.
University of Toronto Hatchery	Supports entrepreneurship and launch by providing legal, accounting, marketing and intellectual property services through a start-up program.
University of Waterloo Velocity	Velocity is a leading entrepreneurship program at the University of Waterloo and the largest free start-up incubator in the world. From idea to product development to commercialization, Velocity provides the knowledge, tools, space and network that start-ups and entrepreneurs need for success.

Notes: List and brief description of incubators and accelerators in the Toronto region.

Universities and other academic institutions

Universities are the foundation of the fintech ecosystem—they feed talent and the results of years of research and development efforts into the ecosystem where it can be leveraged for commercial purposes. With over 16 universities and colleges, the Toronto region is one of the most educated areas among the Organization for Economic Co-operation and Development (OECD) nations.²⁴ Additionally, the region's world-renowned academic institutions offer top-tier research staff and facilities, such as the University of Waterloo's Transformative Quantum Technologies program and the newly formed Vector Institute affiliated with the University

of Toronto (disclosure: Accenture is a platinum partner of the Institute). Accordingly, the Toronto region's universities and colleges play a role in creating and attracting start-ups to be headquartered in the corridor. Interestingly, it is worthwhile to point out that the region's reputation has caught the attention of global high-tech leaders, thus giving its local start-ups credibility on the international stage. Because of this recognition, the competition for the region's STEM talent is significant. For instance, the University of Waterloo is the second-most frequently hired source for talent in Silicon Valley.²⁵

In addition to traditional colleges and universities, the availability and quality of the region's technical talent pool has improved through several established technology boot camps in the region,

such as Bitmaker, Brainstation, HackerYou and Lighthouse labs, where individuals from all walks of life are enrolled in a structured program (usually around 12 weeks in length) to equip themselves with coding and programming skills. In an interview with a local boot camp founder, the entrepreneur commented that a material number of graduates from the boot camp (especially individuals that came from a finance education or professional background) either joined a fintech in the corridor or founded their own fintech start-up.

Talent is a key ingredient to driving growth in the corridor's fintech ecosystem and innovation in the overall financial services sector. We will further touch on the talent topic in Part 2 of this report, where we discuss and analyze technology trends within the fintech ecosystem.

Government and financial services related regulatory bodies

Government and financial services related regulatory bodies influence the fintech ecosystem as they set policies and regulatory boundaries within the financial services sector. In this section, we outline our findings from discussions with fintech stakeholders on topics related to government support for innovation in the Toronto region. These stakeholders include fintech founders, professors specializing in the financial services sector, as well as leaders at financial institutions and venture capital firms, but do not include individuals from government agencies and regulators. For a detailed analysis of our findings on the Toronto region's regulatory environment, please see Part 3 of the report.

Through our global scan and in the context of the financial services sector, we discovered that governments could enable and create a business-friendly environment. Having a business-friendly environment helps attract and retain innovators, while at the same time regulators can enact well-defined government mandates to ensure a secure environment and still incentivizes innovation. For example, the Australian government published Backing Australian FinTech in 2016

to articulate the government's strategy to align efforts to improve the country's fintech hub's competitiveness on a global scale.

Interestingly, our conversations with the Toronto region's fintech stakeholders concluded a mixed perception regarding the Toronto region's business and regulatory environment on innovation. Although clear signs emerge indicating government support that encourages innovation, the overall strategy is not clear, and the effectiveness of the programs may not have benefitted innovators as much as originally intended.

On the positive side, multiple initiatives and programs, at both the Canadian federal and provincial levels, have encouraged a shift toward a knowledge-based, high-tech economy. Most recently in the 2017 federal budget, the Canadian government placed emphasis on innovation and tech clusters; notably, the budget proposes that \$400 million be made available for late-stage venture capital funding through a new program known as the Venture Capital Catalyst Initiative (VCCI).²⁶ Additionally, the federal government offers tax incentives through the Scientific Research & Experimental Development Program (SR&ED). Other federal programs or organizations include the Industrial Research Assistance Program (IRAP) and the Business Development Bank of Canada (BDC), which provide advisory and funding services to innovative small to medium-sized enterprises; at the provincial level, organizations such as the Ontario Centres of Excellence (OCE) support innovation and commercialization of research in financial services, among other industries. On the regulatory front, the Ontario Securities Commission (OSC) created its LaunchPad in 2016 with the aim of helping innovators understand Ontario securities regulations²⁷; meanwhile, the Canadian Securities Administrators (CAS) launched its version of a regulatory sandbox to provide relief to innovative fintech start-ups.²⁸ For an additional detailed analysis of government initiatives and the regulatory environment, please refer to Part 3 of the report.

Despite the availability of various programs, the fintech stakeholders we interviewed pointed out that the Toronto region (and Canada, broadly

speaking) does not have a clear fintech strategy that outlines specific priorities and a consistent plan (i.e. across public agencies) to improve the overall fintech ecosystem.

Additionally, government programs supporting innovation may not have achieved their desired effect due to complexity or reduced availability. The SR&ED incentive is a notable example—in our interviews with fintech founders, the consistent sentiment was that the program was overly complex and that claims take multiple years to process and be funded; as a result, many early-stage start-ups with cash flow constraints would need to rely on third-party lenders, incurring high-interest expenses to stay afloat. Other incentives have seen a reduction: the Ontario Research and Development Tax Credit has decreased from 4.5 percent to 3.5 percent, and the Ontario Innovation Tax Credit has decreased from 10 percent to 8 percent in the 2016 Ontario Budget²⁹ (further exploration of government programs and tax incentives are outlined in Appendix C). For ecosystem stakeholders, the reduction in innovation incentives could represent an inconsistent approach to innovation from the federal and the provincial governments; the inconsistency calls out for the importance of having a clear, government-mandated fintech strategy.

At the time of this report, we further note that the federal budget made some additional changes which could be promising for fintech development. In addition to the VCCI funding, the federal budget also included the following: development of a new intellectual property strategy to modernize the Canadian intellectual property regime for the 21st century, a new procurement strategy called Innovative Solutions Canada (modelled on the small business program in the United States) which allocates CAN\$50 million to government procurement for use in purchasing from small technology companies and the creation of a new department called Innovation Canada. This is a platform to consolidate and simplify dozens of innovation programs situated across many departments. However, these programs for innovation remain to be translated into specific and coordinated fintech policy measures.

Key findings

- The Toronto region lacks a clear, government-mandated fintech strategy that outlines specific priority areas and aligns federal and provincial public agency efforts to help establish the region (or Canada) as a leading global fintech hub.
- The current government's approach on supporting innovation appears to be applied inconsistently. An example of this is, government support through new innovation-focused venture capital funds alongside the roll back in provincial tax incentive programs and operational complexities associated with other existing programs, such as SR&ED.



Part 2. Technology Trends

As discussed in the previous section of this report, the Toronto region fintech ecosystem is experiencing a positive development—there has been significant growth of and investment into fintech start-ups, as well as closer proximity and engagement between key participant and influencer groups, including stronger collaboration between start-ups, traditional financial institutions and venture capital firms. However, one consistent sentiment that emerged from our interviews with fintech leaders in the region is that the corridor lacks an “identity”—a specialization or capability that gives the corridor a comparative advantage over other ecosystems internationally, like Tel Aviv’s identity for its global leadership in cybersecurity. In this section of the report, we examine the Toronto region’s key technology trends and their application to fintech start-ups—focusing on both mature and early-stage technology capabilities—that are significant to maintain and drive high degrees of innovation within the region.

For this section, we define a technology capability as a specific technology form that is essential to

building a fintech’s platform or product, such as web & mobile development capability that enables the creation of web platforms or mobile apps. A technology trend is a general development direction pertaining to a specific technology capability, such as increased investments in AI technology. An interesting perspective to contextualize technology capabilities is to view each technology form as separate but interconnected “building blocks”—where a fintech would leverage and integrate between multiple “blocks” to create their digital product. For instance, a fintech would use both web development and big data & analytics capabilities, at a minimum, to create an online lending platform that adjudicates a borrower’s application in real-time, based on multiple data sources. In the sections below, we will outline six technology trends and capabilities that were identified in our market scan of the Toronto region fintech ecosystem, including web & mobile development, big data & analytics, artificial intelligence (AI), blockchain, cybersecurity and quantum computing.

Web & mobile development

Web & mobile development capability is highly sought-after as it is a foundational and must-have capability for virtually all fintech start-ups.

We define web & mobile development as a capability that digitalizes front-end processes and enables customers to access financial products through online platforms or mobile apps for smartphones and tablets. This capability spurred an initial wave of fintech start-ups around 2010-2012 as digital channels were a value-add compared to traditional channels, due to increased consumer convenience or availability of new services. Examples of these fintech's range from a website where users can compare interest rates from various banks or insurance companies to a digital payment platform where users can pay for goods or services with their smartphone.

Since the initial wave of fintechs, the industry has shifted to a "digital-first" mindset, where consumers have come to expect that financial products could and should be accessible online. Currently, virtually all fintech start-ups (or any start-up or financial institution in a broader sense) have adopted web & mobile development capability to meet consumer demand, signalling that the capability has become a commodity rather than a key differentiator between competitors; however, this fundamental development capability is critical to any fintech as they build and continuously improve their platform to offer a robust and client-centric experience, in line with or exceeding evolving consumer expectations. For example, the early standard for digital channels was a website with basic features; now, it is common practice for fintechs to offer beautifully and intuitively designed web portals and mobile apps with comprehensive features that can be seamlessly integrated with third-party applications to enhance the overall user experience.

Moreover, our research indicated that there is a high and unfulfilled demand for developers in the corridor. In our survey with the region's fintech founders, 30 percent and 15 percent of participants indicated that they are currently facing talent gaps in mobile development and web development, respectively, suggesting that an

increase in the development capability of the talent pool would be beneficial to growing the overall fintech ecosystem.

The high demand could be a testament to the quality of the corridor's talent pool. In a survey with fintech founders where we asked participants to indicate Toronto region technology strength(s), web & mobile development was ranked second with an over 60 percent selection rate (in first place was big data & analytics at 70 percent). This finding was confirmed by our interviews with many ecosystem participants. Many fintech founders indicated Toronto region's development talent pool offers an operational advantage, stemmed from the availability of high-quality developers at competitive rates. For example, the 2015 Global Start-up Ecosystem Ranking report states that the corridor's software engineers earn roughly half of what their peers in Silicon Valley earn (~\$55,000 vs. ~\$120,000).³⁰ Interestingly, several founders we interviewed stated that their start-ups are frequently hiring developers, and will likely continue doing so as they continue to expand.

The corridor's strong capability in web & mobile development could be attributed to its globally recognized universities and colleges located within the region—such as the University of Toronto and the University of Waterloo, with their respective Computer Science programs ranking No. 17 and No. 23 globally³¹—as well as numerous technology boot camps, where enrolled students from a diverse set of professional backgrounds can learn web or mobile development in 12 weeks. From our conversation with a bootcamp's founder and CEO, we estimate that hundreds of developers graduate from local code camps each year and that the number of graduates is likely to increase in the future, as there is a strong market-driven demand for these skill sets. Interestingly, the founder we spoke with also indicated that a material portion of camp graduates started their own fintech or joined a local fintech company as a developer.

Going forward, web & mobile development will likely remain a Toronto region strength that helps attract and retain fintechs to be headquartered in the corridor, as well as sustain the cluster's momentum in fintech innovation. Although web & mobile development has reached high degrees of maturity and will not likely be a primary driver of significant innovation, the capability is foundational

and a must-have for virtually all fintechs. Accordingly, continued growth in the number and quality of graduates from computer science, software engineering, and other development-related programs from local universities and technology boot camps will be critical as it furthers the corridor's fintech hub appeal.

Big data & analytics

Big data & analytics capability is widely adopted by fintechs. The Toronto region is strong in this capability.

We define big data & analytics as a technology capability that aggregates and analyzes data from multiple sources and leverages algorithms or quantitative formulas to convert data into consumable information. Currently, virtually all fintechs in the corridor are using some forms of big data & analytics tools and technologies within their products and services to deliver a personalized customer experience and/or collect insights to make business decisions. For example, a personal financial management tool would analyze a customer's spending data to identify areas of savings, while a lending platform would analyze a borrower's credit score (among other data points) to decide to either approve or reject the personal loan application.

Through our interviews, key stakeholder groups stated that the Toronto region cluster has a strong talent pool in the big data & analytics capability; also, there is a high and unfulfilled demand for data scientists and data engineers. For instance, in our survey with fintech founders, when asked to indicate Toronto region technology strength(s), big data & analytics capability placed first, with an over 70 percent selection rate. Additionally, 30 percent and 20 percent of founders in the same survey indicated that they are facing talent gaps in data scientists and data engineers, respectively, signalling a high market demand for these roles.

The key drivers for the corridor's strength in big data & analytics can be attributed to its top-tier universities in the region (e.g. University of Toronto's Statistics program is ranked 16th in the

world and the University of Waterloo's Mathematics program is ranked 29th in the world³²) and the region's top talent in the financial services sector. In our research, we observed that the interaction and collaboration between data scientists and data engineers with business leaders who have extensive financial services knowledge created a powerful feedback loop that helped to accelerate the capability's development and application to fintech business models.

Moving forward, the growth of big data & analytics talent pool, both from a quality and availability perspective, is critical to the corridor's fintech cluster on two levels. First, the growth will help bridge the unfulfilled demand in the market, contributing and furthering fintechs' ability to build or improve their products, such as new business models or a highly personalized banking experience. Second, advanced big data & analytics capability (i.e. predictive analytics) is a strategic and critical building block in enabling AI, a technology capability that is predicted by many global fintech influencers to be the "next big thing" that will drive significant innovation.

Artificial Intelligence

AI has the potential to drive unprecedented innovation. The Toronto region has an opportunity to emerge as a global leader in AI.

We define AI as a technology that enables computer or mobile applications to perform tasks that usually require human intelligence, such as sensing, comprehending, acting and learning³³. In Accenture's Technology Vision 2017 research, the global consulting firm found that 79 percent of executives across all sectors agree that AI will revolutionize the way they gain information from and interact with customers³⁴.

In the fintech space, AI has an incredible potential to drive unprecedented innovation due to its high applicability to all business groups and operations within the financial services sector, and its opportunities for high value creation. For example, a bank's AI-enabled chatbot in the form of an online chat window or a mobile app that handles

its customers' specific banking needs, such as paying bills or reporting a stolen credit card, would add tremendous value for the customer and the bank through improved experience and reduced operational costs, respectively. An insurance company, likewise, could utilize AI technology to automate claims handling processes and reliably detect fraudulent claims, possibly preventing significant losses.

On a global scale, AI technology is in the early-stages of development across all sectors. However, the Toronto region's fintech leaders display optimism about developing a global AI leadership position as the corridor has demonstrated promising AI strengths. In our survey with fintech founders, when asked to indicate the Toronto region technology strength(s), AI capability was ranked second (tied with web & mobile development—a mature and commoditized capability), with an over 60 percent selection rate. This finding was backed by our conversations with many of the ecosystem stakeholders—fintech leaders, financial institution executives, managing directors at venture capital firms, university professors and founders at various local incubators and code camps—where they expressed that the Toronto region has a relative strength in AI and that the technology has a significant potential to drive a revolutionary wave of fintech innovation.

The corridor's strong AI reputation is rooted in the region's academia from globally recognized universities dedicating their research in the field and a top-tier talent pool with deep expertise in related fields such as neural networks and machine learning. For example, the University of Toronto is a global leader in AI research and the University's professor Geoffrey Hinton is world renowned for his research in the subject. Although the corridor produces top talent in AI, the region (or Canada in general) face significant brain drain—especially to the United States—where successful tech “unicorns” are known for a culture of innovation and collaboration, as well as lucrative compensation packages. Interestingly, the University of Toronto states that while 100 percent of their PhD graduates in applied computer science secure employment, virtually all of them are leaving Canada³⁵. In the United States, University of Toronto alumni can be found leading AI divisions at tech giants such as Google, OpenAI, Apple and Facebook—to name just a few global

companies that have been aggressively pursuing AI capabilities in recent years. There are, however, some graduates that have stayed in the Toronto region to build their own AI start-ups, such as Layer-6 AI³⁶, thereby contributing to research commercialization opportunities in the corridor.

Recently, there has been significant focus on reducing brain drain to the south of the border and to other parts of the world, in order to create further momentum and advance AI research within the corridor. In March 2017, the Vector Institute was launched in Toronto to “retain, repatriate and attract AI talent, to create more trained experts, and to feed that expertise into existing Canadian companies and start-ups”³⁷ (disclosure: Accenture is a platinum partner of the Vector Institute). The Institute, with Professor Hinton serving as the Chief Scientific Advisor, has been committed CAN\$150 million has been committed in funding, provided by both the federal and provincial governments, as well by more than 30 companies, including the likes of Google and several large Canadian financial institutions³⁸, signalling an aligned public and private sector interest to position Toronto as a global hotspot for AI.

Moving forward, there is an increasing sense of urgency to advance AI research in the Toronto region. For example, several interviewees expressed concern that if the corridor does not demonstrate significant achievements in AI and establish a clear comparative advantage, there is a risk that other global hubs of higher “economic value,” such as Silicon Valley or London, could attract relatively more significant investments to outspend the Toronto region in AI research and development efforts, potentially becoming clear global leaders in the technology and leaving the Toronto region behind in the race. However, in our interviews with Toronto region fintech participants and influencers, interviewees expressed optimism that the Toronto region has the potential to develop a global leadership position in AI research, and in turn drive unprecedented value to the local fintech ecosystem as impact-driven investments continue to be made by the public and private sectors. Additionally, the corridor provides an opportunity to establish a crucial feedback loop between AI research and its concentrated financial service sector—as fintechs and financial institutions apply AI technology to their platforms and their products, they gain highly valuable insights, which

would be funnelled back to academic institutions to advance research and development efforts. An iterative feedback loop between research and real-world applications could be extremely valuable to speed up AI maturity.

Blockchain

Financial institutions are exploring use cases to apply blockchain technology; currently, blockchain has not reached significant adoption and scale.

We define blockchain as a technology form that uses distributed ledgers to record transactions; the data is stored and maintained on a “transaction cloud” by a decentralized network of computers or servers on the Internet. Compared to traditional, centralized databases where every organization maintains its own dataset, blockchain enables all parties to have a shared copy of ledger data.

In a 2015 Accenture publication, the global consulting firm’s research in the financial technology sector identified blockchain as “possibly the biggest opportunity from taking an open approach to innovation”³⁹. Additionally, the publication predicated that 2016–2017 will mark the early adoption of blockchain technology by financial institutions globally.⁴⁰ Within the context of Canadian financial institutions, the sector seems to be on trend with the prediction. In June 2016, the Bank of Canada launched Project Jasper, in collaboration with some of the country’s biggest banks—including Royal Bank of Canada (RBC), CIBC, TD Bank and Payments Canada—to examine and explore opportunities on how to put government-backed currency, through issuing, transferring and settling, on blockchain.⁴¹ An additional example of a blockchain application in the Canadian financial services sector includes RBC’s initiative to deploy a real-time customer rewards program in 2017 built on blockchain online ledger⁴². Other major banks are experimenting leveraging blockchain to optimize post-trading processes by leveraging the technology’s secure and automated transaction platform to transform the banks’ often manual trade-clearing systems, leading to securities trades completed faster and at a lower cost⁴³; banks strengthening the protection of online

financial transactions for their retail customers through blockchain-based digital identity networks.⁴⁴

Based on our research, the Toronto region fintech stakeholders’ perception of blockchain capability in the region seems to be mixed. In our interviews with fintech founders, venture capital executives, and university professors focused on fintech research, there was no strong agreement that the corridor has shown significant potential in the development and advancement of blockchain technology; however, this could simply reflect that the technology is still in its early stages of development. Moreover, there has been a stream of brain drain in blockchain talent, within the corridor or Canada more broadly speaking. In a notable example—Ethereum, one of the more widely adopted decentralized blockchain platforms today was created in Canada and the founder studied at the University of Waterloo. The founder explored headquartering Ethereum’s operations in the corridor; unfortunately, due to the region’s and Canada’s regulatory compliance burdens and policy uncertainty, Ethereum established its headquarters in Switzerland (see Part 3 of the report for our analysis of Toronto region’s and Canada’s regulatory environment).⁴⁵

The mixed perception of Toronto region’s blockchain strength could be an indicator that there is no clear-cut comparative advantage of the technology capability in the region, and that the technology is in its early development phase as its distribution and adoption has not reached scale. Accordingly, it is not immediately clear what the winning blockchain-enabled business model or platform would look like. In the market, there are efforts to advance the technology, through both public and private sector investments and collaborations. For example, in addition to Project Jasper—notably in March 2017, the Blockchain Research Institute (BRI) was launched in Toronto, with CAN\$2 million in funding from the Canadian government and private sector companies, to conduct blockchain-related research, explore application opportunities and use cases, as well as identify and mitigate potential implementation challenges.⁴⁶

Going forward, there is relative excitement to observe the development and application of blockchain technology to the financial services

sector in the corridor, and to identify the winning business models and platforms. In a February 2017 report by Don and Alex Tapscott, considered influential thinkers in the technology and the founders of the BRI, the paper identifies the Toronto region's strong financial sector, talent, improved investment climate and collaboration between financial institutions and fintechs as key drivers of blockchain development.⁴⁷ Additionally, the paper proposes several recommendations to establish and strengthen Canada's role as a leader in the capability, including developing a national blockchain strategy, engaging government as model users and protecting and expanding local access to the United States.⁴⁸

Cybersecurity

Cybersecurity is closely tied to fintech innovation and is a top priority for financial institutions. Interestingly, there have not been any leading fintech-specific cybersecurity start-ups since 2010.

We define cybersecurity as technologies that identify, authenticate, and enable the protection of confidentiality, integrity, and availability of information systems and electronic data. Interestingly, advancing cybersecurity capabilities are closely tied to fintech innovation, in terms of establishing a secure financial services sector.⁴⁹ For example, fintech innovation in new products and services introduce new cyber risks; therefore, key security measures must be at the core of fintech innovations.⁵⁰

In a 2016 Accenture paper regarding cybersecurity, it was revealed that approximately one in three targeted attacks on Canadian businesses resulted in an actual security breach; additionally, more than half of business executives indicated that it takes months to detect sophisticated breaches and that as many as a third of breaches are not detected at all.⁵¹ Unsurprisingly, our interviews with financial institution executives consistently indicated that cybersecurity is a top concern and priority investment item, signalling a large market opportunity for cybersecurity capabilities.

Within the Toronto region, there is a strong cluster of cybersecurity start-ups, with concentrations in data protection, application security and identity & access management. In an October 2016 report commissioned by the Toronto Financial Services Alliance (TFSA) and Ontario Centres of Excellence (OCE), Canada was ranked the fourth-largest cybersecurity innovation hub in the world⁵²; the majority of the cybersecurity firms identified in the report were situated in Toronto region. Additionally, the report cites strong talent and thought leaders, as well as access to domestic and international markets as key drivers of the corridor's strength in cybersecurity.⁵³

However, our market scan concluded that there have not been any new entrants since 2010 in the form of cybersecurity start-ups that have a financial services focus. For example, the "youngest" start-up we identified was founded in 2010, while others were inceptioned as early as 2003. This finding could have two implications. Firstly, cybersecurity offerings in the financial services context are dominated by several established players that started developing their capabilities early. Secondly, there could be some barriers to new market entry; for example, a relatively risk-averse culture may hinder financial institutions from adopting new, and potentially somewhat unproven technologies⁵⁴, especially cybersecurity-related capabilities, as they have a profound effect on mitigating risks. Going forward, a systemic catalyst that brings together ecosystem participants—such as cybersecurity innovators, financial institution executives, regulators, among others—to collaborate and further advance cybersecurity capabilities may be critical to advancing the overall financial services sector and the fintech ecosystem.⁵⁵

Recently, TFSA and OCE have been building momentum in advancing innovative fintech-specific cybersecurity through several initiatives; for example, the two organizations hosted the Finance Cybersecurity Partnering Forum in March 2017, where more than 200 experts participated to exchange ideas and identify collaboration opportunities for finance cybersecurity innovation. Additionally, in February 2017, the OCE and Israel Innovation Authority launched a new CAN\$4 million bilateral program to support industry-led innovation and collaboration between small and medium-sized enterprises, as well as large

corporations and academic institutions to develop cybersecurity technologies. The OCE and TFSA have identified several leading Canadian financial institutions to participate in the program.⁵⁶

Quantum computing

Quantum computing is in the early stages of development.

Quantum computing entails harnessing quantum mechanics to enhance information storage and processing; compared to traditional computers, quantum computers can solve a difficult set of problems much faster.⁵⁷ In terms of the capability's application to the financial services sector, there are early signs of its potential value. For example, a wealth firm may leverage quantum computing to optimize its investment portfolio with thousands of assets and financial instruments with varying degrees of interconnected dependencies⁵⁸. Other application opportunities may include detecting fraudulent activities by analyzing massive sets of data to identify key patterns⁵⁹ and increasing cybersecurity-related measures such as performing real-time security breach detection and device-to-device authentication.⁶⁰

Currently, quantum computing is in the early stages of development. In a 2017 Accenture report, the company estimates that consistent enterprise use of quantum hardware is two to five years out.⁶¹ Additionally, Accenture identified D-Wave, a Canadian firm based in British Columbia, as the sole manufacturer of commercial adiabatic quantum computers.⁶² Within the corridor, there has been large investment flowing into the development of quantum computing. Notably, in September 2016, the Canadian federal government committed CAN\$73 million to the University of Waterloo's Transformative Quantum Technologies program to develop universal quantum processors, quantum sensors and long-distance quantum communications.⁶³

Key Findings

- The innovation and growth of the Toronto region fintech ecosystem and the overall financial services sector is tied to the continued development and commercialization of new and emerging technologies—including AI, blockchain, cybersecurity and quantum computing. In particular, our interviews with local fintech stakeholders indicated a growing optimism that the region has considerable potential to develop a global comparative advantage in AI capability.
- Although the Toronto region produces top technical and research talent, the region faces a brain drain issue, notably to the United States. If the region wishes to establish as itself as an innovative and leading fintech hub and financial services sector of the future, it must provide compelling and lucrative opportunities to attract and retain its talent and talent from other regions.



Part 3. Regulatory and Policy Environment Analysis

Introduction and overview

In order for fintech businesses to thrive in the Toronto region, they need a regulatory ecosystem that is responsive to their specific needs and flexible enough to permit innovation. The results of our surveys and interviews suggest that many fintech start-ups and even some incumbent financial institutions view the existing regulatory framework as a significant impediment to rapid innovation and growth. At the same time, one challenge for regulators is that for the most part, their statutory mandates focus on regulation, protection and enforcement, requiring them to protect consumers and investors or safeguard the safety and soundness of the financial system or the capital markets, not facilitate innovation.⁶⁴

But rather than being simply an impediment to innovation, intelligent and responsive regulation can act as a catalyst, and government policy can also play a much broader role in fostering

innovation (for both start-ups and incumbents) than establishing a regulatory framework that does no harm. This chapter surveys the themes that have emerged from discussions with stakeholders regarding the existing regulatory landscape as it relates to fintech (for both incumbent financial institutions and alternative fintech providers) at the provincial and federal levels, discusses how regulators and policymakers in other key jurisdictions worldwide are responding to the challenges and opportunities of fintech and how they are using one particular tool, the regulatory sandbox, and makes other specific policy recommendations for Canada.

The results from our interviews and surveys suggest that Canadian regulators that have jurisdiction over the fintech activities and government agencies whose decisions affect them are making encouraging efforts to respond to the novel business models and online service delivery choices offered by fintech, but much remains to be

done. From many regulators, including the Ontario Securities Commission (“OSC”), the Competition Bureau and Payments Canada, we have heard of the need for dedicated teams of experts who understand both the new business models and the new technologies used to implement them, but stakeholders, especially new entrants without their own compliance staff, often complain about how difficult and expensive it is to navigate the regulatory maze, and that without hiring high-priced legal talent, it is often a challenge to find answers to such threshold questions as whether their proposed products or services are regulated at all and if so, by which of a large number of federal and provincial regulators.

In general, regulators have acknowledged that a fintech-friendly regulatory environment would avoid a rigidly prescriptive, rules-based approach that assumes paper-based transactions and instead would move towards a more principles-based, technology-neutral and organization-agnostic approach. But progress has been slow. What we have heard suggests that, especially for emerging fintech businesses, the potential provincial and federal regulatory compliance burdens can be a significant barrier to entry, so much so that some decide to go to markets outside Canada altogether.

One response to some of these issues is the “regulatory sandbox.”⁶⁵ Adopted by regulators in the United Kingdom, Australia, Hong Kong and Singapore,⁶⁶ and discussed in more detail on page 47, the sandbox provides a “safe space” in which an innovative emerging fintech company can test its business model under controlled conditions for a limited period of time without having to run the full gauntlet of regulations from day one; in some models, it provides a roadmap through the regulatory maze. It can also provide a “safe” space for an incumbent financial institution to try out new technologies without the need for onerous regulatory approvals. Although it may hold potential as a regulatory tool, the regulatory sandbox is difficult to adapt to the fragmented and siloed Canadian regulatory landscape, except in discrete areas such as capital markets. However, it may be possible to create a “super-sandbox” that will bridge federal and provincial and interagency gaps and respond to the unique features of the Canadian provincial and federal regulatory ecosystems.

The first section below discusses at a high level some of the main themes that have emerged from our interviews and surveys, with suggestions about how these can drive regulatory and government policy. The second section considers the extent to which the somewhat fragmented regulatory landscape for fintech in Ontario and Canada may be impeding the development of a more robust fintech industry. The third section discusses the regulatory sandbox in greater depth. Finally, the fourth section puts forward additional policy recommendations that the provincial and federal governments should consider to foster innovation and competition in the fintech sector.

Emerging themes from our research

The role of regulation

The regulatory compliance burden for the providers of financial services can be significant, but few stakeholders would dispute the proposition that regulation is both necessary and desirable, not only to protect the interests of consumers and investors, deter market misconduct, and punish bad actors, but also to promote certainty of outcome and consumer and investor confidence. Not surprisingly, representatives of the regulatory and other governmental bodies that we interviewed⁶⁷ or corresponded with share the view that regulation of the various activities undertaken by providers of fintech products and services (whether on a standalone basis or within a regulated financial institution) is both necessary and desirable to create stability and trust in the financial system. At its Fintech Workshop last February, the Competition Bureau noted that in the initial responses from stakeholders to its market study of the Canadian financial services sector⁶⁸ one of the emerging themes was that “Regulation is Necessary”:

Regulation helps create certainty for investors, consumers and new entrants alike. It is viewed as a way to build credibility, trust and overcome reputational barriers in this industry.

Regulation seeks to promote important public policy goals, such as the protection of personal information and the prevention of financial crime, and to respond to unacceptable levels of risk exposure for consumers and market participants or potential market failures.⁶⁹

Interestingly, we found that this view was shared not only by regulators but also by other stakeholders as well. Some respondents also noted that beyond its protective and certainty-enhancing function, regulation itself can serve as an active instrument of policy and as a catalyst for change and innovation.

The corollary of this theme, however, is that if a regulatory system does not promote certainty (because it is unclear what activities are regulated or by whom, or because rules are applied inconsistently or without a sound basis in policy), or if it is perceived as being hostile to innovation, it can act as a significant brake on innovation. Canada's worldwide reputation for having a stable and prudent financial services regulatory environment, greatly enhanced after our banks weathered the 2008 financial crisis virtually unscathed, can and should make it attractive to financial services businesses. However, that same system is sometimes perceived as favouring large, incumbent financial institutions and being somewhat inhospitable to innovation. One comprehensive report prepared by the Munk School of Global Affairs⁷⁰ summarized the situation in terms echoed by many of our respondents:

Canada has one of the world's most respected financial regulatory frameworks, and this framework is one of the bases for the continuous stability of its financial system. Nonetheless, this regulatory system and specific regulatory bodies now act (and are perceived to act) with inherent tendencies that limit or restrict new innovations emerging from new companies, thus preserving the status-quo for the already established Canadian financial institutions. This leads, first, to many Fintech firms either relocating their operations to the U.S., or not developing products in these niches, thereby allowing foreign companies to gain global prominence and control greater market share.⁷¹

Levelling the regulatory burden

As noted below,⁷² the trend in recent years has been for banks and fintechs to collaborate rather than compete head-to-head. However, an argument still heard in some quarters is that those heavily regulated institutions may be at a competitive disadvantage relative to fintech entrants unburdened by such regulation. For example, deposit-taking institutions, which make loans funded by deposits, are required to maintain sufficient regulatory capital and liquidity to ensure that they can continue to honour their deposit obligations and survive periods of financial stress.⁷³ In the interests of fairness and to ensure that consumers receive the same degree of protection whether the service provider is a bank or a small standalone fintech, the argument goes, both should be subject to the same regulations.

Even the Office of the Superintendent of Financial Institutions ("**OSFI**") has weighed in on this issue from the perspective of systemic risk:

While OSFI is seen as focused largely on appropriate areas of risk, other areas such as shadow banking, non-federally regulated entities in the DTI sector, and FinTech represent risks upon which many believe OSFI should be placing greater focus. The perceived growth in shadow banking and FinTech organizations, combined with the perception that such entities are held to far less onerous regulatory standards, are believed to be fostering an uneven playing field that disadvantages Canada's federally regulated DTIs and introducing systemic risk into the financial sector.⁷⁴

The Department of Finance has coupled the need for consumer protection with the level playing field as well:

While fintech companies are creating the potential for more innovation and competition in the financial services sector, concerns have been raised regarding appropriate regulation of fintech companies, consumer protection, and how best to support a level playing field with regulated financial institutions.⁷⁵

However, some have argued that the metaphor of the level playing field, while superficially attractive, is simplistic in that it assumes that applying the same rules to all players regardless of size, structure or risk posed to the system will necessarily ensure competitive outcomes. As Blayne Haggart, a student of competition in the finance sector, has argued with respect to small credit unions versus much larger financial institutions, applying the same rules to all players, regardless of size, market power, systemic importance or structure may favour large incumbents at the expense of smaller new entrants.⁷⁶ The level playing field metaphor focuses on the means (applying the same rules of the game impartially to all actors) rather than the ends (e.g. financial stability, consumer protection and effective competition). In an industry where large, well-capitalized established incumbents are competing with smaller new entrants, applying the same regulatory rules to both can disadvantage the smaller players without materially furthering the regulatory objectives. Instead, Haggart suggests that the better approach may be one of “competitive balance,” whereby regulators adjust the rules to take into account such factors as the market power, size and structure of the regulated players and the relevant markets.⁷⁷ For some entities, it may be appropriate for regulators to apply a lighter touch, which has been found to encourage fintech innovation in the United Kingdom, Singapore and Australia without necessarily sacrificing consumer protection or increasing systemic risk.⁷⁸

Another potential approach to fairer and more balanced regulation that would require more fundamental structural changes in the regulatory landscape is ensuring that regulation is “organization agnostic”—that is to move away from the current model of regulation based on the type of institution performing a function (is it a bank? a non-bank lender?) to the function itself (does it involve funds transfers? retail deposits?). The federal Task Force for Payments System Review proposed a similar approach when considering reforms to payments system governance in 2010.⁷⁹ So, for example, under this approach, regulation would focus on payment functions rather than on the institutions offering the payment services. In addition, some recommend that the approach should also ensure that regulations should be proportionate to the

risk involved in the activity. Whatever approach is adopted, there is consensus among all the players that the focus must always remain on protecting the consumer and mitigating systemic risk.

The regulatory landscape: confusing, fragmented and siloed

One recurrent theme heard from stakeholders (either directly or through input to the Competition Bureau) is that emerging fintech start-ups have difficulty determining what legislation applies to their activities and what regulators have jurisdiction. Based on stakeholder input to date, the Competition Bureau gave the following assessment of the Canadian regulatory landscape at its February 2017 FinTech Workshop:

The regulatory framework for financial services is fragmented, complex, and voluminous. Jurisdiction for regulating financial services can occur at the provincial or federal level, or both. With the myriad of potentially applicable regulations relating to areas such as privacy, securities, consumer protection, and proceeds of crime—and with many different regulators overseeing these frameworks—it can be a confusing and difficult landscape for a start-up.

The result is that some fintech businesses are not fully aware of which regulations apply to their business. Small and medium firms may also lack the resources to retain the legal or regulatory experts to advise them on how to navigate the regulatory landscape, and may choose not to enter the market or to compete at all.⁸⁰

Unlike a more unitary jurisdiction such as the United Kingdom or Singapore, Canada has no single financial services regulatory authority that has broad jurisdiction over the various areas that could be relevant. This issue has several structural sources: (i) the split between federal and provincial legislative authority; (ii) the allocation of legislative responsibilities among various ministries and departments at each level and (iii) the general lack of co-ordination or harmonization among these government levels and silos.

In this respect Canada bears some similarity to the United States. As one commentator notes in an article on special-purpose bank charters for fintech firms:

The regulation of financial services in the U.S. is highly fragmented, and fintech is challenging every aspect of that structure. Federal and state agencies can stake claim over the regulation of fintech, yet both are ultimately limited by narrow lanes and tightly defined jurisdictional boxes prescribed to them by their respective charters. As a result, even the most well-intentioned efforts are only able to address the trees, but not the forest.⁸¹

Although many of the same issues arise north of the border, Canada does have some advantages over the United States. Whereas banks in the United States can hold charters from either the federal or state governments, and are regulated at both levels, in Canada, banks, federal trust companies and insurance companies are regulated uniformly at the federal level by OSFI under federal financial institution legislation that is largely uniform in approach.⁸² (However, it should also be noted that insurance is regulated prudentially at the federal level but provincially with respect to market conduct, consumer issues and some financial capacity issues.) While securities matters are regulated provincially and we lack a national securities regulator, there is still a high degree of coordination and harmonization through the national instruments and national policies administered by the Canadian Securities Administrators. Although not yet fully operational, the new Cooperative Capital Markets Regulatory System administered by a Capital Markets Regulatory Authority shows some promise of more uniform legislation and policy, at least as between the participating governments of British Columbia, New Brunswick, Ontario, Prince Edward Island, Saskatchewan, Yukon and Canada.⁸³

The constitutional division of powers under Canada's federal form of government divides jurisdiction between Parliament and the provincial legislatures in ways that are not always intuitively obvious. The banking carried on by federally chartered banks is a matter of federal jurisdiction⁸⁴ (overseen by OSFI), yet functionally identical activities carried on by credit unions and many trust companies are regulated provincially by such bodies as the Financial Services Commission of Ontario ("FSCO").⁸⁵ The interbank payments system is regulated federally by Payments Canada under the auspices of the Bank of Canada⁸⁶, yet retail payment systems such as those used for credit and debit cards are largely subject to the

law of contract, with some oversight by the federal Financial Consumer Agency of Canada ("FCAC") administering voluntary codes of conduct.⁸⁷ Credit and debit cards issued by banks are regulated federally, with some ill-defined exceptions,⁸⁸ but prepaid gift cards are subject to provincial consumer protection legislation. In 2010 a task force sponsored by the federal Department of Finance called for a reform of payments law based on regulation by the activity performed by an entity rather than the nature of the entity itself.⁸⁹ To date these recommendations have not been implemented, and the Canadian law of payments continues to be a conceptually incoherent patchwork.

The technologically savvy innovators who typically staff fintech start-ups often lack the legal sophistication to navigate the regulatory landscape. An online marketplace mortgage lender seeking to raise seed capital online and then once it is operational, to match investors with borrowers, for example, needs to know that it is potentially subject to the following legislation:

- the crowd-funding provisions under securities legislation⁹⁰ (for seed funding and Series A financing, for example);
- mortgage brokers and lenders legislation;⁹¹
- collection agency legislation,⁹² if it sends demand letters to delinquent borrowers;
- with respect to disclosure to potential lenders, the registration and prospectus requirements under the Securities Act⁹³ on the basis that the loans constitute securities;⁹⁴
- cost of borrowing disclosure under the Bank Act and/or provincial Consumer Protection Acts;⁹⁵
- provincial legislation governing trust and loan companies, including capital requirements; and
- credit reporting legislation,⁹⁶ if it reports on the creditworthiness of potential borrowers.

If the lender collaborates with a federally chartered bank or a provincial trust company as the lender of record, to fund the loans or to hold funds or provide custodial services for documentation, consideration will have to be given to which entity is the lender for regulatory purposes and whether the lender must also comply with provincial or federal legislation governing those institutions or both.⁹⁷

Each of these pieces of legislation serves a specific consumer or investor protection purpose, and none of the stakeholders suggested that such legislation should be repealed or not apply to fintech start-ups. But we have learned from various regulators and government bodies that the lack of a single point of entry or source of regulatory guidance can have a number of adverse consequences for new entrants. On the one hand, those lacking any regulatory sophistication might assume that their activities are completely unregulated and forge ahead into the market unawares, only to have their activities later subject to regulatory sanctions. One regulator noted that a marketplace lender, for example, might assume that because it is not a federally regulated bank or trust company, it is not subject to regulation at all, not realizing that it has obligations under provincial consumer protection and securities legislation; it could be faced with a cease-and-desist order or incur significant fines and penalties and may have to abandon its business model altogether after incurring significant sunk costs. On the other hand, fintech entrants with some knowledge of the regulatory landscape may find that the regulatory burden or cost of compliance, including obtaining expert legal advice (which can run into the hundreds of thousands of dollars), is prohibitive and decide to expand into another geographic market altogether.

Providing a “regulatory concierge” service may be one way to help start-ups navigate the regulatory maze. Already in use in the agricultural sector, the concierge would provide initial guidance (although not legal advice) as to what regulations may apply to a particular activity and what regulators have jurisdiction.⁹⁸ The OSC LaunchPad and CSA Regulatory Sandbox (discussed on page 47 below) provide such a service with respect to securities regulation, but to provide guidance across a wide range of subject areas, the concierge would need to have particular expertise in fintech business models and technology and broad access to a wide spectrum of legislation, regulation and regulators. Creating such a service will require significant collaboration and cooperation between federal and provincial regulators. We will suggest later that a “super-sandbox” could serve this purpose as well.

The need for fintech-friendly regulation

Of course, the need for regulatory compliance across a broad spectrum of legislation is not unique to fintech start-ups. Even brick-and-mortar enterprises working largely in a paper-based world must at some point come to grips with regulatory compliance obligations under federal, provincial and municipal legislation governing a host of matters—business names, partnership or corporate formation, income tax, HST, property tax, municipal business licenses regulations, privacy and anti-spam legislation—and any enterprise offering financial services must determine what regulations apply to it.

The fact that all these areas are regulated by different regulators is not unique to emerging fintechs. What we have heard from stakeholders, however, is that because these new entrants seek to exploit new business models in an online environment, it is essential that regulations be framed in a way that facilitates the online user experience and is not wedded to a paper-based world. The Electronic Commerce Act⁹⁹ already provides that “electronic documents” and electronic signatures are functionally equivalent to and have the same legal effect as their paper and “wet ink” counterparts, with a few exceptions.¹⁰⁰

But many regulations affecting fintechs can seem to be drafted on the assumption that onboarding, disclosure and contracting will be accomplished using pen-and-paper and telephone and even face-to-face personal contact. The KYC client identification regulations under the Proceeds of Crime (Money-Laundering) and Terrorist Financing Act (Canada) (PCMLTFA)¹⁰¹ have recently been amended to acknowledge that some forms of identification may be ascertained in a non-face-to-face environment (such as a new definition of “signature card” that acknowledges electronic signatures),¹⁰² but many of the possible methods still require an inspection of physical original documents and none of them permit verification remotely through newer technologies such as video conferencing or Skype or by way of biometrics.¹⁰³ The Cost of Borrowing (Banks) Regulations¹⁰⁴ to the Bank Act provides that disclosure must be set out in a specified font size and use prescribed margins. Regulations under Ontario’s Payday Loans Act also specify prescribed

font sizes for certain disclosure.¹⁰⁵ Requirements such as these would make it difficult for a bank or fintech to deliver the disclosure to the small screen of a mobile device.

As a good example of how such legislation can be made more technology neutral, the cost of borrowing regulations under Ontario's Consumer Protection Act prescribe only the contents of required disclosure. Instead of drilling down to media-specific requirements such as font size with respect to specific items of disclosure, they reference only their relative degree of prominence,¹⁰⁶ which could be easily adapted to a small screen.

Open banking-APIs: Is Canada ready for this experiment?

Regulators in many jurisdictions have begun embracing the concept of "open banking,"¹⁰⁷ supported by application programming interfaces ("**APIs**") that enable the sharing of financial information among financial services providers. The adoption of Payment Services Directive 2 ("**PSD2**") will bring open banking and the sharing of customer information through common APIs to members of the European Union. PSD2 has been characterized as a "game changer"¹⁰⁸ for everything from everyday banking to peer-to-peer payments to the fundamental nature of the bank-customer relationship. One European banker has even described PSD2 as "the biggest change in banking for 700 years."¹⁰⁹ The intention is to level the playing field between financial institutions ("**FIs**") as gatekeepers of customer information and smaller players that have no easy access to that information.

The access to accounts or "XS2A" rule of PSD2 mandates banks or other account-holding payment service providers to facilitate secure access via APIs to their customer accounts and data if the account holder provides consent. Even though Brexit may prevent the full implementation of PSD2 in the United Kingdom or at least delay its implementation,¹¹⁰ the UK Competition Marketing Authority¹¹¹ has implemented a package of open banking measures. In September 2015, HM Treasury asked to set up the industry-led Open Banking Working Group (OBWG) which produced the Open Banking Standard to guide how banking data should be created, shared and used by various

parties with access. In an August 2016 report by the United Kingdom's Competition and Markets Authority regarding the retail banking market, the Financial Conduct Authority requires banks to implement the Open Banking Standard by early 2018.

Some regulators in Canada have also expressed support for open banking. Speaking at a conference on payments compliance, Commissioner of Competition John Pecman endorsed a recommendation that Canada adopt open banking to enhance competition between incumbent FIs and non-banks for financial services:

Open banking enables personal customers and small businesses to share their data securely with other banks and with third parties, to manage their accounts with multiple providers through a single digital app, to take more control of their funds, and to compare products on the basis of their own requirements. The transition to internet-protocol-based financial transactions could ultimately do to banking what Skype did to the telephone. Dr. Atkinson told us that, while there do remain some challenges to be overcome, open banking is fundamentally a more efficient, lower cost, more globalized, and more consumer-friendly model.¹¹²

The OSC has also indicated some sympathy for input received from innovators at the OSC's first "Hackathon":

Data that can be openly accessed, used and shared securely can benefit consumers and regulators. Open data has the potential to simplify a client's onboarding experience by making core information about the client available to various parties and eliminating duplicative forms and processes.

The potential for open data in streamlining manual processes was demonstrated by a number of solutions that eliminated duplication in KYC information collection and verification processes, and reflected the desire of investors to be in control of their own identities and data.

Open data may also be helpful to regulators. Regulators could potentially access this data on a real-time basis, making verification procedures faster and easier and improving auditing and oversight capabilities.¹¹³

In addition, the chair of OSC LaunchPad, Pat Chaukos, has voiced her support for open data as a spur to innovation, noting in a press interview: “You need to have the open-access data before you can get to the innovation” and “We’re going to support the facility of access to data. ... It is very much a live discussion for all regulators, and I would actually even say for government.”¹¹⁴

However, we have also heard significant concerns from members of the banking community that mandating so fundamental a change to the banking relationship in Canada could pose significant risks to consumers and the financial system and that at the very least those risks must be carefully assessed and mitigated before any policy decision is made in favour of open banking. The fact that the EU is adopting open banking should not in itself be sufficient reason for Canada to follow suit, especially in light of the less-than-stellar track record of the EU’s banking system in recent years. As its advocates point out, there are some obvious consumer benefits to allowing the seamless sharing of customer financial data, such as expediting onboarding and facilitating product-by-product comparisons. But those benefits must also be weighed against the risks and regulatory challenges.

Privacy is one concern. The Personal Information Protection and Electronic Documents Act¹¹⁵ (Canada) (PIPEDA) prohibits banks from disclosing the personal information of individual customers without their knowledge or consent except in narrowly specified circumstances. Of course, that consent could be obtained as part of standard account opening documentation, which could provide that the customer consents to the bank sharing his or her personal information with other financial institutions or providers of financial services for the purpose of opening accounts with or obtaining services from such institutions or providers where the customer has expressly authorized them to access this information for that purpose. However, customers may still have legitimate concerns about having their personal financial information shared beyond the virtual walls of their financial institution. Cybersecurity is another concern. Even the most secure systems are vulnerable to attack and data breaches, and when the inevitable breaches occur, a regulatory framework will need to be in place to assign liability and provide compensation.

How and by whom open banking would be regulated in Canada is also a question mark. Since OSFI and FCAC regulate only federal financial institutions it is not clear who would ensure compliance by non-regulated fintechs. In addition, all other things being equal, the benefits of imposing an additional layer of regulation on financial institutions would need to clearly outweigh the burden, and that case has yet to be made in Canada. Also, because regulation of financial services is largely entity-based rather than function based, that burden could fall unequally on federally regulated financial institutions: OSFI could have the power to compel them to share customer information with non-financial entities, but those entities could get the benefit of that information without a corresponding obligation to share information in return. At the very least, therefore, careful co-ordination among levels of government and regulatory bodies would be needed to ensure that an open banking standard is truly open and not restricted to federally regulated financial institutions.

Finally, it may still be too early to gauge the negative effects and unintended consequences of the PSD2 and open banking experiments. Perhaps a more prudent course would be to revisit the issue after enough time has passed to flush out those issues so that we can apply in Canada the lessons learned from real-world trials of this initiative in other jurisdictions.

Broad support for regulatory sandboxes, with some caveats

In general, we found broad support in principle from fintechs, incumbent financial institutions and regulators for the idea of a regulatory sandbox. Of the fintechs surveyed, 75 percent agreed that “establishing one or more regulatory sandboxes at the provincial and/or federal level would be of benefit to fintech start-ups in the Toronto region.”¹¹⁶ The Canadian Bankers Association (“CBA”) has also endorsed regulatory sandboxes that can adjust the regulatory requirements for organizations (both financial institutions and fintechs) to enable the testing of innovative products, services, business models and delivery mechanisms in a live environment.

Within the context of this type of regulatory model, appropriate parameters should be established in order to balance risks while fostering innovation. To that end, lessons may be learned from other jurisdictions where “regulatory sandboxes” and other types of regulatory innovation are already being proposed or developed.¹¹⁷

However, some regulators interviewed report that many stakeholders who express support for regulatory sandboxes may have only a rudimentary understanding of how they operate and therefore may entertain unrealistic expectations as to how much impact a single regulatory sandbox can have on the regulatory compliance burden generally. As discussed below, establishing a single regulatory sandbox that would cut across federal and provincial constitutional and jurisdictional divides presents significant challenges and would require a high degree of inter-governmental and inter-agency cooperation and coordination, led by a suitable “champion.” The relative success enjoyed by regulatory sandboxes in relatively unitary jurisdictions such as the United Kingdom and Singapore are not necessarily predictive of how effective they will be in Canada’s more fragmented regulatory landscape.

In addition, some venture capitalist respondents noted that regulatory sandboxes can actually serve as a disincentive to VC investments in a start-up offering products in a sandbox environment. Many are hesitant to invest in a start-up insulated from the “real world” in a sandbox that does not test the costs and stresses created by the regulatory compliance burden faced by real-world businesses. If sandboxes become more widely used in Canada, government policymakers (or the fintech “champion”) will need to make a strong business case to potential investors that fintech start-ups operating within a sandbox must demonstrate an ability to provide their services more widely in real-world conditions.

As will be discussed below, the OSC and CSA have already undertaken initiatives that bring regulatory sandbox concepts to securities regulation, but the question remains whether that approach is either possible or necessary to address the regulatory compliance burden facing fintechs.

The Canadian regulatory landscape for fintechs

Although regulation is notoriously slow to catch up with new technologies, fintech companies and their activities are by no means unregulated in Canada. “Fintech,” of course, is not a legal subject matter but a collective description of products, business models and service delivery platforms—such as payments, remittances, marketplace lending, on-line investment advice, portfolio management, data analytics—offered through an electronic platform, usually web-based, by standalone providers, regulated financial institutions or the two working together. These activities may be subject to a number of distinct regulatory regimes, depending on the type of activity and in some cases the type of entity that conducts it—banking, securities, federal and provincial financial institution legislation, anti-money laundering, privacy, anti-spam and consumer protection. They are for the most part subject to the same regulation that applies to their brick-and-mortar counterparts. In addition to the somewhat fragmented nature of these regulations, as noted above, we have also heard persistent complaints from fintech service providers that many of the regulations that apply to them are not well-suited to an online environment and that the application of existing regulatory paradigms to new business models can impose unnecessarily burdensome restrictions without appreciably enhancing consumer protection. In this section, we will give a brief survey of the Canadian regulatory framework that governs fintech activities in Canada and complaints and concerns that we have heard from stakeholders impacted by the particular regulatory schemes.

Federally regulated financial institutions

Regulatory issues confront the large incumbent federally regulated financial institutions (“**FRFIs**”) as well as small fintech start-ups. FRFIs include more than 400 banks, federal trust companies, co-operative credit associations, insurance companies and fraternal benefit societies, each subject to structurally similar federal legislation.¹¹⁸ Banks are subject to voluminous prudential regulations designed to safeguard the interests of depositors and the safety and soundness of the financial

system. OSFI is charged with regulating and supervising FRFIs and pension plans to determine whether they are in sound financial condition and are meeting their supervisory and regulatory requirements. FCAC complements OSFI as the agency responsible for consumer protection with respect to financial products.¹¹⁹

In its submission to the Department of Finance Canada in connection with the review of the federal financial sector framework,¹²⁰ the CBA voiced a number of concerns that its members have with the existing regulatory framework as it affects banks, views shared by many of the larger incumbent FIs responding to interviews and surveys.

Balancing innovation with consumer protection and stability

FRFIs are subject to extensive regulations and supervisory guidelines relating to privacy, consumer protection, cybersecurity and risk management.¹²¹ Largely self-regulated, fintech service providers may not offer the same level of consumer protection and security and may even pose systemic risk. Speaking at an annual shareholders' meeting in March 2016, the CEO of Toronto-Dominion Bank, Bharat Masrani, called for tighter regulation of online financial services on the basis that "Security breaches—service interruptions—and solvency issues have plagued a number of fintechs" and stated: "I believe it would be appropriate for policy makers to consider a regulatory environment that ensure the safety of consumer information and the integrity of our financial system."¹²² Although Mr. Masrani could not cite specifics, the CBA shares his concern:

Banks have been able to provide innovative products while working within a comprehensive regulatory framework that protects consumers. Canadians have trust and confidence that their interactions with banks will be efficient, accurate, and secure. Banks have extensive security measures in place to protect customers from fraudulent activity, including transaction monitoring to look for unusual activity, authentication measures for online banking, and the move to more secure chip and PIN debit and credit cards and tokenization of customer credentials in mobile wallets. Many of the new entrants to the financial services marketplace are not subject to similar regulatory requirements.

The objectives of innovation need to be balanced with consumer protection and the continued strength of the financial services sector. New players in financial services could cause significant disruption to the financial system and a deterioration of consumer confidence if they fail to meet their obligations to consumers. For example, if a consumer provides instructions to transfer funds based on disclosure of terms and conditions that are unclear, the consumer may be exposed to penalties and additional charges, as well as adverse credit reports, if the funds fail to clear in time to meet a bill payment deadline. Similarly, from a financial risk perspective, a payment service provider that has insufficient liquidity may fail to settle its payment obligations during the clearing and settlement process, exposing consumers and other market participants to negative impacts. Finally, a payment services provider that does not have adequate security measures may put consumer funds and consumer personal information at risk.¹²³

Whatever actual risks may be posed by the relative absence of regulation in the fintech sector, it is true that in the area identified by the CBA there is something of a regulatory vacuum. OSFI clearly has no jurisdiction over a marketplace lender that is not operating through an FRFI. As will be seen later in this section, such businesses are not entirely unregulated but they are not subject to the risk management, capital, consumer protection and disclosure requirements that would govern a bank offering the same suite of services. Accordingly, "Canadian consumers would benefit from a framework that ensures participants in the financial system, including non-bank players, meet standards appropriate to the financial services activities they engage in and the level of risk they pose."¹²⁴

One highly regarded authority on the law of payments in Canada has expressed similar concerns:

The practical consequence of the absence of legislative or regulatory control over the businesses of these entities is troubling, because it suggests that members of the public who do business with these entities are exposed to risks of which they may not be aware: (i) funds deposited with a fintech are probably not insured or guaranteed by any responsible entity; (ii) those funds may be held in unsegregated accounts,

and exposed to credit risk on the fintech; (iii) the contracts providing the terms of service are not subject to regulatory approval, or even oversight, by any governmental agency; (iv) disclosure by customers of their bank account or credit card account numbers and access codes or PINs are probably acting in violation of their contractual obligations to their banks or card issuers and, therefore, outside the scope of the “zero liability” policies; and, (v) although the fintechs have access to the payment systems, they create unknown levels of systemic risk, since they are not required to demonstrate any level of technical competence or reliability of their operations.

There is no federal authority with a mandate to regulate the entities providing retail payments services to the public. Bank of Canada has the authority to oversee the operations of the major wholesale payment systems for systemic risk, and the clearing and settlement operations of the ACSS for payment system risk, but no authority over fintech entities providing payment services directly to the public.¹²⁵

Concerns such as these will necessarily have to inform any policy that drives the regulation of fintech businesses providing financial services that could pose risk to consumers or even systemic risk.

Restrictions on partnering with fintechs: powers and investments

Although the conventional wisdom was once that incumbent FIs would compete head-to-head with more nimble and “disruptive” fintech players and possibly erode their market share in such areas as lending and investment counselling, the trend more recently has been more towards collaboration than competition and disruption.¹²⁶ However, the CBA noted that banks regulated under the Bank Act often find it difficult to forge effective working relationships with non-FIs because of the Bank Act’s restrictions on permitted investments and permitted lines of business. First, the bank must ensure that any fintech activities that it carries on directly are permitted under the Bank Act.¹²⁷ With certain exceptions, banks are not permitted to carry on any business other than the business of banking (which is not defined by statute), which includes “providing any financial service” (also undefined). Nearly any activity engaged in by a fintech firm could be regarded broadly as a “financial service” but the CBA has recommended that these provisions be clarified in the next round

of amendments to federal financial institution legislation scheduled for 2019 to ensure that banks can provide fintech services that might not fall squarely within traditional categories:

To ensure that banks can lead in financial innovation and conveniently deliver the services that enrich the lives of Canadians, and that Canadians demand, the business and powers section of the Bank Act should be updated to pave the way for financial sector evolution. This includes broadening the scope of activities that a bank may engage in under the Bank Act and adopting a broad and liberal interpretation of these provisions, including broadly interpreting what is a financial service and what is the business of banking. The Bank Act, and the ongoing interpretation of the Bank Act through OSFI Guidelines, Advisories and Rulings, should recognize that innovation in financial services means that the types of services provided by banks are, and will continue to be, rapidly changing. There should be a recognition that the use of technology is inherent in all financial services and that the mere use of technology to provide services, including new types of services and new ways to provide services, does not exclude such services or the provision of such services from the meaning of “financial service” or make them any less of a service that is within the business of banking.¹²⁸

Federally regulated financial institutions are also subject to strict limits on making “substantial investments” in entities other than “permitted entities” in specified lines of business without regulatory approval,¹²⁹ which the CBA and the Canadian Life and Health Insurance Association also regard as barriers to collaboration.¹³⁰ That said, some regulators observed that federally regulated financial institutions sometimes seem to regard the current lack of legislative clarity as a “crutch” or convenient excuse for not offering more disruptive fintech products or partnering more creatively with fintech service providers. There is room for innovation even within the current legislative framework.

Federal anti-money laundering legislation

The Proceeds of Crime (Money-Laundering) and Terrorist Financing Act (Canada) (“**PCMLTFA**”) and associated regulations¹³¹ impose extensive anti-money laundering (“**AML**”), counter-terrorist financing (“**CTF**”), know-your client/client identification (“**KYC**”) and suspicious transaction

reporting requirements on a prescribed list of reporting entities (casinos, real estate brokers, banks, insurance companies, securities brokers, money services businesses, accountants, British Columbia notaries and jewellers). Reporting entities must be registered with the Financial Transactions and Reports Analysis Centre of Canada (“**FINTRAC**”). The category that would be most relevant for stand-alone fintech businesses would be “money services business,” defined as including a business engaged in transferring funds from one individual or organization to another using an electronic funds transfer network. Determining whether a business that involves electronic funds transfers is a money services business is not a straightforward exercise: FINTRAC has issued a large number of policy interpretations that run to 84 pages answering whether a given activity constitutes a money services business.¹³² In addition, a fintech business, whether or not it is a reporting entity, may still have CTF reporting obligations under the Criminal Code or PCMLTFA regarding terrorist property, Taliban property or listed person property.

If the fintech service provider is subject to the reporting and registration requirements of the PCMLTFA, it may also need to comply with know-your-client regulations mandating specific forms of client identification. As noted earlier,¹³³ some of these regulations may be challenging for fintechs that want to offer a totally online experience. The fact that some FIs may be subject to AML/CTF sanctions legislation by partnering with possibly non-compliant fintech service providers who in effect shift the expensive compliance risk to the FIs could result in the FIs “de-risking” by terminating the relationship with the fintech entity, as it has been the case in the United Kingdom.¹³⁴ Any fintech whose activities involve enabling funds transfers or on-line payments must at some point deal with a bank that has access to the Canadian payments system. Being “de-risked” and effectively shunned by Canadian banks could effectively force these companies to pull up roots and move elsewhere. Greater clarity with respect to whether AML legislation applies to various fintech activities could stem this flow if it becomes clear to the FI that its fintech partner no longer poses a risk of non-compliance, either because it clearly is not subject to AML legislation or it is compliant.

Payments law

No single piece of legislation or single regulatory authority governs electronic payments in Canada. Cheque clearing and settlement and wholesale and retail transfers of funds between financial institutions such as banks and trust companies are governed by the detailed rules and procedures administered by the Canadian Payments Association (now operating as Payments Canada),¹³⁵ a non-share capital corporation created by statute.¹³⁶ The Bank of Canada has the authority to oversee the wholesale and retail payments system for systemic risk, but the payment and quasi-banking services provided by non-bank fintechs are largely unregulated. Surveying the patchwork of legal rules governing payments in Canada, in 2011 the federal Task Force on Payment System Review recommended in its report¹³⁷ that payments be recognized as a distinct area of the law governed by a uniform set of legislated rules and that a new regulatory body should be established to oversee and regulate payments activities, regardless of the nature of the entity that provides them, and set policy, maintain uniform standards and protect the public.

To date these recommendations have not been acted upon, but concerns that the regulatory vacuum in which fintechs provide payment and even “shadow banking” services appears to continue to trouble the Department of Finance. As noted above, in its Consultation Document, the Department of Finance warned that “While fintech companies are creating the potential for more innovation and competition in the financial services sector, concerns have been raised regarding appropriate regulation of fintech companies [and] consumer protection.”¹³⁸

Provincial securities regulation

Many of the activities undertaken by such fintech companies as online advisers, marketplace lenders, angel investor platforms and crowdfunding may implicate provincial securities legislation. Securities law is highly complex and technical and even the threshold question of whether a given product constitutes a “security” can be fraught with difficulty, and the process of obtaining expert legal advice and applying for relief or a ruling can be extremely time-consuming and expensive, often running into the hundreds of thousands of dollars in legal fees. Although securities regulators

are making some progress in providing guidance and in some cases exemptive relief for fintechs, the approach to date has been somewhat reactive and ad hoc, with a tendency to force the innovative activity into an existing regulatory mould rather than coming up with alternative means of compliance.

The Ontario Securities Commission has adopted both a traditional and, recently, a more progressive approach to innovation. In an address to the Toronto region Board of Trade last fall, the Chair and CEO of the OSC, Maureen Jensen, highlighted the tension between the OSC's legislative mandate and the need to allow innovation:

As a securities regulator, the Ontario Securities Commission must balance protection of investors and the integrity of the financial system—while allowing innovation and avoiding over-regulation. The need for balance has never been greater.

Quite simply, I do not believe the status quo is an option.

That said, what has not changed at the OSC is our focus on our touchstone mandate: to protect investors from unfair, improper or fraudulent practices and foster fair and efficient capital markets.¹³⁹

The traditional approach is illustrated in the OSC's cautious position on peer-to-peer lending. In a press release¹⁴⁰ the OSC set out its expectations for businesses planning to operate peer-to-peer lending websites. Essentially the document is simply a warning that registration or prospectus requirements may apply to the activity and a recommendation to obtain legal advice.

Peer-to-peer lending websites generally facilitate the matching of borrowers and lenders. The OSC notes that these lending businesses may differ in structure, and depending on the underlying facts and circumstances, a loan arrangement entered into on a peer-to-peer lending website may constitute a "security" as defined under the Securities Act.

"If you are approaching any Ontario investors to fund peer-to-peer loans or loan portfolios, then you should be talking to the OSC about securities law requirements, including whether you need to be registered or require a prospectus," said Debra Foubert, Director of Compliance and Registrant Regulation at the OSC.

If a person or company is offering securities to the public in Ontario, they must file a prospectus or rely on an exemption from the prospectus requirement.

There is no real attempt to adapt the existing registration and prospectus requirements to the new business model. Instead the OSC is bound by its mandate, which is "to provide protection to investors from unfair, improper or fraudulent practices and to foster fair and efficient capital markets and confidence in the capital markets"—not, it might be added, to foster innovation and create a welcoming regulatory environment for new business models. Last summer, an OSC Staff Notice underscored these points.¹⁴¹ In granting exemptive relief to online lenders, the OSC has proceeded with a degree of caution that has likely driven some start-ups to friendlier jurisdictions. Following a long and expensive process,¹⁴² the OSC issued its first registration of a peer-to-peer lending platform to CommunityLend Inc. as a limited market dealer in 2009¹⁴³ within a highly restrictive framework. (Possibly partly because of the regulatory burden, CommunityLend ceased operating its P2P lending platform in 2012.) It was not until October 2016 that the OSC granted any further exemptive relief to P2P lenders or investment platforms, now within the framework of the new OSC LaunchPad and National Instrument 31-103.¹⁴⁴

Another example is the OSC's recent cautions regarding distributed ledger technology:¹⁴⁵

Any business that is operating or planning to operate a DLT-based venture should consider the different types of offerings that involve securities within the meaning of the Ontario Securities Act (e.g. evidence of title to or interest in the capital, assets, property, profits, earnings or royalties of any person or company, a product that is an investment contract); the types of trading activities that will occur; and whether registration as a dealer, adviser and/or investment fund manager is required.

In fairness, this is not a narrowly prescriptive prohibition but cautionary advice that a DLT-based venture may implicate securities legislation. However, given the notorious difficulty of determining whether a novel financial product constitutes a “security,” the uncertainty created by this sort of admonition is not calculated to encourage innovation. Rather than hire a Bay Street law firm to give an expensive and probably highly qualified opinion as to whether Ontario securities law applies to an innovative platform for transferring securities using DLT, a fintech firm may decide to take its idea elsewhere. To create greater certainty, it would be helpful if the OSC or CSA engaged in the sort of detailed, legislation specific analysis that the U.S. Financial Industry Regulatory Authority (“**FINRA**”) has recently undertaken regarding the implications of blockchain for the securities industry.¹⁴⁶ In addition, Singapore recently proposed a new regulatory framework for payment providers that would bring digital currency exchanges under the jurisdiction of the Monetary Authority of Singapore.¹⁴⁷

As discussed below, the OSC initiated its LaunchPad last October as a means of providing guidance to fintechs as to their responsibilities under securities law and granting targeted exemptive relief on a case-by-case basis. In announcing the LaunchPad the OSC Chair acknowledged that the traditional approach may not work with fintechs:

Some of the new fintech businesses and platforms don't fit neatly into our regulatory framework. And some of our requirements may not make any sense in the context of their business. We recognize that we have to keep pace with the changes brought on by fintech and not prevent promising business models from coming to market. Our objectives of investor protection and fair and efficient markets are unchanged, but the approach we take needs to evolve.¹⁴⁸

The CSA has also provided somewhat prescriptive guidance to online investment advisors¹⁴⁹ to the effect that online advisors must comply with National Instrument 31-103¹⁵⁰ regardless of the form of advice, that the advisor is still responsible for satisfying KYC requirements and that prior to implementing an online model, the advisor will

need to file substantial documentation, including their proposed KYC questionnaire. To date there is no securities regulatory regime tailored specifically to online advice, presumably because the risks to investors remain the same regardless of the medium in which advice is given. For example, some stakeholders have questioned the rationale behind requiring a robo-advisor to speak with clients before enrolling them on-line.¹⁵¹ However, through the OSC LaunchPad the OSC is showing some flexibility in providing for alternative compliance in this and other areas.

One illustration of how incomplete coordination among provincial regulators of securities legislation can yield a somewhat unwieldy legislative solution is the equity crowd-funding exemptions that are now in place across Canada. Equity crowd-funding is relevant to fintech in two ways: (i) it can provide a platform for raising seed capital or early-stage capital for a fintech start-up and (ii) the line of business itself. Ontario, Manitoba, Quebec, New Brunswick and Nova Scotia have adopted a crowdfunding prospectus exemption through Multilateral Instrument 45-108¹⁵² (which runs to some 21 pages and imposes detailed requirements for disclosure and web portals). However, an alternative set of “harmonized exemptions” was adopted by British Columbia, Saskatchewan, Manitoba, Quebec, New Brunswick and Nova Scotia,¹⁵³ resulting in a somewhat confusing patchwork.¹⁵⁴

Consumer protection legislation: cost of borrowing

Like any other enterprise, a fintech that does business directly with consumers must comply with provincial consumer protection legislation. One area that may raise some compliance concerns for on-line lenders seeking to do business in other provinces is the cost of borrowing disclosure. Although there is some degree of harmonization, preparing disclosure statements that satisfy the requirements of every province can be challenging. For lenders whose value proposition involves a paperless online or mobile device experience, complying with legislation that was designed for paper-based onboarding can be a frustrating experience.¹⁵⁵

The regulatory sandbox—a potentially useful tool, but no panacea

As implemented in a number of key fintech centres worldwide, the regulatory sandbox has attracted attention as a potentially useful tool of policymakers to foster innovation in the fintech sector by permitting companies (including start-ups, established players and traditional financial institutions) to get innovative fintech products to market quickly during a controlled test phase without incurring the expenses and delays associated with full-bore regulatory compliance and to provide helpful guidance through the regulatory maze. Appendix B summarizes the structure and operation of regulatory sandboxes as they have been implemented in four leading centres—the United Kingdom, Singapore, Australia and Hong Kong—and for comparison looks at the United Arab Emirates model and some analogous exemptive relief that has become available in the United States.

Of course, in considering the regulatory sandbox, it is important to bear in mind that however implemented, the regulatory sandbox is no magic bullet: the actual number and type of firms that can successfully make use of it may be somewhat limited. As noted in Appendix B, even in the United Kingdom, where the FCA sandbox has been live for over two years, only 24 of 69 applicants in the first cohort have entered the testing phase (and of these, only one was an “insuretech” offering),¹⁵⁶ and it is not yet clear how many of these will successfully exit to offer their products in the “real” world subject to the full burden of authorization.

In this section, we consider how regulatory sandboxes can assist both fintechs, especially in their start-up phases, and established financial institutions alike, whether the regulatory sandbox is a viable solution for the compliance issues affecting fintech discussed earlier, the structural and political issues that would need to be addressed for sandboxes to be effective, which regulatory bodies at the federal and provincial level should be included, and what a “made in Canada” sandbox might look like.

Securities law initiatives

At the outset, it should be noted that to their credit, Canadian securities regulators have already started to embrace the regulatory sandbox or related tools as a means of allowing fintechs to test in a controlled market products and services that may engage securities laws in a less restrictive regulatory regime that does not compromise investor or consumer protection. The OSC LaunchPad that was rolled out last November,¹⁵⁷ while not a true sandbox, incorporates some elements of a regulatory sandbox, such as dedicated staff and guidance, but to date has provided only tailored exemptive relief for dealers or intermediary registration and alternative compliance on a case-by-case basis rather than across the board relaxation of such requirements for applicants that meet certain criteria. In addition, the OSC has announced that “work[ing] with fintech businesses to support innovation and promote capital formation and regulatory compliance” will be one of its priorities in 2018.¹⁵⁸

Through the OSC LaunchPad, the OSC offers support to emerging fintech businesses by providing tailored guidance on navigating the Ontario securities regulatory landscape.¹⁵⁹ The OSC LaunchPad team directly engages with eligible businesses by offering:

- meetings or conference calls between the OSC LaunchPad team and eligible businesses;
- informal guidance on potential securities regulation implications prior to, or at an early stage of, development of the product or service;
- flexible approaches to fulfilling regulatory requirements; and
- informal guidance provided by securities law experts through events hosted by the OSC LaunchPad team.¹⁶⁰

The OSC is empowered to exempt start-ups on a case-by-case basis under s. 74 of the Ontario Securities Act, which affords relief from prospectus requirements¹⁶¹ and the requirements to be registered.¹⁶² Through the LaunchPad, the OSC also considers time-limited registration or exemptive relief to allow companies to test their products or services in a live environment. For example, the OSC has granted time-limited registration to an online platform that connects accredited investors who have venture capital

investing experience with tech start-ups that are participating in or have completed an Approved Incubator Program.¹⁶³ The rationale from the OSC is that the acceptance into an incubator also acts as a vetting process. Additionally, the OSC has granted this platform exemptive relief from certain securities requirements for a test period of two years.¹⁶⁴ (By comparison, fintech businesses accepted into Australia's regulatory sandbox are entitled to test their products for a period of 12 months.) Furthermore, time-limited registration or exemptive relief for other start-up funding platforms is considered on a case-by-case basis. In another example, the Canadian start-up Lending Loop has also obtained exempt market dealer licenses to enable the company to present lending opportunities to accredited investors.¹⁶⁵

The OSC recently entered into an agreement with the United Kingdom's FCA, whereby the two regulatory bodies have committed to helping fintech companies enter into each other's markets.¹⁶⁶ The OSC will refer the businesses it supports through its LaunchPad scheme to the FCA's regulatory sandbox and vice-versa.¹⁶⁷ At the preliminary stage, the businesses that are referred will be able to discuss the authorization process with the regulator as well as any preliminary regulatory issues that have been identified. The OSC and the FCA will continue providing assistance to companies during the authorization process and after authorization has been granted.¹⁶⁸ The agreement also contains a commitment to information sharing with respect to market trends and emerging regulatory issues.¹⁶⁹ The OSC has also entered into a similar arrangement with the Australian Securities and Investments Commission.¹⁷⁰

On February 23, 2017, the CSA launched Canada's first national regulatory sandbox for securities.¹⁷¹ The initiative will allow fintech companies to test innovative business platforms without full regulatory approval from securities regulators, for example, through limited audiences or under a time-limited exemption.¹⁷² Exactly how the CSA sandbox will operate in practice is not yet entirely clear. Interested businesses are asked to contact their relevant securities regulators, who will consider the business' eligibility and then refer eligible applications to the CSA, with a major requirement being that businesses "provide genuine technological innovation in the securities

industry."¹⁷³ As part of the application process, the CSA may request live environment testing, a business plan and demonstration of potential investor benefits.¹⁷⁴ Examples provided by the CSA of potential business models eligible for the CSA regulatory sandbox are:

- online platforms, including crowdfunding portals, online lenders, angel investor networks or other technological innovations for securities trading and advising;
- business models using artificial intelligence for securities trades or recommendations;
- cryptocurrency or distributed ledger technology-based ventures; and
- technology service providers to the securities industry, such as non-client facing risk and compliance support services.¹⁷⁵

Of course, both these initiatives are restricted to securities legislation and they essentially involve a special application and institutionalization of exemptive powers that securities regulators already possess.

As noted earlier, there seems to be broad support in principle among Ontario and federal regulators for the concept of a regulatory sandbox.¹⁷⁶ In addition, in 2016 the Bank of Canada conducted an experimental trial of blockchain technology as the backbone for a new payments system called "Project Jasper," a collaboration between the major Canadian banks and the Bank of Canada to test blockchain technology in a closed environment.¹⁷⁷

It should also be noted that regulatory sandboxes need not be confined to emerging start-ups: they have a role to play for incumbent financial institutions seeking to test innovative products as well without having to go through the full process of applying for OSFI or ministerial approval. Indeed, only authorized financial institutions can access the Hong Kong Monetary Authority's Supervisory Sandbox.¹⁷⁸

Elements to be included in regulatory sandboxes

As set out in greater detail in Appendix B., the four regulatory sandbox regimes that we examined share a number of common elements that should

be considered for inclusion in any Canadian regulatory sandbox:

Eligibility criteria and application process

The United Kingdom, Singapore and the United Arab Emirates sandboxes require fintech candidates to undergo a formal application process to become eligible for the exemptive relief that could become available. The eligibility criteria include:

- a genuine innovation or use of technology in an innovative way;
- some evidence of consumer benefit, increased efficiency or competition or improved consumer choice;
- demonstration that a sandbox is needed; and
- ability to deploy the fintech service more broadly in the relevant market.

The Hong Kong Monetary Authority has not yet prescribed specific eligibility criteria. Alone among the sandboxes surveyed, instead of an application process, Australia's regulatory sandbox sets out a number of eligibility criteria and conditions which if satisfied entitle the fintech business to rely on the relevant licensing exemption for 12 months to test one of a limited number of products and services. Although this approach has the benefit of using self-assessment to avoid the additional red tape of a formal application, it also exposes the fintech business to the risk of non-compliance if it misinterprets the eligibility criteria in its favour or inadvertently exceeds one of the thresholds (for example, having no more than 100 retail clients and customer exposure or no more than \$5 million). In the Canadian context, the Australian model would therefore seem less attractive than the UK or Singapore model.

Relief and guidance available

Regulatory sandboxes typically provide time-limited exemptive relief from licensing or authorization requirements and guidance as to regulatory compliance obligations. For example, as in the United Kingdom and Australia, authorizations subject to specific restrictions can be granted to unauthorized firms or tailored to their specific needs or as in Singapore, specific legal and regulatory requirements can be relaxed on a case-by-case basis. Another form of relief is

the no-action or no-enforcement letter that can be given to otherwise authorized firms seeking comfort that their proposed activities will not attract regulatory sanctions. Finally, the regulatory authority can grant waivers of specific regulatory requirements to firms that meet prescribed criteria.

Protecting consumers and investors

No regulatory sandbox can relax existing regulatory restrictions in a manner that exposes consumers or investors to the risk of fraud, loss or breach of privacy or confidentiality. Regulatory approaches to these issues vary by jurisdiction. One approach is to require that customers give their informed consent to dealing with a firm not subject to the full gamut of regulatory restrictions. Some basic requirements with respect to risk management, protecting customer confidentiality and funds and dispute resolution are often kept in place, and if they suffer a loss, customers have recourse against the sandbox firm, either through insurance or sufficient capital.

Exiting the sandbox

A fintech firm can typically enjoy the benefits of a sandbox relief only for a specified period, unless terminated earlier if, for example, the firm breaches the sandbox conditions or at which time the firm must exit the sandbox. At that point the firm can deploy the service more broadly but will be subject to all relevant regulatory requirements.

Adapting the regulatory sandbox to Canada

A made-in-Canada super-sandbox?

The fragmented and siloed nature of financial services regulation in Canada makes it difficult to envisage what a single regulatory sandbox that would apply to all areas of jurisdiction and all participants in the fintech marketplace would look like or whether it is even possible. The reality is that effective co-ordination between different levels of government and different regulatory agencies will be essential if regulatory sandboxes are to achieve their objectives.

In a few areas of provincial regulatory competence, co-operation among provincial regulators could form the basis of an inter-provincial regulatory

sandbox that would enable fintech entrants to obtain exemptive relief or alternative compliance in one participating province or territory and then rely on that exemption in the other participating provinces and territories. Capital markets is the best example. As we have seen, the CSA has already embarked on its own cross-Canada regulatory sandbox that is intended to “facilitate the ability of [fintech] businesses to use innovative products, services and applications all across Canada, while ensuring appropriate investor protection.”¹⁷⁹ However, it is hard to see how this model could be applied to multiple levels of government and multiple regulatory bodies within each level given that Canada has no national regulator with prudential, market conduct and supervisory authority as broad as that of the United Kingdom’s FCA or the Monetary Authority of Singapore. Having multiple sandboxes, one for each “silo,” could conceivably make matters worse for fintechs rather than better by requiring an applicant to make a separate application to each sandbox, after first seeking legal advice to find out which ones apply and then possibly having to satisfy multiple and conflicting eligibility criteria.

One idea that would at once address the fragmentary nature of the Canadian regulatory landscape and differentiate Canada from other fintech centres is the “super-sandbox,” proposed by Chris Donnelly, Vice-President and Counsel to Manulife, in a submission to the Competition Bureau:

Other jurisdictions have established similar regulatory sandboxes. We believe that there is an opportunity to differentiate Canada by creating a “Super-Sandbox.” The “Super-Sandbox” would provide all fintech companies, whether working independently or in collaboration with an existing financial services provider, with a single source of contact through which to engage all relevant regulators in Canada. It could not only act as a gateway but could be tasked with actively helping fintech companies engage with federal and provincial regulators. Regulators should commit to working collaboratively with each other in assessing fintech solutions in order to reduce duplication and facilitate the timely delivery of innovative services across provincial borders and across sectors.

We encourage the federal government to establish a “Super-Sandbox” that would help to coordinate discussion between fintech companies and regulators across Canada. This work could be housed within OSFI, ISED [Innovation, Science and Economic Development Canada] or the Bank of Canada.¹⁸⁰

This is certainly an idea worth exploring. The keeper of a super-sandbox would likely have no regulatory authority itself. Instead it would act as an initial screen, gateway and guidepost, having the authority to assess eligibility, using a uniform set of criteria that would apply across the board, grant a preliminary approval and then direct the applicant to the appropriate federal or provincial regulator to complete the application process and set conditions for exemptive relief, no-action letters or waivers. Each regulator would have its own sub-sandbox that would form a part of the super-sandbox network and be subject to its generic application criteria and conditions but could also be accessed on a standalone basis, as with the CSA sandbox, if the applicant is confident that regulatory relief was required in only one area. The super-sandbox keeper could also serve as the national “fintech champion,” proposed on page 52 below, promoting the cause of fintech businesses while at the same time easing their regulatory burden.

Primary objectives of the super-sandbox

On the basis of our research and input from stakeholders we believe that the primary objectives of a super-sandbox (and its component sub-sandboxes) would be as follows:

- providing greater certainty to fintech firms as to what, if any, regulations apply to them and serving as a source of reliable information and guidance;
- encouraging innovation and experimentation by both fintech firms and financial institutions by permitting novel ideas and business models to be tested during a time limited test period on relatively small groups of consenting and fully informed consumers or investors without incurring the time and expense of compliance with all the regulations that would apply to such activities outside the sandbox;
- permitting fintech firms and financial institutions to bring innovative fintech ideas to

market more quickly by providing exemptive relief from otherwise time consuming compliance requirements, or waivers, no-action letters or expedited approvals, or crafting alternative means of compliance that recognize the electronic nature of fintech service delivery;

- providing enhanced access to capital markets for new entrants; and
- serving as the centrepiece for a broader innovation hub that would include partnerships with private incubators and academic institutions.¹⁸¹

What regulators should participate in the super-sandbox?

Whether a regulator or government agency is suitable for a regulatory sandbox depends in large part on what it regulates and how. In order for a government entity to participate meaningfully in a regulatory sandbox, it must first have regulatory and enforcement powers the exercise of which now are perceived as unduly burdensome and the statutory power to provide exemptive relief from those powers and/or the discretion to permit alternative means of compliance that still achieve the regulatory objective. Provincial securities regulators such as the OSC are the classic example. The sandbox concept works less well at the federal level, where the government agency may have a quasi-regulatory role in setting technical standards and imposing rules designed to ensure systemic stability and efficiency, such as Payments Canada, and to some extent, the Bank of Canada. The latter type of agency can play a useful role in setting up scope and time-limited beta tests of new technologies which do not yet have a statutory framework: one notable recent example is Project Jasper, a joint pilot project of the Bank of Canada, Payments Canada and private enterprise to test distributed ledger (blockchain) technology as the basis for a modernized, faster wholesale and retail payments system.¹⁸² However, Payments Canada could not very well exempt some of its direct clearers from compliance with the rules governing clearing of electronic payments without disrupting or even causing chaos in the payments system. It is also not immediately apparent how a regulatory sandbox would work where a regulator such as OSFI has a broad supervisory mandate to ensure that the institutions it regulates do not take excessive risk that could jeopardize the savings of consumers; it may be for that reason

that the recent US Office of the Comptroller of the Currency proposal to grant special purpose bank “fintech charters” to some banks has encountered considerable resistance at the state level.¹⁸³ However, through published guidelines specifying eligibility criteria and required protective measures and setting out statements that no administrative action would be taken if the requirements were complied with, OSFI could in effect establish regulatory sandboxes that would enable FRFIs to offer innovative fintech solutions without ministerial or OSFI approval.

That said, the federal and inter-provincial regulators that should be considered are

- OSFI (federal financial institutions),
- FINTRAC (AML/ATF legislation),
- Financial Consumer Agency of Canada (financial consumer protection),
- Competition Bureau,
- the new Capital Markets Regulatory Authority,
- Payments Canada,
- Bank of Canada,
- Office of the Privacy Commissioner of Canada.

The same considerations discussed at the federal level will need to be taken into account in assessing how various provincial regulators and agencies could participate in one or more regulatory sandboxes. Those that should be considered in Ontario are

- OSC/OSC LaunchPad, in cooperation with the CSA,¹⁸⁴
- Ministry of Finance,
- Financial Services Commission of Ontario (soon to be transitioned to a new Financial Services Regulatory Authority),¹⁸⁵
- Ministry of Consumer and Government Services,
- Information and Privacy Commissioner of Ontario.

Again, it should be emphasized that co-operation between federal and provincial regulators to establish a uniform approach will be crucial if regulatory sandboxes are to succeed, especially for financial institutions such as banks, insurance companies and trust companies, which operate nationally.

Other government policy measures that could be considered to support the Toronto region fintech ecosystem

The regulatory sandbox is but one of many tools available to regulators and government policymakers to foster innovation in financial services and other areas. There is no shortage of existing government-funded tax incentives and funding programs available to encourage start-ups and SMEs to develop new technologies. Appendix B sets out a summary of a few of the established and promised programs at the federal and provincial levels. It will be seen that most of these initiatives are variations on a few common themes—tax incentives and financial support through grants or loans. But few of these programs specifically target the fintech sector; and because they are scattered throughout various ministries, departments and agencies, it can be daunting even to find a program that matches a fintech start-up's particular funding needs, much less navigate through the application process. Moreover, while funding and tax relief are important levers, they will not suffice to turn the Toronto region into a vibrant fintech hub, if only because taking the benefit of such incentives can be time consuming and frustrating. One perennial complaint from respondents, for example, is the long delays in having claims for scientific research and tax credits ("**SR&ED**") reviewed and approved by the CRA.

We note that there are also a number of policy tools, in addition to the regulatory sandbox which are being used by internationally leading fintech jurisdictions. In particular, the United Kingdom and Singapore have both taken an active policy approach implementing a number of useful regulatory measures to facilitate fintech development in their countries. Further details on these initiatives can be found in Appendix C.

In light of our research and stakeholder input we would recommend that the federal and Ontario governments and regulatory bodies work together towards the following policy objectives and regulatory outcomes:

Promote intergovernmental and inter-agency collaboration

Whether or not regulators establish a "super sandbox," co-ordination and collaboration between federal and provincial governments and among the various regulatory bodies and ministries at each level will be essential first, to ensure a coherent approach to fintech that balances the need for consumer, investor and systemic protection against the need for innovation, second, to provide a single gatekeeper that can direct a fintech seeking regulatory guidance to the appropriate authority or source of information. One possible means of ensuring such coordination would be for regulators and government agencies, ministries and departments that have jurisdiction over fintech related issues at both the provincial and federal levels, to enter into memoranda of understanding that would provide a framework for developing common, harmonized policy objectives and regulatory principles. A protocol for inter-agency communication and co-operation would set out those objectives as benchmarks for regulation in each area.¹⁸⁶

Establish dedicated fintech teams

Respondents and interviewees repeatedly stressed the need for fintech-specific expertise at the regulatory level. Regulators must understand both the technology and the business models used by fintechs seeking regulatory guidance or relief before they can respond appropriately. Some measures have been taken in this regard by provincial securities regulators including, for example, the OSC LaunchPad and the British Columbia Securities Commission's dedicated fintech team.¹⁸⁷

Create a national fintech champion

Federal and provincial regulators should collaborate and co-operate to create a national fintech "champion" and strategy, following the examples of the United Kingdom and Singapore. According to John Pecman, the Commissioner of Competition:

When we look to the international stage, it's clear that countries with a FinTech champion and strategy achieve innovation faster. I've already mentioned the United Kingdom, where the Competition and Markets Authority has advanced regulatory reform in fundamental areas like open banking. Singapore is another country that is recognized for surging ahead, following a series of strategic activities that brought FinTech stakeholders together in a cluster to accelerate their growth.¹⁸⁸

Nationally this could be achieved if the provinces agreed to designate a newly formed unit of a designated federal department. One logical candidate would be Innovation, Science and Economic Development Canada ("**ISED**"). Part of ISED's stated mission is that it "works in partnership with the members of the Innovation, Science and Economic Development Portfolio to leverage resources and exploit synergies" in a number of areas, including "innovation through science and technology—helping firms and not-for-profit institutions more rapidly turn ideas into new products and services."¹⁸⁹ This fintech champion could take a lead role in the co-ordination of many of the initiatives identified below. However, we note that the 2017 federal budget proposes to consolidate all of the federal government's innovation programs under the banner of the newly created Innovation Canada, which may be a logical choice for a fintech champion.¹⁹⁰

Ensure that regulations are technology-neutral and organization-agnostic

Legislators should ensure that regulations can be complied with regardless of whether the regulated activity is conducted using traditional physical paper-based media or in an entirely electronic environment.¹⁹¹ FINTRAC and the Department of Finance should seek to modernize client identification and authentication and KYC requirements to reduce or eliminate the need for face-to-face contact or reference to original documentation and permit the use of technologies such as biometrics and video links for client onboarding. In addition, regulation should ideally focus on activity rather than the entity that conducts it, bearing in mind that "competitive

balance" may require that regulation differentiate between large and small players, adjusting for market power, size and structure.¹⁹²

Study whether open banking makes sense for Canada

As discussed above, PSD2 in the EU and the open banking initiative in the United Kingdom enable and indeed mandate the sharing of customer data between financial institutions and fintech service providers through the use of open APIs that will allow fintech businesses to use bank data to develop and provide a range of value-added services to consumers. Doing so could enhance customer choice, simplify onboarding, reduce duplication in KYC information collection and verification and even assist regulators by making verification procedures faster and easier and improving auditing and oversight capabilities. However, as we noted earlier,¹⁹³ legislators and policymakers should proceed with great caution and prudence before mandating so fundamental a change to the Canadian banking relationship as open banking would produce.

Consider amendments to the Bank Act to facilitate collaboration with fintechs

As discussed above,¹⁹⁴ certain restrictions on the investments and powers of federally regulated banks make it difficult for them to partner with fintechs or offer innovative financial services without ministerial approval. As part of its review of the federal financial sector framework,¹⁹⁵ Finance Canada should consider revisiting these provisions to provide incumbent FIs with greater flexibility in both collaborating with fintech firms or providing fintech services themselves.

Facilitate immigration of foreign talent

One complaint sometimes heard from respondents is that Canada's temporary foreign worker program¹⁹⁶ is so cumbersome and slow that recruiting foreign fintech talent in any reasonable time frame is often impractical. Canada should consider emulating the United Kingdom's Tech Nation Visa Scheme, which facilitates the visa process for tech talent to move to the United Kingdom, including considering "applications

from individuals that demonstrate ‘Exceptional Promise’ and permitting groups of up to five to apply at once for consideration, “allowing UK digital businesses to attract high calibre and high performing teams that have a proven track record of creativity, collaboration and commercial vision”¹⁹⁷ and Australia’s Entrepreneur Visa, which is “available for entrepreneurs who want to develop or commercialise their innovative ideas in Australia and who have \$200,000 in funding from a specified third party.”¹⁹⁸

Grants and incentives

Professor Michael King, Co-Director, Scotiabank Digital Banking Lab at Ivey Business School, and Amelia Young of Upside Consulting have endorsed many of the above ideas in an insightful background briefing.¹⁹⁹ Among their ideas are novel forms of direct funding and tax incentives:

Provide Direct Funding to Start-Ups: Government intervention (both federal and provincial) should follow Israel and Finland in providing more direct funding to FinTech start-ups in the form of grants or conditionally repayable loans.

Provide Incentives for VCs: The Canadian government should follow Australia and create tax and other incentives for specialized FinTech VC funds co-sponsored by institutional investors and provincial governments.²⁰⁰

None of these ideas alone will ensure that the Toronto region thrives as a fintech hub, but their cumulative effect may well make a dramatic difference. Of course implementing any or all of these recommendations will require focused and clearly articulated government policies that express a firm commitment to fostering innovation in the delivery of financial services, particularly through technology.



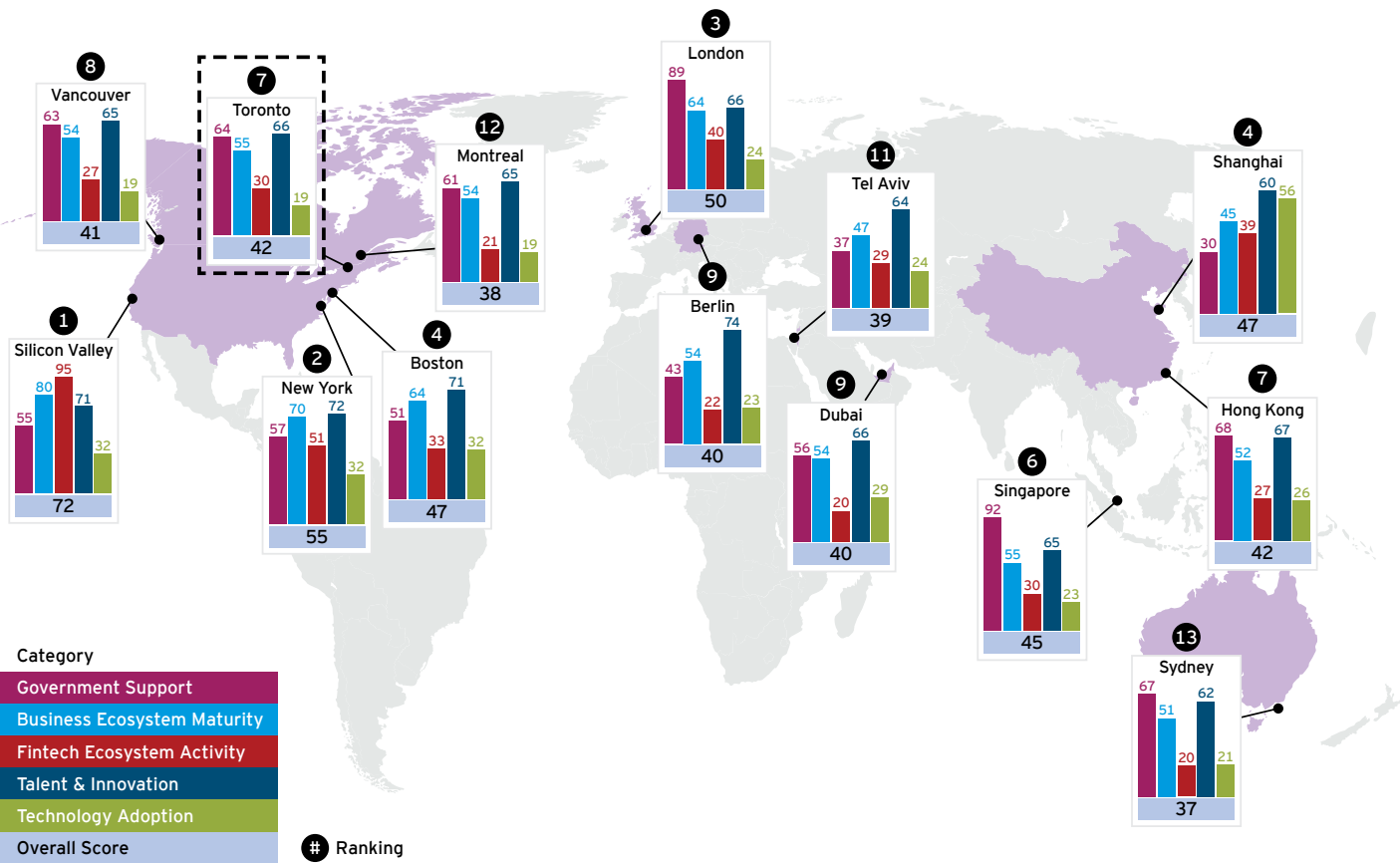
Part 4. Global Fintech Ecosystem Benchmarking

To determine how the Toronto region fintech ecosystem ranks against leading and emerging global hubs, we benchmarked performance across five groups of metrics, including: (1) government support, (2) business ecosystem maturity, (3) fintech activity, adoption and financing, (4) talent pool and innovation, and (5) technology availability and adoption. The data used within each metric group was sourced from both publicly available and proprietary databases, such as the World Economic Forum, the World Bank, CB Insights and CrunchBase. For further details on our benchmarking methodology and metrics selection, please see Appendix D.

Out of the 14 fintech hubs that we have analyzed, our benchmarking model placed the Toronto region fintech ecosystem squarely in the middle at number seven, alongside peers such as Hong Kong and Berlin (see Figure 14 for a complete ranking of all 14 hubs). It lacks the ecosystem maturity and ability to attract foreign investments to the likes of Silicon Valley and New York, and the established government support to that of the United Kingdom and Singapore. From our analysis and findings, one thing is clear—in order for the Toronto region fintech ecosystem to catch up to global hubs, much more work needs to be done.

Below, we provide our commentary on how the corridor ranks on each group of metrics.

Figure 14: Ranking of 14 global fintech hubs



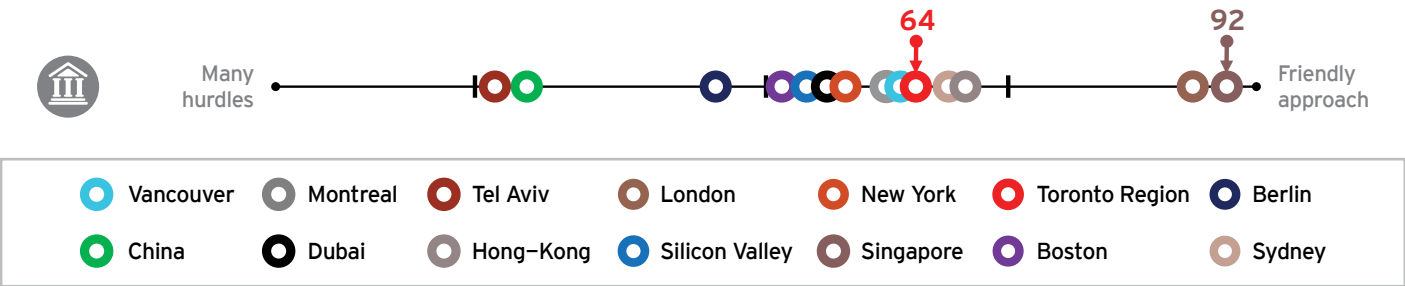
Government support

This metrics group evaluates general government support for private businesses, as well fintech-friendly initiatives or policies, such as implementing fintech regulatory sandboxes. London and Singapore are clear leaders in this category as both hubs have a clear fintech strategy and government mandates. The Toronto region scored close to the middle position on this metric group.

In terms of support to small and medium-sized businesses, the Toronto region is on par with most other cities for its generally business-

friendly environment, low complexity to start a business and advantageous total business tax rate (although the high personal tax rate may act as a counterweight).

However, government support (particularly through regulation and guidelines) for the Toronto region is not as strong as for the leading fintech hubs. Generally, Canadian regulations, particularly as applied to fintech, are seen as more burdensome than those of other leading jurisdictions. For a detailed qualitative analysis on existing policy and regulatory landscapes in other sample jurisdictions, please refer to Appendix E.

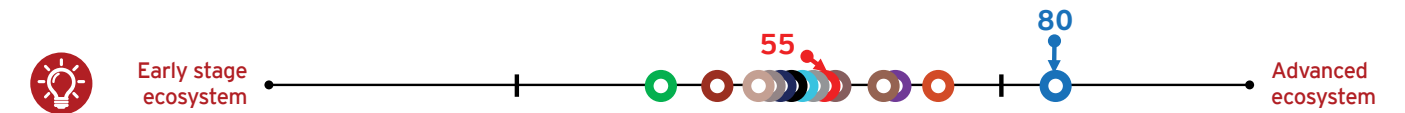


Business ecosystem maturity

This metrics group evaluates each hub’s general start-up ecosystem attractiveness and development (i.e. across all sectors, not specific to fintech), such as the quality of life, inflow of foreign direct investments and economic value of the start-up ecosystem. Toronto ranked close to the middle, but first-place Silicon Valley has a large lead over all other hubs due to its decades-long culture of innovation and growth.

The Toronto region scored favourably on cost of living and quality of life. Additionally, a relatively high ranking on the Global Financial Centres Index contributed positively to the Toronto region’s score in this category.

However, when comparing the economic value of each hub, the corridor is trailing behind leading hubs by a large margin. For instance, the Toronto–Waterloo region ecosystem is valued at \$7.2 billion, while the Silicon Valley, New York and London start-up ecosystems are valued at \$264 billion, \$71 billion and \$44 billion, respectively.²⁰¹ This finding aligns with our interview insights and has further implications on the overall ecosystem growth. Specifically, our interviewees expressed that there are a minimal number of tech “unicorns” in Canada, whereas there are numerous highly successful tech companies in Silicon Valley, and in other leading hubs, that help champion innovation and continued growth within the area.

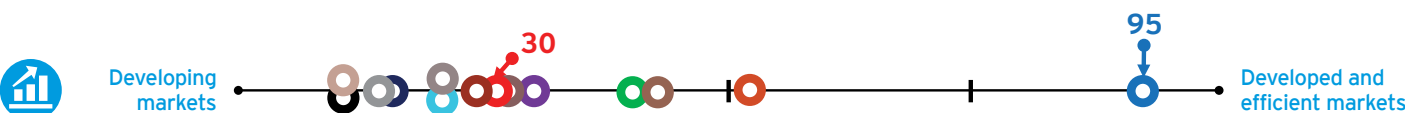


Fintech activity, adoption and financing

This metrics group assesses volumes of fintech-related investment and financing activities. Within this category, all fintech hubs are skewed towards lower scores due to Silicon Valley’s significantly higher volumes of fintech investments and financing activities, both in terms of value and the number of deals. The Toronto region ranks in the middle of the pack.

Similar to the findings in the business ecosystem maturity category, the Toronto region fintech ecosystem significantly trails behind the top hubs.

For instance, the region’s fintech ecosystem only represented 1.5 percent of global fintech deals (by value, from 2010 to 2015), while Silicon Valley, New York and London commanded 22.9 percent, 10.8 percent and 4.2 percent, respectively. As mentioned in Part 1 of the report, although the corridor’s fintech ecosystem has been one of the fastest-growing hubs in the world in recent years, it is growing from a much smaller base. If the region wishes to be considered a premier fintech hub, in terms of investments, it must continue to achieve higher growth rates than its peers and leading hubs.



Vancouver	Montreal	Tel Aviv	London	New York	Toronto Region	Berlin
China	Dubai	Hong-Kong	Silicon Valley	Singapore	Boston	Sydney

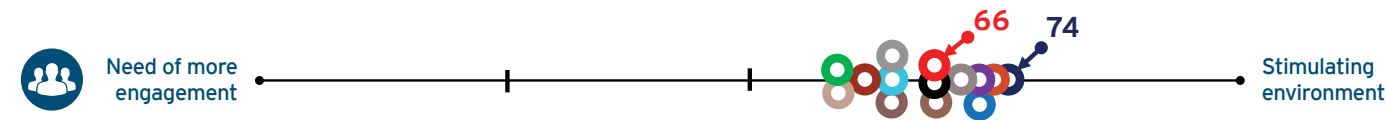
Talent pool and innovation

This metrics group assesses each hub's talent pool quality and innovation ability or culture. Notably, all 14 ecosystems scored fairly similarly, unlike in other metrics groups where there are clear leaders. This clustering may suggest that talent pool and innovation do not serve as critical differentiating factors among the hubs included in the model. That being said, the Toronto region scored close to the middle.

In alignment with our interview findings, the corridor ranked positively on talent pool with financial services expertise and technical skills, driven by relatively high degrees of financial

literacy and availability of scientists and engineers.

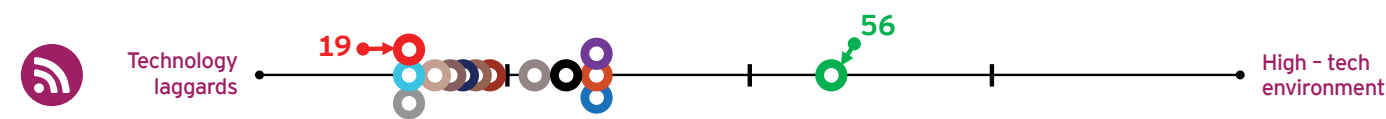
The Toronto region is lower in both its ability to attract (from abroad) and to retain talent. Additionally, its capacity to innovate falls short of that of leading hubs such as Berlin and Silicon Valley. Notably, Berlin differentiates itself from the pack for its government's open approach to high-skilled workers and its strong innovation culture both through research (high number of patents) and its private sector's ability to innovate. The next leading hubs, New York and Boston, are differentiated by their ability to attract talent from abroad and retain it, most likely due to their world-class universities (e.g. Boston) and dynamic ecosystem (e.g. New York).



Technology availability and adoption

This metric group assesses mobile usage and connectivity, as well as relative market opportunity to adopt to new technologies. Shanghai is the clear leader in this category due to the hub's high volume of mobile connections, in absolute terms. The Toronto region was ranked last in this category.

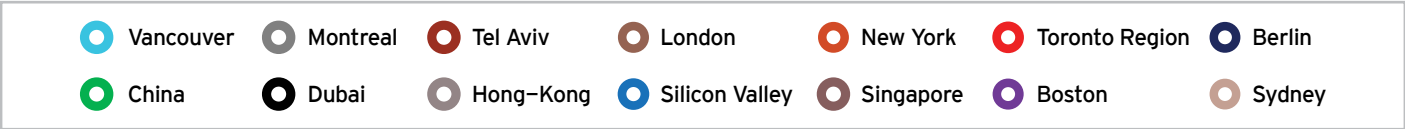
Firstly, the region has one of the lowest number of mobile connections, due to its relatively smaller population base. Secondly, compared to other hubs, the Toronto region has one of the lowest rates of firm-level new technology absorption rate.²⁰² This finding may be reflective of the relatively risk-averse culture in Canada, as mentioned in the previous sections of the report, which may prevent businesses from investing in or adopting to newer technologies at a rate similar to other hubs.



In the future, there will be other developing global hubs that should be considered in fintech benchmarking studies, notably India. In a short period of time, India has embarked and made significant strides in driving digital innovation in its financial services sector. This journey is government-led and has the vision of financial inclusion for the country's entire population.²⁰³ Projects like Aadhaar, a digital identity solution, are increasingly shaping how Indians will transact. These changes have the potential to materially

drive innovation towards future financial services products.²⁰⁴

Overall, our findings suggest that leading fintech hubs such as Silicon Valley, New York and London will continue to spearhead fintech deals and innovation at the highest level. Emerging hubs such as Singapore and Australia are likely to gain traction and achieve investment growth due to their fintech-friendly business and regulatory environment. Other markets are also moving aggressively to grow their fintech ecosystems.





Part 5. Summary of Key Findings and Recommendations

Key findings

Below are the key findings on which we base our recommendations:

1. Overall, the Toronto region fintech start-ups are in the early stages of development, relative to those from leading global fintech hubs. The region offers some operational advantages, driven primarily by lower operational costs and the strong presence of financial institutions and renowned academic institutions. However, these advantages are relatively undifferentiated as the majority of fintech founders base their start-ups in the Toronto region because it is where they chose to live.
2. The Toronto region lacks a clear, government-mandated fintech strategy that outlines specific priority areas and aligns federal and provincial public agencies' efforts to help establish the region (or Canada) as a leading global fintech hub. We have found that the current approaches focused on supporting innovation are applied inconsistently. An example of this is, government support through new innovation-focused venture capital funds alongside the roll back in provincial tax incentive programs and operational complexities associated with other existing programs, such as SR&ED.
3. For many fintech start-ups, Canada's existing regulatory framework is a significant barrier to growth and for incumbent financial institutions, it can hamper their ability to innovate. To thrive in the Toronto region, fintechs require regulations that respond to their needs and foster innovation. While necessary, regulation that is overly prescriptive can drive away start-ups and discourage collaboration. Despite some promising first steps, Canada lags behind many global fintech centres in fashioning a regulatory regime where fintechs can flourish without

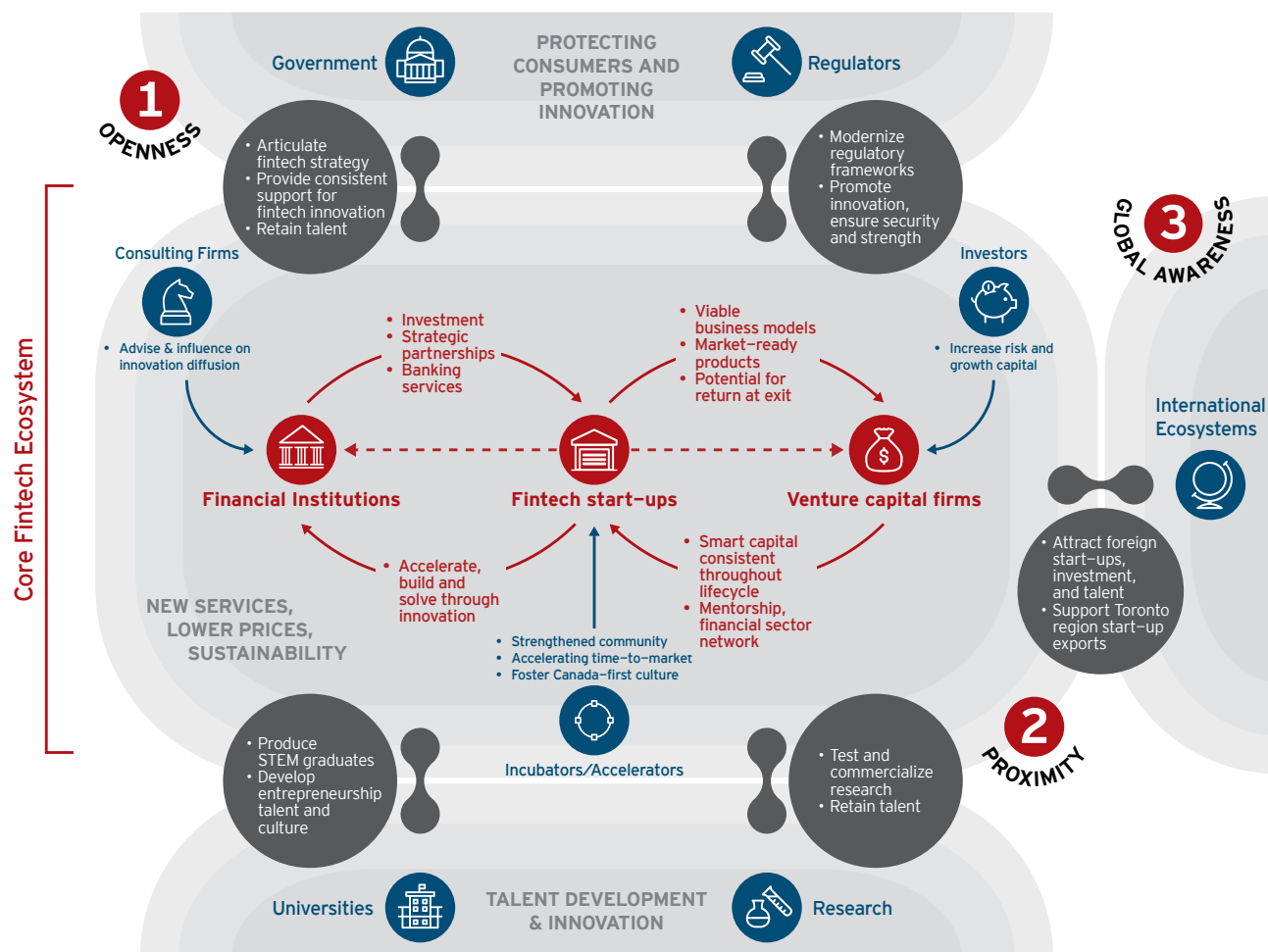
putting consumers and investors at risk and where incumbent financial companies can more easily innovate.

4. The funding climate in the Toronto region fintech ecosystem is improving but still lacks significant growth capital sources. Going forward, the increased local presence of established venture capital firms and the availability of later-stage funding will be critical to growing the corridor's fintech ecosystem, achieved by developing and nurturing strong ties with the business community and talent.
5. Talent is a key component for the development and flourishing of the Toronto region fintech ecosystem. The corridor produces top technical and research talent; however, the region faces a brain drain issue, notably to the United States. If the region wishes to establish itself as an

innovative and leading fintech hub and financial services sector of the future, it must provide compelling and lucrative opportunities to attract and retain its talent and the talent from other regions.

6. The collaboration between fintech start-ups and financial institutions are improving, but challenges remain. Financial institutions are critical to driving the collective and shared growth of the fintech ecosystem and the overall financial services sector. Through effective partnerships with fintechs, these institutions can further advance their innovation agenda, support the local economy and business community and signal a positive business environment to the international community.
7. The innovation and growth of the Toronto region fintech ecosystem is tied to the continued

Figure 15: Fintech ecosystem recommendations



Notes: Accenture analysis and recommendation framework for the Toronto region fintech ecosystem.

development and commercialization of new and emerging technologies—including AI, blockchain, cybersecurity and quantum computing. In particular, our interviews with local fintech stakeholders indicated a growing optimism that the region has considerable potential to develop a global competitive advantage in AI capability.

Recommendations

Given the global competition from both leading and emerging fintech hubs, the Toronto region fintech ecosystem must act now to create winning conditions that will help drive ecosystem growth and innovation, or risk being left behind. Based on key findings above, we recommend a top-down, government-mandated approach that aligns public and private efforts to create a business-friendly and progressive regulatory environment that incentivizes innovation, in addition to ensuring security and strength. Our recommendations can be grouped, analyzed and prioritized through three interrelated components of the overall fintech ecosystem—openness, proximity and global awareness (see Figure 15 for our recommendation framework).

Openness

From a fintech ecosystem perspective, we define “openness” as a business-friendly environment that incentivizes innovation and drives collaboration between ecosystem participants and influencers, while ensuring stability and strength. We believe that fostering a high degree of openness is a fundamental step towards creating winning conditions in the ecosystem and critical to attracting and retaining fintech start-ups, investments and talent, both nationally and globally. To achieve this, we propose the following calls to action.

Governments need to develop and articulate a clear fintech strategy to align and prioritize efforts to drive the collective growth of the fintech ecosystem.

To create winning conditions, the federal and the provincial governments should articulate a clear fintech strategy, with the intent of supporting

innovation and growth for the Canadian financial services sector. Elements of the strategy should include identifying fintech priorities (e.g. by financial services offerings, technology niches and talent), and aligning public sector innovation and investment programs or initiatives across applicable government agencies. Additionally, governments should consider establishing an industry-led panel, involving leading participants in the ecosystem—such as fintech founders, executives at financial institutions and venture capital firms, academia and researchers—to advise them and policymakers on all fintech related matters.

Our global scan indicated that other ecosystems are adopting a similar approach to capitalize on the future of financial services. For example, in Australia, the government published Backing Australian FinTech in 2016 to articulate its fintech strategy and align efforts to improve the country’s fintech ecosystem competitiveness. Within this document, the government highlights its fintech priority areas and details its plans for growing such areas (e.g. crowdfunding, greater availability of data and guidance on robo-advice, etc.). Additionally, the document calls for the creation of a Fintech Advisory Group to advise the Treasurer directly on critical fintech issues, such as specific priorities to be considered in government policies and potential future reforms.²⁰⁵ Members in the Group consist of ecosystem participants and influencers, including fintech founders, managing directors at venture capitals, financial institution executives and partners at law firms specializing in fintech. This is an attempt to ensure that all interests are represented, and the collective ecosystem achieves shared growth. In another example, the Singaporean government set up its national Fintech Office in May 2016 to create a centralized, “one-stop” shop to deal with all matters related to fintech. In addition to providing funding and grants advice to fintechs looking to set up operations in the country, the Office will identify gaps and propose recommendations for Singapore’s fintech ecosystem, including funding initiatives across government agencies, industry infrastructure, talent development and other key pillars.²⁰⁶

Modernize regulatory frameworks to reflect changing business models, technologies and priorities.

As discussed in Part 3, regulatory uncertainty, the heavy burden of compliance and frictions in fintech-financial institution collaboration could slow growth and innovation in the financial services sector. Regulators in leading and emerging fintech hubs are working closely with industry experts to replace heavily prescriptive rules with a “light-touch,” “principles-based” and supportive environment that fosters fintech growth and participant cooperation while still managing risks and ensuring industry security and actively champions the fintech cause.

Accordingly, governments and financial-services-related regulatory bodies should consider following suit and creating a common platform to proactively engage with fintech start-ups (and incumbent financial institutions seeking to offer fintech solutions), offer regulatory guidance, gather industry feedback regarding potential future reforms, and provide regulatory safe spaces or “sandboxes” where innovators can bring their ideas to market freed from some of the shackles of regulation.

The United Kingdom and Singapore provide examples of such an approach. The United Kingdom’s Financial Conduct Authority (FCA) started the Innovation Hub as a common platform for regulators to proactively engage with fintechs, provide regulatory support and advice to start-ups, facilitate feedback from start-ups and drive key policy changes that promote innovation.²⁰⁷ A key initiative of the Innovation Hub is the FCA’s regulatory sandbox, discussed in more detail in Appendix B. The Monetary Authority of Singapore (MAS), the country’s central regulator, is encouraging fintech innovation by applying a minimal number of regulations to early-stage start-ups and adopting a risk-based approach that strikes a fine balance by regulating only fintechs that have scaled up to a size large enough that they may pose a material risk to the country’s financial system or a large consumer base.²⁰⁸ This risk-based approach aligns with Singapore’s fintech strategy—to promote, rather than slow innovation. For further details about regulatory initiatives for other leading fintech jurisdictions

and how Canada ranks on a comparative basis (from a regulatory perspective), please refer to Appendix E.

Create the opportunities and conditions that will attract and retain top talent.

Talent and innovation is a virtuous cycle—talent drives innovation, while at the same time, innovation attracts talent. In a globalized economy, the war for talent is something that all regions face. By nature, an established ecosystem not only produces high-quality talent but also represents a gravitational pull, in the form of compelling and lucrative opportunities, that draws talent from other regions (e.g. Silicon Valley).

When an ecosystem is in the early stages of its development, the talent war becomes lopsided. This is the challenge the Toronto region is facing on two dimensions. Firstly, the corridor faces gaps in experienced executive talent that is capable of moving start-ups into hyper-growth. Secondly, STEM graduates and individuals specializing in emerging technologies (e.g. AI, blockchain, etc.) are leaving the region for compelling and lucrative opportunities elsewhere.

We believe that the federal and provincial governments should take proactive measures by working closely with industry to define a holistic talent strategy. The strategy should prioritize the resolution of these challenges by creating policies and initiatives that will grow, attract and retain talent within the Toronto region.

Proximity

We define proximity as the levels of engagement and collaboration between participants and influencers within the fintech ecosystem, such as between fintech start-ups with financial institutions or regulatory bodies. In highly effective technology ecosystems, participants benefit tremendously on two levels. Firstly, there is the knowledge spillover effect, where ecosystem participants share and collaborate on ideas that result in technological improvements. Secondly, successful start-ups and entrepreneurs become the champions of growth and innovation within the ecosystem. We propose the following recommendations to create stronger proximity within the Toronto region fintech ecosystem.

The Toronto region needs access to sophisticated funding at the seed-level and local later-stage (series B and beyond) growth funding.

In developed, highly mature start-up ecosystems, there is a strong local presence of venture capital firms with specialized industry verticals and large funding capability. In the Toronto region fintech ecosystem, our market scan concluded that increased availability of sophisticated funding at the seed level and later-stage funding (series B and beyond) is needed for the region to compete at the highest level.

We believe the federal and provincial governments should assess opportunities to help to attract large international venture capital firms to establish a local presence and invest in Canadian fintech start-ups. Such opportunities may include incentive programs, potentially in the form of “fund of funds,” where the government provides matched funding for foreign firms’ investments in Canadian companies (for example, in the 1990s, the Israeli government allocated \$100 million in matched funds to support the country’s entrepreneurs, and arguably laid the foundation for its burgeoning start-up ecosystem today).²⁰⁹ Matched funding aims to help Canadian start-ups attract greater growth capital and gain access to the venture capital firm’s vast network of resources, which are critical for any start-up to compete on the global stage. Also, local start-ups’ successes strengthen their ties to the region, which motivate them to remain headquartered there and promote local ecosystem growth, while exporting their products and services to international markets.

Without having a strong local presence of fintech-focused growth capital (i.e. series B or beyond), start-ups in the Toronto region are forced to seek funding in international markets. If they are successful in securing foreign funding, establishing business relationships with foreign firms may motivate start-ups to relocate; if they are not successful, the start-ups will not have the required capital to scale and expand their operations. All in all, the region must establish a strong local presence of fintech-specialized funds and improve the availability of growth capital to create a winning environment where local fintechs and the collective ecosystem can grow.

Closer and more frequent engagement and collaboration among fintech start-ups, well-established financial institutions and venture capital firms is needed.

We see opportunities for greater collaboration between fintech companies, venture capital firms and financial institutions that are mutually beneficial for all participants.

Financial institutions regularly talk with hundreds, if not thousands of start-ups each year. This constitutes a large amount of effort, with relatively few partnerships being formed. Alternatively, financial institutions could partner with local and global venture capital firms to improve the identification process of fintech start-ups that have solutions which can help them achieve their strategic objectives.

Venture capital firms are in the business of identifying high-potential companies and investing in them, as well as providing founders with executive mentorship, among several other benefits. When financial institutions work closely with venture capital firms, they increase the likelihood of meeting a start-up that is more prepared to work at the enterprise level and has funding to weather difficult times. This helps the financial institution reduce the risks of working with start-ups. Furthermore, the relationship between the venture capital firm and the fintech are incredibly important as they have a shared stake in their mutual success.

Another way to achieve greater engagement is by creating collaboration platforms that bring together ecosystem participants. Fintech ecosystem participants can leverage the platform to co-create innovative solutions for the common challenges faced by the industry. For example, the Toronto-based Cookhouse Lab focuses on open innovation for the insurance industry. For the companies that participate in specific design thinking sessions, there is shared access to the solution design and intellectual property rights.

Governments, universities and businesses alike need to do more to encourage the commercialization of research.

In our openness recommendations, we discussed that talent and innovation creates a virtuous cycle—one begets the other. Fundamentally, the commercialization of research fuels the economy through the development and application of new technologies into new and existing businesses.

Within the Toronto region, there is a strong presence of globally recognized universities, research teams and organizations that drives the development of new and emerging technologies. For example, the Vector Institute and Creative Destruction Lab aim to create AI research commercialization opportunities. By doing so, these organizations help to develop, attract and retain specialized start-ups and talent within the Toronto region.

Going forward, the Toronto region could directly benefit by adding an applied research vertical dedicated to the financial services industry to nurture the development of new solutions on the emerging technologies (AI, machine learning, blockchain, etc.). The creation of the vertical could help the Canadian financial services sector grow into a leadership position on the global stage.

Global awareness

From a fintech ecosystem perspective, we define global awareness as an ecosystem's overall reputation across international fintech hubs, which has a direct impact on its ability to attract and retain fintech start-ups, talent and investments, both nationally and globally. To further the global reputation of the Toronto region fintech ecosystem, we recommend the following.

Dedicate efforts to raise the Toronto region fintech ecosystem's global profile

Leading fintech ecosystems globally have understood that it is as important to attract global fintechs as it is to grow them locally. Many of the successful companies in Silicon Valley

and Singapore immigrated from outside those ecosystems, attracted by those regions' profiles on the global stage. To achieve similar success, we recommend that the various stakeholders in the ecosystem work together to raise the Toronto region's profile globally. There are two main areas of potential opportunity.

First, the federal and the provincial governments should consider establishing global cooperation agreements where win-win opportunities can be realized. Global cooperation agreements, sometimes referred to as "global landing spots," are bilateral, inter-governmental programs to facilitate the ease of conducting business and navigating through the regulatory environment in each respective country. Effectively, landing spots could help participating countries improve the export of their businesses to other markets while attracting foreign businesses and investments. Additionally, start-ups that operate in other international areas could help serve as an innovation ambassador for their origin ecosystem. The OSC and Financial Conduct Authority (FCA) currently have a cooperation agreement where the two regulatory bodies would help fintech start-ups to enter each respective market through regulatory guidance and assistance. Going forward, there may be additional opportunities for the federal and/or the Ontario governments to establish cooperation agreements with other leading and emerging fintech hubs.

Secondly, the federal and provincial governments should consider assigning ownership and responsibilities to specific stakeholder groups to promote and highlight the Toronto fintech ecosystem's appealing factors to the international business community. For example, the Singaporean government's Fintech Office is tasked with coordinating all fintech-related spending as well as managing the branding and marketing of Singapore as a fintech hub through events and initiatives.²¹⁰ This helps to ensure a consistent marketing message with the aim of attracting foreign fintech start-ups, talent and investments into its own local hub.



Conclusion

Our findings suggest that leading fintech hubs such as Silicon Valley, New York and London will continue to spearhead fintech deals and innovation at the highest level. Emerging hubs such as Singapore and Australia are likely to gain traction and achieve investment growth due to their fintech-friendly business and regulatory environment. Other markets are also moving aggressively to grow in fintech.

The Toronto region is growing and possesses a number of strengths and advantages. However, it remains far behind the global leaders in the sector. Also, it risks falling further behind as other fintech hubs move strategically to seize a competitive advantage.

It is imperative to act now to create a government-mandated, business-friendly environment that reduces regulations and encourages innovation in fintech—giving firms in the Toronto region a greater opportunity to raise capital, attract talent and commercialize research.

The future global giants in this field will be determined by the choices made today and in the coming years by entrepreneurs, financial institutions, researchers, investors and policymakers.

Other countries and regions are gaining traction and making progress. They are attracting investment. They are collaborating with established financial services providers. They are creating a business and regulatory environment in which their start-ups can grow, improve and ultimately thrive at home and in the world. Rather than risk being left behind, they are setting winning conditions for innovation.

We must do the same. The Canadian financial system is touted as one of the strongest in the world. Fintech can and is already changing the game. It's time now to create the conditions for our fintechs to grow and thrive. And to ensure the Canadian financial system stays strong.

Appendix A

Fintech Start-ups in the Toronto Region

Selection criteria for fintech start-ups (141 identified in total):

- (a) Private companies founded after the year 2000 and in operation at the time of this report.
- (b) Business operations are headquartered in Toronto, Kitchener or Waterloo.
- (c) The main business models leverage technology to offer financial products and/or services that complement or compete with products or services provided by financial institutions in the market today (e.g. banks, trust companies, and insurance firms).

The above selection criteria aim to pinpoint our analysis on tech start-ups with financial-services-focused product or service offering(s) and are participants within the Toronto region fintech ecosystem.

Selection criteria for leading fintech start-ups (25 in total—bolded in the table below):

- (a) Fintechs that have publicly disclosed more than \$500,000 in equity financing.
- (b) Fintechs that have received considerable national media coverage for their products or services.

The above selection criteria aim to highlight fintech start-ups within the Toronto region fintech ecosystem that have secured relatively sizable financing and received considerable media coverage.

Capital Markets	Digital Currencies/FX	Personal Financial Management (PFM)	Wealth Management
AlgoTrades	BitRush Corp	Drven	ducovest
Ark Paradigm	Blockstation	Evree	Emerging Star
bigterminal	Can Leaf Mart	Fentury	Finaeo
Coinsquare	Cancoin	Helium Investments	FindBob
CrowdMatrix	Coinkite	Invisor Global Inc.	Nest Wealth
Equibit	Cryptiv	Ketty	QWeMA Group
Finatechal	Decentral	LegacyTracker	SmartMoney Invest
FinMaven	Emerentius	MyPlanMap	Wealthsimple
Hockeystick Inc.	Kooltra	RateHub.ca	
I2T CLUB	SecuraCoin	Salt Edge	
Incryptex Ltd.	StockBet	Sensibill Inc.	
InvestRica	Tinker	WayPay Inc.	
NexusCrowd			
Nvest			
Overbond			
Q4 Inc.			
QGS Technologies			
Qmetrica			
Quandl Inc.			
Retail Derivatives Trader			
Silqe Inc.			
StockRender			
Street Contxt			
TradeWatch.me			
Vuru.co			

Banking–Risk	Insurance
Applied Recognition	ClientDesk
Ethoca	Encircle
SecureKey Technologies*	Insurables
Security Compass	Jauntin’
	League
	PLEX.ai
	Zensurance

*Cybersecurity firm with a focus on financial services.

Banking–Payments	Banking–Back Office	Banking–Lending
AscendantFX Capital	APrivacy	Aspire Financial Technologies Inc.
AvidRetail	BI–Metrix	BetterCapital
Carta Worldwide	blueC 802	Borrowell
CoinCad	CaseWare RCM	CauseSquare
Collective POS Solutions	ChangeJar	Curomax Canada Inc.
Delego Software	Commercial Passport	Financeit
Dollarwise	CompareMyRates.ca	Flexiti Financial
Dream Payments	CXO Corporation	FundThrough
Drop	Decisioning Solutions	GoDay.ca
Dwello	eBridge Connections	Health Smart Financial Services
EnStream	Fusebill	HiEnd Systems (HES)
HyperAfrica	Hubdoc	Lendified
KoreConX	MindBridge	lendu
Loadhub	OutsideIQ	LowestRates.ca
nanoPay	Reportin	Paymentflex Technologies
Overbond	Sqirl Capital	Peerfunder
Payfare	Tier1CRM	Pitchpoint Solutions
Payment Rails	Wave	R2Crowd
PaymentEvolution	Wiser	WeiFund
Paymobile		
Plooto		
Proton Consulting		
RemitBee		
ReUp		
SelfPay		
Smooth Commerce		
SmoothPay		
Soundpays		
Sweet Tooth		
Tacit Innovations		
UGO Wallet		
U Remit		
Virtual Next		
Wallet Savvy		
Zetawire		

Appendix B

Survey of Five Regulatory Sandboxes and the United States

The United Kingdom

In 2015, as part of its Project Innovate, the United Kingdom's Financial Conduct Authority ("FCA") established a regulatory sandbox that allows businesses to test innovative products, services, business models and delivery mechanisms in a live environment, in some cases without meeting all the requirements for authorization by the FCA.²¹¹ To participate in the FCA's regulatory sandbox, firms and institutions must apply to the FCA during one of its application periods or "cohorts". To date, the FCA has considered applications from two cohorts and 24 of the 69 applicants in the first cohort have been approved, with 18 firms having entered the testing phase. The FCA has received 77 applications for the second cohort, of which 31 will be accepted towards testing.²¹²

In developing the regulatory sandbox, Christopher Woolard, FCA Director of Strategy and Competition, noted in a speech at the Innovate Finance Global Summit in April 2016, that the FCA faced two challenges:

- How to deliver a sandbox that lowers barriers to testing within the existing regulatory framework.
- How to ensure that risks from testing novel solutions are not transferred from firms to consumers.²¹³

To meet the first challenge, the FCA set up "a tailored authorisation process, which means that sandbox firms will first be authorised with restrictions, allowing them to test their ideas but no more. They still need to apply for authorisation and meet threshold conditions, but critically only for the limited purposes of the sandbox test."

Application to the Regulatory Sandbox

The FCA has set out the following eligibility criteria for assessing applications to the regulatory sandbox:²¹⁴

Is the firm in scope: Is the firm looking to deliver innovation in regulated businesses or which supports regulated business in the UK financial services market?

Genuine innovation: Is the innovation ground-breaking or constitute a significantly different offering in the marketplace?

Consumer benefit: Does the innovation offer a good prospect of identifiable benefit to consumers (either directly or via heightened competition)?

Need for sandbox: Does the business have a genuine need to test the innovation on real customers?

Ready for testing: Is the business ready to test its innovation in a live environment?

Features of the Regulatory Sandbox

For unauthorized firms, the regulatory sandbox provides a tailored authorization process that allows testing by firms who need to become authorized to trial their new products or services. These firms will first be authorized with restrictions, which allows them to test their ideas subject to restrictions ("**Restricted Authorization**"). Once the firm is able to meet "full" requirements, restrictions can be lifted.²¹⁵

The Restricted Authorization option will allow firms to become authorized in their own right while only having to meet authorization requirements that are proportionate to testing activities. This process should also be quicker than applying for a "full" authorization. When launching full commercial activity, firms will be required to apply to have restrictions lifted in order to carry on relevant regulated activities but they will not have to apply for new authorization.²¹⁶

Authorized firms and technology firms that provide outsourced services to other companies are mainly concerned about the FCA's reaction to new solutions. The regulatory sandbox provides these firms with the following options:²¹⁷

No enforcement action letters ("NALs"): The FCA could issue a NAL stating that no FCA enforcement action will be taken against testing activities where the FCA is reasonably satisfied that the activities do not breach the FCA's requirements or harm their objectives. It is important to note that this only addresses the risk of enforcement action by the FCA and does not limit businesses' liability towards their customers.

Individual Guidance ("IG"): The FCA can issue individual guidance to a firm on the interpretation of applicable rules in respect of testing activities the firm may be carrying out. If the firm acts in accordance with this guidance, it will give them certainty that the FCA would not take action against them.

Waivers: Where it is clear that testing activities do not meet the FCA's rules but the firm can meet the waiver test and the rules are within the FCA's power to waive, the FCA can waive or modify particular rules for sandbox firms.

Consumer Protection

Finally, the FCA can take the following steps to protect consumers that participate in sandbox testing:²¹⁸

As in clinical trials, the sandbox firms can only test their new solutions on customers who have given informed consent to be included in testing. Consumers are notified of the potential risks and the available compensation.

FCA agrees on a case-by-case basis the disclosure, protection and compensation appropriate to the testing activity.

Customers have the same rights as customers who engage with other authorized firms (e.g. to complain to the firm or to the Financial Ombudsman Service and have access to the Financial Services Compensation Scheme²¹⁹ if a firm fails).

Businesses undertaking sandbox trials are required to compensate any losses (including investment losses) to customers and must demonstrate that they have the resources (capital) to do so.

Singapore

In 2016, the Monetary Authority of Singapore ("**MAS**") launched a regulatory sandbox to allow firms to experiment with innovative financial services.

Application to the Regulatory Sandbox

MAS has set out the following eligibility criteria for assessing applications to the regulatory sandbox:²²⁰

The proposed financial service includes new or emerging technology, or uses existing technology in an innovative way. For example, research should show that few or no comparable products or services are available in the Singapore market.

The proposed financial service should address an issue or bring benefits to consumers or the industry more generally. For example, this criteria could be supported by evidence from relevant consumer or industry research.

The applicant has the intention and ability to deploy the proposed financial service in Singapore on a broader scale after exiting the sandbox. If, however, there are exceptional reasons why a proposed financial service cannot be deployed in Singapore, by reason of it not being commercially viable, for example, then MAS is of the position that the applicant should contribute to Singapore in other ways such as continuing developmental efforts of the proposed financial service.

The test scenarios and expected outcomes are clearly defined, and the applicant should report to MAS on the progress of testing of the proposed financial service based on an agreed schedule.

In order for the sandbox to be meaningfully executed, the appropriate boundary conditions should be clearly defined, while sufficiently protecting consumer interests and maintaining the safety and stability of the industry.

Significant risks arising from the proposed financial service should be assessed and mitigated. This would include, for example, providing evidence of preliminary testing as part of the application, identifying the risks discovered, as well as creating a proposal to mitigate the risks.

An acceptable exit and transition strategy should be clearly defined whether or not the proposed financial service has to be discontinued or for it to proceed to be deployed on a broader scale after exiting the sandbox.

Features of the Regulatory Sandbox

Depending on the firm and the financial service or product to be tested, MAS will determine the specific legal and regulatory requirements that it is prepared to relax. The following are some legal and regulatory requirements that MAS may be prepared to relax for the duration of the sandbox:²²¹

1. Asset maintenance requirement

- Board composition

- Cash balances

- Credit rating

- Financial soundness

- Fund solvency and capital adequacy

- License fees

- Management experience

- MAS Guidelines, such as technology risk management guidelines and outsourcing guidelines

- Minimum liquid assets

- Minimum paid-up capital

- Relative size

- Reputation

- Track record

However, MAS intends to maintain the following legal and regulatory requirements for all firms participating in the regulatory sandbox:²²²

1. Confidentiality of customer information

- Fit and proper criteria particularly with regards to honesty and integrity

- Handling of customer's money and assets by intermediaries

- Prevention of money laundering and countering the financing of terrorism

The above lists of regulatory and legal requirements are not exhaustive. Moreover, MAS has not ruled out the possibility of applying similar tools found in other jurisdictions, including NALs.

Exiting the Regulatory Sandbox

At the end of the sandbox period, the legal and regulatory requirements relaxed by MAS will expire, and the sandbox entity must exit from the sandbox. Upon exiting, the sandbox entity can proceed to deploy the financial service on a broader scale, provided that (a) both MAS and the sandbox entity are satisfied that the sandbox has achieved its intended test outcomes; and (b) the sandbox entity can fully comply with all relevant legal and regulatory requirements.²²³

The sandbox may also be discontinued when:²²⁴

1. MAS is not satisfied that the sandbox has achieved its intended purpose, based on the latest test scenarios, expected outcomes and schedule mutually agreed with the sandbox entity.

The sandbox entity is unable to fully comply with the relevant legal and regulatory requirements at the end of the sandbox period. If such a situation is anticipated, the sandbox entity is encouraged to contact MAS earlier.

A flaw has been discovered in the financial service under experimentation where the risks posed to customers or the financial system outweigh the benefits of the financial service under experimentation, and the sandbox entity acknowledges that the flaw cannot be resolved within the duration of the sandbox.

MAS terminates the sandbox due to reasons such as the sandbox entity breaching any condition imposed for the duration of the sandbox.

The sandbox entity has informed MAS of its decision to exit the sandbox at its own discretion.

Australia

In December 2016, the Australian Securities and Investments Commission ("**ASIC**") released Regulatory Guide 257 - Testing fintech products and services without holding an AFS or credit license ("**RG 257**")²²⁵, which details ASIC's framework for fintech businesses to test certain financial services, financial products, and credit activities without an Australian financial services license ("**AFSL**") or Australian credit license ("**ACL**"). At a high level, this new regulatory framework will allow eligible fintech businesses to commence testing and operate for 12 months without the expense and time delay of obtaining the applicable regulatory licenses.²²⁶ According to ASIC, "the fintech licensing exemption allows concept validation of a business model without holding a licence in circumstances where: (a) many fundamental consumer protections still apply in some form; and (b) the products and services being tested are limited in scope to minimise the risk of loss, particularly where the business ceases operations following the end of the testing period."²²⁷

In early February 2017, ASIC held its first regulatory technology round table, which opened up the prospect of its innovation hub and regulatory sandbox being extended to start-ups working in this area, but no concrete action has taken place as of yet.²²⁸

Application to the Regulatory Sandbox

Fintech businesses do not need to apply to ASIC to obtain the benefits of the licensing exemption. Provided that the fintech business meets the eligibility requirements set out below and follows the conditions set out in either the ASIC Corporations (Concept Validation Licensing Exemption) Instrument 2016/1175 or the ASIC Credit (Concept Validation Licensing Exemption) Instrument 2016/1176, the fintech business is legally entitled to rely on the exemption for 12 months.²²⁹

In order to be eligible for this exemption, fintech businesses must meet the following conditions.²³⁰

- Have no more than 100 retail clients, although a fintech business may make an application to increase the limit to 200 clients. There is no limit on the number of wholesale clients.
- Plan to test for no more than 12 months, although a fintech business may make an application to extend the period for an additional 12 months.
- Have total customer exposure (retail and wholesale) of no more than \$5 million. There are also lower limits on the exposure in respect of specific products.
- Have adequate compensation arrangements (such as professional indemnity insurance).
- Have dispute resolution processes in place.

- Meet disclosure and conduct requirements. For instance, fintech businesses who qualify for the licensing exemption will continue to be subject to the statutory disclosure obligations normally applicable to businesses providing financial services or credit assistance. Clients and potential clients must also be notified of reliance on the exemption.

On the issue of eligibility, there are only a limited range of products and services which can be tested via this licensing exemption. This includes:²³¹

- (1) Giving financial product advice in relation to or dealing in the following products (other than by issuing those products):
 - Listed or quoted Australian securities
 - Debentures, stocks or bonds issued or proposed to be issued by the Australian government
 - Simple managed investment schemes
 - Deposit products
 - Some kinds of general insurance products
 - Payment products issued by authorized deposit-taking institutions
- (2) Acting as an intermediary or provider of credit assistance in relation to credit contracts that:
 - Have a maximum amount of credit of no more than \$25,000
 - Have a maximum annual cost rate of 24
 - Are not subject to tailored responsible lending obligations (i.e. are not a reverse mortgage or a small amount credit contract)
 - Are not a consumer lease

Persons that are not eligible for the fintech licensing exemption (for example, because they already have an AFS licence) are able to seek an individual exemption under the existing relief regime pursuant to Regulatory Guide 51 – Applications for relief.²³² This provides existing licensees who wish to test an innovative product or service an opportunity to comply with a modified version of the law.²³³

Features of the Regulatory Sandbox

Australia's "regulatory sandbox" framework—which allows for fintech products or services to be tested without a licence—has three components:²³⁴

- Existing flexibility in the regulatory framework or exemptions provided by the law which mean that a licence is not required.
- ASIC's "fintech licensing exemption"—provided under ASIC Corporations (Concept Validation Licensing Exemption) Instrument 2016/1175²³⁵ and ASIC Credit (Concept Validation Licensing Exemption) Instrument 2016/1176²³⁶, which apply to certain products or services.
- Tailored, individual licensing exemptions granted by ASIC to a particular business to facilitate product or service testing.

Consumer Protection

There are two aspects to consumer protection under the licensing exemption in RG 257: customer disclosure and compensation arrangements.

With respect to disclosure, RG 257 provides that fintech businesses participating in the licensing exemption will need to provide their customers with the information normally contained in a credit/financial services guide and also disclose the following:²³⁷

1. That it does not hold a license
2. That the service being provided is being tested under the fintech licensing exemption
3. That some of the normal protections associated with receiving services from a licensee will not apply

With respect to compensation, at a minimum, fintech businesses operating on the basis of the exemption will be required to have certain insurance policies. Most significantly, this includes professional indemnity insurance of at least \$1 million.²³⁸ Fintech business will also be required to take reasonable steps to obtain “run-off” coverage for a period of 12 months.²³⁹

Hong Kong

On September 6, 2016, the Hong Kong Monetary Authority (“**Monetary Authority**”) launched a Fintech Supervisory Sandbox that provides banks the opportunity to test innovative products and initiatives within a live, controlled environment, before they are fully compliant. According to the Monetary Authority, this will enable institutions to gather real-life data and user feedback on their new fintech products or services more easily in a controlled environment, so that they can make refinements to them as appropriate.²⁴⁰ In contrast to the regulatory regimes introduced in a number of other countries, the exemption introduced by the Monetary Authority is only open to Hong Kong authorised banks and not to start-ups and other unlicensed businesses.²⁴¹ This reflects the Monetary Authority’s focus on technologies that are increasingly being implemented or explored by the banking industry globally, such as mobile-centred services, robotics, biometrics and blockchain/distributed ledger technology.²⁴²

Application to the Regulatory Sandbox

To date, the Monetary Authority has not prescribed a specific application process, although it has noted that access to the sandbox will be assessed on an individual basis. However, it has stated that it does not intend to stipulate a precise list of the supervisory requirements that it is potentially willing to relax for the duration of the testing period. Rather, it has requested that authorised institutions interested in accessing the sandbox contact the Monetary Authority to discuss the appropriate supervisory flexibility that can be made to them.²⁴³

Within the sandbox, authorised institutions will be allowed to conduct trials which involve actual banking services and a defined group of participating customers, provided that certain fundamental measures and controls are put in place, including:²⁴⁴

- Customer protection measures including an informed and voluntary participation process, mechanisms to deal with complaints and withdrawals, and provisions for compensation for financial loss as a result of failures within the trial.
- Appropriate risk management controls to mitigate the risks arising from less than full compliance with supervisory requirements and to address cyber security, system disruptions and other risks posed to the institutions’ operations and customers outside the scope of the trial.
- Clearly defined scope, duration and termination arrangements of the trial.
- The relevant systems and processes need to be ready, and close monitoring during the trial will be expected to ensure timely identification of issues and prompt resolution, such as those involving customer communications.

United Arab Emirates ("UAE")

Application Requirements for Regulatory Laboratory

The Financial Services Regulatory Authority of the Abu Dhabi Global Market ("**FSRA**") launched the Regulatory Laboratory ("**RegLab**") in November 2016 to provide a controlled environment for innovator businesses to develop and test innovative solutions that promote efficiency and consumer choices in the financial sector. To qualify for authorization under the RegLab and obtain the Financial Services Permission ("**FSP**"), the applicant must demonstrate, among others, the following:²⁴⁵

The proposed fintech promotes fintech innovation, in terms of the business application and deployment model of the technology.

The proposed fintech has the potential to promote growth/efficiency/competition in the financial sector, promotes better risk management solutions and regulatory outcomes, and improves the choices and welfare of clients.

The proposed fintech is at a sufficiently advanced stage.

The proposed fintech is capable of being deployed in the Abu Dhabi Global Market and UAE.

On receipt of the application, the FSRA will work with the applicant to identify those rules that are not relevant to the applicant's fintech proposal. The FSRA will then waive or modify any of these rules by way of a waiver or a modification notice. While the FSRA does not seem to impose any specific requirements on the applicant to adopt measures to address consumer protection, all successful applicants are required to make appropriate disclosure to, and obtain consent from, the consumers who are willing to use their fintech products. At the same time, the FSRA will limit the scope and scale of the applicant's test activities by imposing boundaries and geographical restrictions to control the impact of the products to consumers.²⁴⁶

Exit Strategy

Applicants may enjoy the benefit of RegLab for two years.²⁴⁷ At the end of the two-year validity period, FSP will expire unless the applicant successfully applies for extension at least three months before the expiry of the validity period.²⁴⁸ According to the FSRA, extensions will be granted only in exceptional circumstances.²⁴⁹

The exit strategy may vary according to the applicant's commercial needs. The applicant may choose to cease its business or transfer its fintech product to other authorized financial institutions.²⁵⁰

The FSRA reserves the right to cancel the FSP in the following circumstances: (i) the applicant is failing, or is likely to fail, to satisfy the threshold conditions set out in the regulation; (ii) the FSRA determines it is desirable to cancel the FSP to further one or more of the FSRA's objectives; or (iii) the applicant has committed a contravention of the Financial Services and Markets Regulations 2015 or any rules made thereunder.²⁵¹

United States

No Regulatory Sandbox

The United States has not adopted any regulatory sandbox approaches that are currently in place in other foreign jurisdictions at either the federal or State levels. Bill H.R.6118 - Financial Services Innovation Act of 2016 was introduced on September 22, 2016.²⁵² The Bill contemplates the establishment of a federal regulatory framework which will require federal regulators to have a mandate to foster innovation in financial services through the creation of Financial Services Offices within their agencies.

No-Action Letter – Securities and Exchange Commission

An individual or entity may request an NAL from the U.S. Securities and Exchange Commission (“**SEC**”). Most NALs describe the request, analyze the particular facts and circumstances involved, discuss applicable laws and rules, and, if the staff grants the request for no action, conclude that the SEC staff would not recommend that the Commission take enforcement action against the requester based on the facts and representations described in the request.

The no-action relief is limited to the requester and the specific facts and circumstances set forth in the request. In addition, the SEC staff reserves the right to change the positions reflected in prior NALs.²⁵³

No-Action Letter – Consumer Financial Protection Bureau

On February 18, 2016, the Consumer Financial Protection Bureau (“**CFPB**”) released the final version of its Policy on No-Action Letters (the “**Innovation Policy**”).²⁵⁴ The Innovation Policy establishes a new process through which companies can apply for a no-action letter from the CFPB staff to clarify regulatory uncertainty regarding a new product that is under development.

Requests for no-action letters should be submitted in writing via email to ProjectCatalyst@cfpb.gov with the subject line stating “Request for No-Action Letter”. Requests submitted through this process are required to meet a set of substantive criteria set forth in the Innovation Policy, including but not limited to:²⁵⁵

- A description of the consumer financial product involved.
- An explanation on how the product is likely to provide substantial benefit to consumers.
- A candid explanation of potential consumer risks posed by the product.
- An undertaking by the requester to address and minimize such risks.
- A showing of why the requested NAL is necessary and appropriate to remove substantial regulatory uncertainty hindering the development of the product.
- A description of any particular consumer safeguards the requester will employ if an NAL is issued.

When the CFPB staff decides to provide an NAL to a requester, its contents are expected to include a statement that, subject to the conditions and limitations set forth therein, the CFPB staff has no present intention to recommend initiation of an enforcement or supervisory action against the requestor in respect of the particular aspects of its product under the specific identified provisions and applications of statutes or regulations that are the subject of the NAL.²⁵⁶ NALs issued by the CFPB staff will be non-binding on the CFPB, will not be a waiver of any law or regulation, and will not give a requesting entity an exemption from complying with any statutory or regulatory rules.²⁵⁷

The CFPB anticipates that NALs will be provided rarely, on the basis of exceptional circumstances and following a thorough and persuasive demonstration of the appropriateness of such action.²⁵⁸

or regulations that are the subject of the NAL.²⁵⁶ NALs issued by the CFPB staff will be non-binding on the CFPB, will not be a waiver of any law or regulation, and will not give a requesting entity an exemption from complying with any statutory or regulatory rules.²⁵⁷

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Appendix C

Existing Federal and Provincial Programs to Encourage Fintech

In this appendix the focus is on available programs and incentives in the following jurisdictions: (1) federal, (2) Ontario, (3) British Columbia and (4) Québec. The section on federal programs and incentives also includes a discussion of several initiatives that were announced by the federal government in the 2017 federal budget ("**Budget 2017**").

Federal

Start-ups and Small and Medium Enterprises ("**SMEs**") may receive preferential tax treatment and benefit from federal tax incentive programs. The Government of Canada also provides financial and advisory support to SMEs through various federal agencies and departments, such as the National Research Council Canada and the Business Development Bank of Canada ("**BDC**").

Tax Programs/Incentives

Canadian-Controlled Private Corporations ("**CCPCs**"), as defined in Section 125(7) of the Income Tax Act (Canada) ("**ITA**"), may qualify for a small business deduction and also receive benefits from the scientific research and experimental development ("**SR&ED**") tax incentive program. These programs are administered by the Canada Revenue Agency.

- **Small Business Deduction ("**SBD**"):** Start-ups and SMEs that are qualifying CCPCs can benefit from the SBD. SBD results in a preferential federal tax rate of 10.5% on the first \$500,000 of active business income earned by a CCPC. Generally, SMEs with taxable capital up to \$10 million for the preceding year will be fully eligible to claim SBD. The amount eligible for SBD is proportionately reduced for those with taxable capital between \$10 million and \$15 million. The eligibility ceases if taxable capital surpasses \$15 million.²⁵⁹
- **Scientific Research and Experimental Development Tax Incentive Program:** CCPCs can earn (i) a refundable investment tax credit at the enhanced rate of 35% on qualified SR&ED expenditure (that is, all the amounts that qualify for calculating the investment tax credit in a year, pursuant to Section 127(9) of ITA, except for repayments of assistance and contract payments made in that year), up to a maximum of \$3 million, and (ii) a non-refundable investment tax credit at the basic rate of 15% on an amount over the \$3 million threshold. Non-CCPCs can earn a non-refundable investment tax credit at the basic rate of 15% on qualified SR&ED expenditures.²⁶⁰

Non-Tax Programs

Start-ups and SMEs which seek to develop and commercialize innovative processes and products may also apply under the following federally-administered programs for financial and advisory support:

- **Canada Small Business Financing Program:** Through the program, established under the Canada Small Business Financing Act, the federal government provides government guarantees to allow qualifying SMEs to obtain financing from financial institutions. Start-ups and SMEs may negotiate a loan valued up to \$1,000,000 under this program.²⁶¹
- **Business Development Bank of Canada Financing:** BDC provides various specialized financing. For example, BDC offers start-up financing with longer amortization periods as well as the option to postpone capital payment to entities with potentials in their start-up phase. Also, BDC offers financing of up to \$100,000 to Canadian SMEs that have been in operation for 24 months or longer.²⁶²
- **Industrial Research Assistance Program ("**IRAP**"):** Funded by the National Research Council Canada, this program provides financial and advisory support to qualified small and medium-sized enterprises in

Canada to help them undertake technological innovation.²⁶³ Delivered by IRAP, the Canada Accelerator and Incubator Program (“**CAIP**”) provides funding over a five-year period in the form of non-repayable contributions to a limited number of outstanding accelerators and incubators that meet strict eligibility and selection criteria.²⁶⁴ Applicant accelerators and incubators are evaluated based on their ability to encourage the growth of early-stage firms, potential to develop entrepreneurial networks with other firms, and ability to demonstrate matching contribution.²⁶⁵ In 2015, Ryerson University, in partnership with Simon Fraser University and the University Of Ontario Institute Of Technology, were selected as recipients of CAIP funding up to \$10.7 million.²⁶⁶

- **Collaborative Research and Development Grants:** Funded by the Natural Sciences and Engineering Research Council of Canada (“**NSERC**”), the grants support well-defined projects undertaken by university researchers and their private-sector partners. The grants give companies that operate from a Canadian base access to the unique knowledge, expertise, and educational resources available at Canadian postsecondary institutions and help to train students in essential technical skills required by industry.²⁶⁷ NSERC also offers research grants to fund a wide range of research programs and projects undertaken by universities and colleges. For example, NSERC’s Idea to Innovation Grant provides funding to college and university faculty members to support research and development projects with recognized technology transfer potential.²⁶⁸
- **Western Innovation Initiative:** Funded by Western Economic Diversification Canada, the program is a \$100 million five-year federal initiative that offers repayable contributions for SMEs with operations in Western Canada, in order to help move their new and innovative technologies from the later stages of research and development to the marketplace.²⁶⁹ (Note: the intake period for this program is now closed.)
- **Investing in Business Innovation Program:** Administered by the federal Economic Development Agency for Southern Ontario, the program provides financial support in the form of grants and loans to SMEs located in southern Ontario. Canadian-incorporated businesses headquartered in southern Ontario with less than 50 full-time employees may apply for a loan up to \$1,000,000 for activities related to late-stage development and early-stage commercialization of innovative, unique products and processes. The specific terms of repayment are determined on a case-by-case basis.²⁷⁰
- **Investing in Business Growth and Productivity Program:** Also administered by the federal Economic Development Agency for Southern Ontario, the program provides financial support to help SMEs in southern Ontario expand markets and facilities, increase adoption of new technologies and processes, and increase business capacity to participate in global markets. Canadian-incorporated businesses headquartered in southern Ontario with more than 15, but less than 1,000 full-time employees may receive a loan up to \$20 million for projects that help SMEs expand, diversify and adopt innovation. The applicant businesses must demonstrate, among other things, evidence of a minimum of 75% cash funding available for the projects, a sustainable business model and a track record of profitability. The specific terms of repayment are determined on a case-by-case basis.²⁷¹
- **Canadian International Innovation Program:** Funded by the Canadian Trade Commissioner Service, the program provides funding for industrial research and development initiatives pursuing opportunities for bilateral cooperation. The primary focus is on technology co-development, technology validation or technology adaptation with partners from Brazil, China, India and Israel (and shortly, South Korea). Canadian-incorporated businesses with less than 500 full-time employees which seek to collaborate with international partners on an industrial research and development project may apply for funding under this program.²⁷²
- **Going Global Innovation Fund:** Also funded by the Canadian Trade Commissioner Service, the program gives Canadian innovators up to \$75,000 to help commercialize, validate or adapt their technologies. Canadian citizens working at SMEs, academic institutions or non-governmental research centres may apply for funding.²⁷³
- **Build in Canada Innovation Program:** Through the program, the federal government tests pre-qualified goods and services from successful applicants (Canadian companies of all sizes may apply). After testing, the government provides feedback to vendors on the performance of their products or services. The program is designed to help innovative businesses move their goods and services from the final stages of research and development into the market by providing them with a first reference

sale, while allowing them to retain their intellectual property. Successful applicants may receive up to \$500,000 for non-military innovations and up to \$1 million for military innovations.²⁷⁴

- **Southern Ontario Smart Computing Innovation Platform ("SOSCIP"):** SOSCIP is a research and development consortium funded by both the federal government and the Government of Ontario that focuses on developing made-in-Canada disruptive technologies by providing academic and industry researchers with access to advanced computing platforms, technical expertise and funding. Since the program began in 2012, SOSCIP has launched more than 60 projects, engaging or creating 38 businesses in a range of industries, including digital media, healthcare and manufacturing, while establishing more than \$2 billion in revenue for new or growing businesses. Each example of disruptive technology utilizes SOSCIP's advanced computing and big data analytics platforms to advance innovative commercialization opportunities for Ontario-based companies.²⁷⁵
- **Canada Media Fund - Experimental Stream:** The Innovation Program of the Canada Media Fund Experimental Stream provides financial support in various forms to CCPCs and entities licensed to operate as Canadian broadcasters for development of interactive digital media contents and software applications.²⁷⁶

Budget 2017

Budget 2017 contains a number of proposals and initiatives designed to deliver simpler, more efficient and more coordinated support to fintech businesses and SMEs.²⁷⁷

- **Innovation Canada:** One of the most notable aspects of Budget 2017 is the government's promise to undertake a review of the dozens of federal-government-led innovation programs with the goal of consolidating and streamlining such offerings. This review will encompass all relevant federal organizations along with a parallel review of the SR&ED tax incentive program to ensure its continued effectiveness and efficiency. This review will not only aim to ease the current difficulties and added cost associated with finding and securing appropriate support but also to provide more timely access to innovation services.²⁷⁸ To this end, the government has proposed to establish Innovation Canada, which will be led by Innovation, Science and Economic Development Canada, and which will be responsible for coordinating and simplifying the support available to Canadian innovators. In time, Innovation Canada will serve as the sole host for the federal government's simplified suite of innovation programs.²⁷⁹
- **Innovation Superclusters:** In terms of substantive new initiatives, the most significant is the government's announcement of a \$950 million investment over five years (starting in 2017-2018) to support a small number of business-led innovation "superclusters." "Superclusters" refers to dense areas of business activity that contain large and small companies, post-secondary institutions and specialized talent and infrastructures. Example of "superclusters" can be found in Silicon Valley, Berlin and Tel Aviv. The funds will be provided on a competitive basis, with investment focused on superclusters that contain highly innovative industries such as advanced manufacturing, clean technology, digital technology and infrastructure and transportation.²⁸⁰ In other words, the government is expecting various participants in innovative market sectors to come together and propose innovative products and services that the government will then contribute to out of the allocated funds. The applicable criteria for eligibility and the manner in which such a program will operate has not been set out in detail as of yet.
- **Venture Capital Catalyst Initiative:** To support the continued growth of Canada's innovative companies, Budget 2017 proposes to make available through the BDC \$400 million on a cash basis over three years, starting in 2017-2018, for a new Venture Capital Catalyst Initiative that will increase late-stage venture capital available to Canadian entrepreneurs. With funds leveraged from the private sector, this investment could inject around \$1.5 billion into Canada's innovation capital market. To access the funds, private sector parties will submit proposals to the government that will be evaluated based on the amount of private sector capital already secured; expected benefits for Canadian firms; the proposed approach for risk sharing between the government and private sector; and the investment strategy, among other considerations.²⁸¹

- **Strategic Procurement:** Budget 2017 proposes to provide up to \$50 million, starting in 2017-2018, to launch a new procurement program, Innovative Solutions Canada, modelled on the very successful U.S. Small Business Innovation Research program. Under Innovative Solutions Canada, a portion of funding from federal departments and agencies will be allocated towards early-stage research and development, late-stage prototypes and other goods and services from Canadian innovators and entrepreneurs.²⁸² The specific portion that will be allocated has not been determined as of yet.
- **Intellectual Property Strategy:** In recognition of the importance of a well-functioning intellectual property regime, Budget 2017 announces the government's intention to develop a new intellectual property strategy over the coming year. The strategy will help ensure that Canada's intellectual property regime is modern and robust and supports Canadian innovations in the 21st century.²⁸³
- **Artificial Intelligence:** In order to attract and retain academic talent in Canada, Budget 2017 proposes to provide \$125 million to launch a Pan-Canadian Artificial Intelligence Strategy for research and talent. This strategy will promote collaboration between Canada's main centres of expertise in Montréal, Toronto-Waterloo and Edmonton and position Canada as a world-leading destination for companies seeking to invest in artificial intelligence and innovation. The Canadian Institute for Advanced Research ("CIFAR") will be responsible for administering the funding for the new strategy.²⁸⁴

On March 30, 2017, government and business leaders in Toronto came together to announce the launch of the Vector Institute, a non-profit independent facility that will act as a research hub devoted to the study of artificial intelligence. The facility has been funded with \$40 million from the federal government and \$50 million from the provincial government and a group of 31 corporate donors have pledged \$81 million over ten years.²⁸⁵

- **Supporting Innovation in Financial Services:** In recognition of the ability of financial technology products and services to make financial services more accessible, more useful and more affordable, the government announced a number of initiatives to help spur fintech in Budget 2017. For one, while details have not been set out yet, Budget 2017 notes that the government's Innovation and Skills Plan will help fintech entrepreneurs realize their full growth potential by bringing together high-skilled talent, financing solutions, business advisory services and export support. In addition, to support greater financial innovation, the government announced that it is committed to working with provincial and territorial regulatory authorities to better coordinate and share information. Finally, to promote a well-functioning payments system that fosters innovation and better protects consumers, the government announced that it will release a consultation paper on a new retail payments oversight framework. This paper will be released in 2017. Based on the results of its consultations, the government will then propose legislation to implement the oversight framework.²⁸⁶

Ontario

Tax Programs/Incentives

Ontario's general corporate income tax rate is currently 11.5%. Ontario corporations may be eligible for the Small Business Deduction which reduces the corporate income tax rate on the first \$500,000 of active business income of Canadian-controlled private corporations to 4.5%.²⁸⁷

The Ontario tax credits listed below range from 3.5% to 20% whereas Quebec's range from 14% to 30% and British Columbia's is 10%.²⁸⁸

- **Ontario Innovation Tax Credit ("OITC"):** The OITC is a fully refundable tax credit at the rate of 8% of qualified expenditures. This tax credit is available to all corporations with a permanent establishment in Ontario, for SR&ED expenditures carried out in Ontario. Based on an expenditure limit of \$3 million, the maximum tax credit amount is \$240,000.²⁸⁹

- **Ontario Business–Research Institute Tax Credit (“OBRITC”):** The OBRITC is fully refundable at the rate of 20% of qualified expenditures. This tax credit is available to corporations with a permanent establishment in Ontario in respect of qualified expenditures on SR&ED incurred under eligible contracts with eligible research institutes (“ERIs”). Qualified expenditures are capped at \$20 million annually.²⁹⁰
- **Ontario Research and Development Tax Credit (“ORDTC”):** The ORDTC is a non–refundable tax credit at the rate of 3.5% of eligible expenditures. This tax credit is available to corporations with a permanent establishment in Ontario, for SR&ED carried out in Ontario.²⁹¹
- **Ontario tax exemption for commercialization:** This tax exemption is only available for corporations incorporated between March 25, 2008 and March 24, 2012 and are operating in the telecommunications, computer or digital technologies production, advanced health or bioeconomy industries and commercializing intellectual property developed at a Canadian university or college. Eligible corporations could receive a refund of the corporate income tax and corporate minimum tax the corporation paid in its first 10 taxation years.²⁹²
- **Ontario transitional tax debits and credits:** Corporations may be subject to an Ontario transitional tax debit or be eligible to claim an Ontario transitional tax credit due to the harmonization of the two legislative acts governing federal and Ontario income taxes.²⁹³

Non–Tax Programs

The government of Ontario provides various loans, grants and equity investments through programs either directly or in conjunction with institutions. The government of Ontario has funded various not–for–profit institutions, including Ontario Centres of Excellence (“OCE”), which invests in start–ups, provides a variety of funding and support programs and operates similar to an incubator.²⁹⁴

- **Investment Accelerator Fund:** The government of Ontario in conjunction with MARS Discovery District provides investments in cleantech, information/communications technology and other industries for up to \$500,000.²⁹⁵
- **York Entrepreneurship Development Institute programs:** Accepted students undergo a free, intensive 16–week program. Program graduates are eligible for up to \$30,000 in seed funding in conjunction with York Entrepreneurship Development Institute. This program is not limited to any particular sector or industry.²⁹⁶
- **Collaboration Voucher Program:** Eligible Ontario companies can receive a credit that they are able to redeem from research institutes at various universities to help them access expertise and knowledge. This is an OCE program.²⁹⁷
- **SmartStart Seed Fund:** This fund provides both seed financing and financing for entrepreneurship skills training to help recipients grow their start–up and make them investment and customer ready. This is an OCE program.²⁹⁸
- **Jobs and Prosperity Fund:** Grant of up to 20 percent, a loan of up to 40 percent, or a combination of grants and loans up to 40 percent of eligible project costs for projects in sectors such as information and communications technology, advanced manufacturing, life sciences, strategic/anchor investments.²⁹⁹ The proposed project must have at least \$10 million in eligible project costs.³⁰⁰
- **Ontario Catapult Microloan Fund for Social Enterprises:** Individuals who own a social enterprise can receive a low–interest loan from \$5,000 to \$25,000. To be eligible, the individual must be a member of the Centre for Social Innovation and the enterprise must be addressing social, environmental, economic or cultural needs.³⁰¹
- **Southern Ontario Smart Computing Innovation Platform :** SOSCIP was created in collaboration with IBM and other institutions. SOSCIP offers computing platforms and funding to support the work of post–doctoral and graduate students from universities.³⁰² SOSCIP receives funding from both the federal government and the Government of Ontario.³⁰³

Miscellaneous

The Ontario government also provides a variety of programs to support or fund businesses based on their geographic location (i.e. programs specifically to support businesses located in Northern Ontario) or based on the demographic group (i.e. programs specifically designed to support Aboriginal, women, or youth).³⁰⁴

British Columbia

The Government of British Columbia offers both tax and non-tax incentives for fintech companies. From a tax perspective, B.C. has competitive corporate tax rates, in addition to a series of tax credit programs to encourage growth. B.C. also offers a variety of non-tax supports, including technology and entrepreneurial programs, loan/funding programs, and grants to help fintech companies prosper.

Tax Programs/Incentives

B.C. has two rates of corporate income tax—the general rate and the lower small business rate. The small business corporate income tax rate is 2.0 percent (applies to active business income up to \$500,000), while the general corporate tax rate is 11 percent.³⁰⁵ Further, B.C. offers many tax credits, including:

- **Scientific Research & Experimental Development Tax Credit:** The tax credit provides qualifying corporations that are Canadian-controlled private corporations the ability to claim a refundable tax credit of 10 percent.³⁰⁶
- **Small Business Venture Capital Tax Credit:** The tax credit provides B.C. investors with a 30 percent tax credit on their investment in a Venture Capital Corporation or an Eligible Business Corporation.³⁰⁷
 - o A Venture Capital Corporation is formed for the sole purpose of investing in Eligible Small Businesses. Alternatively, existing or new small businesses may register as an Eligible Business Corporation to raise equity capital directly from arms-length eligible investors.³⁰⁸
- **The International Business Activity:** The program provides eligible corporations, certain foreign banks authorized to carry on business in Canada, and specialists employed by these entities a refund of the B.C. income tax paid on income related to the corporation's international business carried on in B.C.³⁰⁹
- **Labour Sponsored Funds Program:** The program provides B.C. investors a combined federal and provincial tax credit of up to 30 percent on their investment in a labour-sponsored investment fund. The goal of this program is to help create investment funds that are able to invest in small and medium-sized businesses with high growth potential that need equity financing to achieve success.³¹⁰

Non-Tax Programs

The B.C. government, in addition to the B.C. Innovation Council ("**BCIC**"), offer a series of non-tax incentives to support fintech companies. The incentives include support programs, grants, and loans/funding. The B.C. government directly offers the following supports:

- **BC Tech Fund:** A \$100 million venture capital fund-of-funds aimed at stimulating growth in the technology sector.³¹¹
- **BC Knowledge Development Fund:** A capital investment fund that provides funding for public post-secondary institutions, research hospitals and affiliated non-profit agencies.³¹²
- **Mitacs Canada:** The B.C. government has invested in Mitacs Canada, a national non-profit headquartered in B.C., that supports innovation through co-ordination of industry-university projects that focus on talent development.³¹³

The BCIC is a Crown Agency and is the largest funder of entrepreneurial support programs in the province.³¹⁴ BCIC focuses on the support of technology start-ups and entrepreneurs that facilitate technology commercialization. BCIC supports technology start-ups and entrepreneurs through programs, sponsorship and competitions. Support programs include:

- **BCIC Ignite:** The program provides up to \$300,000 in funding to a company to accelerate commercialization of new technologies and innovations in the natural resources and applied sciences in British Columbia.³¹⁵
- **BCIC–New Ventures BC Competition:** This is a competition where the top technology business idea is awarded up to \$300,000.³¹⁶
- **BC Venture Acceleration Program:** This program provides a paid structured venture growth program designed to guide, coach and grow ambitious early-stage technology entrepreneurs and effectively grow their technology ventures.³¹⁷
- **BCIC Tech Works:** The program provides grants that fund the hiring of students.³¹⁸
- **Launch Academy:** The program helps entrepreneurs and start-ups learn how to build tech companies faster and more efficiently. This program does not offer seed money, but does provide programs and supports to assist start-up companies succeed.³¹⁹
- **Technology Entrepreneurship@SFU:** The program is a partnership with Simon Fraser University where students work together to develop a market-inspired technological product and pitch for the funds to take it from bench-top to market. Funding for this program comes from BCIC, Simon Fraser University, and the B.C. government.³²⁰

Furthermore, there is a series of specialized grant/funding programs offered, including:

- **Women's Enterprise Initiative Loans Program:** The program offers small business loans to women-owned businesses in B.C. to start, enhance or grow a B.C. business. The maximum is \$150,000.³²¹
- **BC Tech Co-op Grants Program:** The program is delivered through co-op departments at B.C. post-secondary institutions. It encourages student training and job readiness through work terms with small firms in tech or any companies hiring for tech roles.³²²
- **The BCIC Innovator Skills Initiative:** The program provides students employment in B.C.-based technology companies through a BCIC Innovator Skills Initiative Voucher valued up to \$7,500, which is matched by the company.³²³
- **Western Innovation Initiative:** The program offers repayable contributions to western Canadian businesses with less than 500 employees, to commercialize innovative technology-based products, processes or services.³²⁴
- **Western Economic Diversification Canada:** The program helps fill the gap between traditional bank lending and venture capital for small business. It works with not-for-profit organizations and business partners to provide loans to entrepreneurs in western Canada.³²⁵

Québec

Tax Programs/Incentives

In Québec, the provincial tax rate on a corporation's business income varies depending on whether the corporation is eligible for the small business deduction. In Québec, the general corporate tax rate is 11.9 percent whereas the rate is 8 percent on the first \$500,000 eligible for the small business deduction.³²⁶

Research and Development (“R&D”):

There are four Scientific Research and Experimental Development tax credits available in Québec.³²⁷ The basic rate for the Scientific Research and Experimental Development tax credit is 14 percent of eligible expenditures. However, the rate for small and midsize businesses (“**SMBs**”) is 30 percent on the first \$3 million of eligible expenditures. An SMB is a Canadian-controlled private corporation whose assets are less than \$50 million.³²⁸

Financial Services:

The Québec government has implemented the following tax credits related to financial services companies:

- **The refundable and non-refundable tax credit program for international financial centres:** A corporation recognized for specializing in any of the 25 qualified international financial transactions³²⁹ can benefit from a tax credit of 24 percent of the salaries of eligible employees to a maximum of \$16,000 per employee.³³⁰
- **Tax Credit for New Financial Services Corporations:** A qualified corporation³³¹ can benefit from a refundable tax credit equivalent to 32 percent of certain eligible expenditures.³³²
- **Tax Credit for the Hiring of Employees by a New Financial Services Corporation:** A qualified corporation may claim a refundable tax credit equivalent to 24 percent of salaries, up to an annual maximum credit of \$24,000 per employee.³³³

Other

The following tax credits are also available to fintech start-ups and SMEs operating in Québec:

- **Tax Credit for the Development of E-Business:** This credit enables specialized corporations that carry out innovative, high-value-added activities in the IT sector to obtain a tax credit of an annual maximum of \$25,000 per employee.³³⁴
- **Tax Credit for Technological Adaptation Services (“SAT”):** The SAT credit provides a tax credit of up to 40 percent of eligible expenses for businesses engaged in advanced technology initiatives with eligible applied research centres that provide technical support, technical development as well as information and training.³³⁵

Non-Tax Programs

The Québec government also offers the following incentives for start-ups and SMEs that are not tax-related:

- **Canada Economic Development for Québec regions** can cover up to 50 percent of authorized costs through repayable or non-repayable contributions for approved projects by SMEs that innovate, adopt a technology or provide technology transfers.³³⁶
- **Investissement Québec offers the following programs:**
 - o Providing development capital and project financing of up to \$100 million³³⁷ (comprised of equity or debt financing³³⁸) for SMEs.³³⁹
 - o An Immigrant Investor Program through which a non-repayable contribution of up to \$250,000, approved and managed by Investissement Québec, is distributed to Québec businesses based on the interest generated by immigrant investors' investments.³⁴⁰

- o Providing immediate financing for technology companies in the amount of anticipated Scientific Research and Experimental Development, SAT and Development of E-Business tax credits.³⁴¹
- o Providing loans, financial assistance and loan guarantees to innovative and entrepreneurial investment projects through its ESSOR program (administered jointly with the Ministère de l'Économie, de la Science et de l'Innovation).³⁴²
- o Providing direct venture capital investment or indirect investments through specialized funds of at least \$1 million.³⁴³
- **Québec First Patent Program** provides a non-repayable contribution of up to 50 percent of eligible expenses, to a maximum of \$25,000 for patent applications of SMEs.³⁴⁴
- **Le Fonds InnovExport** offers up to \$3 million in funding for innovative projects that aim to export products or services and are supported by an incubator, accelerator or expert panel;³⁴⁵ and
- **Femmessor** provides loans (\$20,000 to \$150,000) or capital stock (up to \$250,000) to companies that are at least 25 percent owned by women.³⁴⁶

Appendix D

Fintech Hub Benchmarking Model Methodology

The objective of the benchmarking model is to rank the Toronto–Kitchener–Waterloo (“Toronto region”) fintech ecosystem against other global fintech hubs on a set of quantitative metrics. Those metrics were chosen to take into account their assumed impact on fintech hub development and the consistency and availability of data across the fintech hubs included in the model.

The methodology of the Fintech Hub Benchmarking Model is comprised of five main sections:

a) Hubs selection

We included 14 fintech hubs in the model, based predominantly on data showing where recent fintech activity is concentrated, as well as a Canadian–centric view to allow for a national comparison. Moreover, we wanted to have a reasonable selection of the hubs across the main geographies, while at the same time having a larger sample of North American hubs to cover thoroughly main regional competitors of the Greater Toronto Area hub.

Country	Hub
Australia	Sydney
Canada	Montreal
Canada	Toronto region
Canada	Vancouver
China	Shanghai
Germany	Berlin
Hong Kong	Hong Kong
Israel	Tel Aviv
Singapore	Singapore
United Arab Emirates	Dubai
United Kingdom	London
United States	Boston
United States	New York
United States	Silicon Valley

b) Metrics and groups selection

Forty–six single metrics were used in the benchmarking model. Those metrics were chosen to take into account their assumed impact on fintech hub development and the consistency and availability of data across the fintech hubs included in the model. Metrics were sourced from datasets maintained by institutions, including the World Economic Forum, UN, ITU, the World Bank, CB Insights and CrunchBase.

We grouped the 46 single–metrics included in the model into sub–groups, which were then subsequently grouped into five main groups, which in our opinion explain well the different areas that influence the way fintech hubs are developing.

The groups and sub-groups chosen are:

- **Government support**
 - **General government support**
Fintech space comprises mainly early/growth-stage companies, for whom it is important to have supportive government policies—either when it comes to starting a business or growing it.
 - **Fintech-related support**
Financial services are usually more regulated than other industries, so it can be beneficial for fintech start-ups to have an FS regulatory approach more in alignment with their needs.
- **Business ecosystem maturity**
 - **Ecosystem attractiveness**
The broad hub ecosystem should be attractive for new business ventures—attracting both the influx of foreign capital and employees (thanks to the hub's good living conditions).
 - **Ecosystem development**
The development of a fintech hub can be easier when the whole ecosystem is already well-developed—meaning there are clusters of other firms, start-ups in other areas are growing, and it can be observed that people in the hub have entrepreneurial attitudes.
- **Fintech activity and financing**
 - **Fintech activity**
Fintech development is to some extent based on the “snowball effect”—it is easier to develop new fintech companies if there are already several active fintech businesses in the area and there is a growing number of potential employees with fintech experience that can come up with new ideas.
 - **Financing options**
Fintech companies and start-ups need to have access to different financing options. Based on their growth stage it may mean venture capital financing, bank financing or capital markets financing (IPO).
- **Talent pool and innovation**
 - **Talent pool**
All tech start-ups (so also fintech ones) are dependent on access to the pool of talented and skilled (mostly in science, technology, engineering and mathematics (STEM) workforce, which can be either grown internally within a country/hub or attracted from abroad.
 - **Innovation capacity**
Some countries score low in various innovation rankings despite having large pools of educated people. Thus, it is vital to be able to translate education efforts into innovative projects instead of repetitive tasks.
- **Technology availability and adoption**
Two aspects are important for tech start-ups to develop—access to quality technological solutions so they can compete with other solutions and a large pool of potential customers using new technologies (and as a result to be able to have scale effects when offering products/services).

c) Metrics normalization

As the raw data for single-metrics were of different units and scales, data rescaling was applied to each of the datasets. Each numeric variable was scaled in the range [0,100] by using one of the two normalization formulas:

$$x_{new} = \frac{x - x_{min}}{x_{max} - x_{min}} * 100 \quad (\text{for metrics using normal scale}) \text{ or}$$

$$x_{new} = (1 - \frac{x - x_{min}}{x_{max} - x_{min}}) * 100 \quad (\text{for metrics using inverted scale})$$

Where:

- x is the value of the variable before normalization.
- x_{new} is the value of the variable after normalization.
- x_{min} is the lowest value for a particular metric before normalization.
- x_{max} is the highest value for a particular metric before normalization.

After rescaling, a score of 0 means the lowest possible result while a score of 100 means the highest possible result for each single metric.

d) Group scores

The index was calculated by using expert weighting based on the assessment of the importance of given factor for the overall score supported with the regression analysis that proved the weighting to be valid in describing hubs' maturity. For each sub-group, the score was obtained by calculating the weighted average of the normalized values for all metrics in each sub-group. Then, scores for groups were calculated by using the weighted average of normalized values for all sub-groups included in each of the five main components.

e) Regression analysis

Regression analysis was used to assess the correlation between the overall index (obtained by normalizing and creating the weighted averages of 46 metrics—which collectively represent fintech hub development maturity drivers) with fintech activity (measured by the number of deals) in recent years in each of the hubs analyzed.

The regression specification used was:

$$D_{i,t} = \alpha + \beta \cdot I_{i,t}(K) + \varepsilon_{i,t}$$

$$i = 1, \dots, 12 \quad t = 1$$

Where,

- i is each of the 14 regions
- t is time 2016
- D is the number of fintech deals in a given region
- α is a constant term
- I is the overall score of the index
- K is a set of explanatory metrics used to calculate the index
- ε is an error term

The regression analysis showed a significant relation between the index and defined output variable, confirmed by the following statistics:

- $R^2=82$
- Adjusted $R^2=80$
- F-statistic = 53.04
- Probability (F-statistic) = 0.00
- Index score t-statistic = 7.28
- Probability (t-statistic) = 0.00

Appendix E

Overall, how well does Canada's and Ontario's current regulatory and policy environment support fintech compared to other major international fintech centres?

Overall, Canada and Ontario lag behind many comparable fintech centres, such as the United Kingdom and Australia from a regulatory and policy perspective. While some recent regulatory and policy initiatives are helping Canada bridge this gap, Canada and Ontario have a way to go before their fintech regulatory and policy ecosystems are competitive with global leading fintech hubs.

London, United Kingdom

London is widely considered as having a first-rate regulatory and government policy environment for fintech businesses. Its Financial Conduct Authority has been called the “gold standard” for fintech start-ups.³⁴⁷ On a 1- 5 ranking of the fintech hubs in our model, with 1 representing a poor regulatory and policy environment and 5 representing a first-rate regulatory and policy environment, London was among only two cities that scored a 5. In a global comparative study of 44 innovation hubs, London took the top spot (tied with Singapore) as favouring fintech growth, while Toronto ranked 10th.³⁴⁸ In a smaller study, the U.K. ranked first out of seven major fintech jurisdictions on the metric of policy, which was based on aggregated effects of the regulatory regime, the availability of government programs, and the government's taxation policy (Canada was not evaluated as part of this study).³⁴⁹

London's success as an innovation hub is due in large part to the proactive approach taken by the U.K.'s principal fintech regulator, the FCA, which has pioneered a number of regulatory innovations that set London apart from other fintech centres. Leading the way is the FCA's Innovation Hub, which helps fintech businesses navigate the UK regulatory landscape and facilitates the entry and exit of fintech firms from the country.³⁵⁰ As discussed above, Ontario has recently followed the FCA's lead in establishing the OSC LaunchPad,³⁵¹ but, because it necessarily focuses only on securities law the OSC LaunchPad's ability to assist fintech companies is more limited than the FCA's Innovation Hub, and, unlike the FCA, it has not yet reached much beyond Canada's borders. The FCA has also signed cooperation agreements with most major fintech hubs to facilitate the ease of expansion out of and into the United Kingdom, including agreements with Australia, Singapore, Hong Kong, Canada and Japan.³⁵² At the time of writing, the OSC has signed international cooperation agreements only with Australia and the United Kingdom.³⁵³

Furthermore, as discussed above, the FCA was one of the first regulators to launch a fintech regulatory sandbox, which has seen two application cycles.³⁵⁴ In addition, the United Kingdom has proactively embraced a number of other progressive fintech-friendly regulatory developments, including, enabling the sharing of customer data between financial institutions and fintech service providers through the use of APIs,³⁵⁵ launching a professional services information hub, and establishing a panel comprised of industry representatives to help map out a long-term strategy for UK fintech.³⁵⁶ By comparison, no Canadian regulatory authority has taken steps to implement open banking (despite some statements of support), or established low-cost professional services hubs.³⁵⁷ However, following the United Kingdom's lead, the OSC has announced the creation of a Fintech Advisory Committee consisting of leading industry representatives.³⁵⁸

Furthermore, the United Kingdom offers a suite of tax incentives to support the fintech environment including: the Enterprise Investment Scheme and the Seed Enterprise Investment Scheme.³⁵⁹ Finance Canada in contrast only recently announced the comparable Venture Capital Catalyst Initiative³⁶⁰ and fintech companies still have to rely on the venerable but notoriously slow SR&ED tax credit.

Interestingly, when considering the burden of regulation generally, on a global comparative basis with a high score translating to being less burdensome, the United Kingdom achieved only a slightly better score of 4.1 out of 7 compared to Canada, which scored 3.8.³⁶¹ However, the United Kingdom scored 5.4 out of 7 compared to Canada's 6 out of 7 on a scale measuring regulator focus on ensuring the stability of the financial markets (with a higher score implying that the regulators are more restrictive).³⁶²

The United Kingdom also ranks highly in the areas of intellectual property ("**IP**"), cybersecurity, and information communications technology ("**ICT**"), in some cases ranking well ahead of Canada. Considered to have a sophisticated national IP environment, which includes a regime for strong cross-sectoral enforcement, the United Kingdom also has an IP environment supported by wide-ranging educational and pro-innovation activities and policies.³⁶³ Globally it ranked 2nd out of 45 countries, substantially ahead of Canada's middling 17th place.³⁶⁴ The United Kingdom has also enacted specific legislation governing cybersecurity. The Office of Cybersecurity and Information Assurance, part of the Cabinet Office, is the officially recognized agency responsible for implementing a national cybersecurity strategy, policy and roadmap.³⁶⁵ Nevertheless, globally, the United Kingdom ranked 5th, worse than Canada's 2nd place. Also, on a seven-point scale assessing the development of laws related to ICT (such as electronic commerce and digital signatures), compared to other jurisdictions globally, the United Kingdom scored 5.5 while Toronto scored a comparable and respectable 5.3 (with a higher score implying a more well-developed set of ICT laws).³⁶⁶

Another factor favouring the United Kingdom is its policy towards attracting and retaining talent, especially in the fintech space. On a global comparative basis, the United Kingdom ranked 3rd on the global talent competitiveness index compared to Canada's mediocre 13th.³⁶⁷ One notable feature of the United Kingdom's labour approach, mentioned earlier, is the establishment of the Tech Nation Visa Scheme which facilitates the visa process for tech talent to move to the United Kingdom.³⁶⁸

Hong Kong

Overall, Hong Kong boasts an above average regulatory and policy environment for fintech businesses. In the 1-5 ranking of the fintech hubs in our model, with 1 representing a poor regulatory and policy environment and 5 representing a first-rate regulatory and policy environment, Hong Kong scored 4, ahead of Toronto's 3 ranking. In the global comparative study of 44 innovation hubs, Hong Kong ranked 6th, well ahead of Toronto's 10th.³⁶⁹

Hong Kong's fintech supervisory sandbox may be its most notable feature. The Hong Kong Monetary Authority ("**HKMA**") has adopted a flexible policy towards granting exemptive relief. Instead of stipulating an exhaustive list of the supervisory requirements that it is potentially willing to relax during the test period, it invites authorised institutions interested in accessing the sandbox to discuss with the HKMA the appropriate supervisory flexibility that can be made available to them.³⁷⁰ By way of contrast, the CSA regulatory sandbox requires fintech businesses to first contact their local securities regulator who will vet the business for eligibility (e.g., whether it provides a genuine technological innovation in the securities industry) before referring them to the CSA regulatory sandbox, and exemptive relief can be granted only under an express statutory power.³⁷¹ Consequently, the HKMA's approach to the regulatory sandbox appears to be less restrictive and more flexible than that adopted by the CSA.

In addition, the Government of Hong Kong has a number of programs to support technological innovation generally and fintech more specifically. For example, the Fintech Facilitation Office is tasked with facilitating the healthy development of the fintech ecosystem in Hong Kong and promoting Hong Kong as a fintech hub in Asia.³⁷² The OSC Launchpad serves a somewhat similar purpose but only with respect to securities regulation.

InvestHK, an entity established by the Government of Hong Kong, has a dedicated fintech team which organizes various events and conferences to showcase Hong Kong's unique fintech advantages.³⁷³ Toronto has not yet implemented any initiatives similar to this. According to fintech industry participants, this has negatively affected its global profile and the corresponding capability for Canadian fintech businesses to access international markets.³⁷⁴

On the previously mentioned global comparison for burden of regulation, Hong Kong achieved a significantly better score of 5.2 out of 7 compared to Canada's 3.8.³⁷⁵ Similarly, on the global comparison for regulatory focus on ensuring stability in the financial markets, Hong Kong achieved a slightly worse score of 6.1 out of 7 compared to Canada's score of 6 out of 7.³⁷⁶ Lastly, on the global comparison for the development of laws related to ICT, compared to other jurisdictions globally, Hong Kong and Canada were nearly tied, with Hong Kong scoring a 5.2 compared to Canada's 5.3.³⁷⁷

Sydney, Australia

Sydney is considered to have a good regulatory and policy environment for fintech businesses. Its status as an emerging fintech hub is evident, with it scoring fairly well on a number of international reports comparing fintech jurisdictions around the world. For example, in the comparative ranking of the fintech hubs in our model, 1 representing a poor regulatory and policy environment and 5 representing a first-rate regulatory and policy environment, Sydney scored a 3. In the global comparative study of 44 innovation hubs, Sydney ranked 8th with respect to being conducive to fintech growth compared to Toronto's 10th place.³⁷⁸ In a smaller survey of regulatory regimes, Australia ranked third out of seven major fintech jurisdictions on the metric of policy (Canada was not ranked).³⁷⁹

With respect to its regulatory approach, the Australian Securities and Investments Commission ("**ASIC**") has enacted both a regulatory sandbox and an innovation hub that provides tailored advice to fintech start-ups looking to navigate the Australian regulatory system.³⁸⁰ While the innovation hub resembles the OSC LaunchPad, the ASIC regulatory sandbox is unique globally in that it allows eligible fintech businesses to test their product or service for a twelve-month period without formally having to apply to ASIC.³⁸¹ In addition, for those businesses that are not eligible for the regulatory sandbox, ASIC is able to provide tailored, individual licensing exemptions to facilitate product or service testing,³⁸² making this regulatory scheme overall more flexible for fintech businesses as compared to the one offered by the CSA and OSC.

The Australian Government has also created a suite of incentives to support fintech businesses and innovation. Along with a range of tax relief measures aimed at encouraging investment in early-stage innovation companies that have high growth potential,³⁸³ the Australian Government has also announced the investment of \$36 million over four years in a Global Innovation Strategy to improve Australia's international innovation and science collaboration.³⁸⁴ Part of this investment will go towards the establishment of five "landing pads" (in Tel Aviv, San Francisco, Shanghai and two other locations). These landing pads will provide market-ready start-ups with a short-term (90-day) operational base where they can access entrepreneurial talent, mentors, investors and a wider connected network of innovation hubs. While the OSC has signed cooperation agreements with Australia and the United Kingdom,³⁸⁵ these measures are not nearly as expansive as those of Australia with respect to developing international relationships with other fintech hubs.

On the previously mentioned global comparison for burden of regulation, Australia achieved a slightly worse score of 3.4 out of 7 compared to Canada's 3.8.³⁸⁶ Similarly, on the global comparison for regulatory focus on ensuring stability in the financial markets, Australia achieved a slightly worse score of 5.9 out of 7 compared to Canada's score of 6 out of 7.³⁸⁷ Lastly, on the global comparison for the development of laws related to ICT, compared to other jurisdictions globally, Australia achieved a slightly worse score of 4.9 compared to Canada's score of 5.3.³⁸⁸

With respect to intellectual property, cybersecurity and information technology, Australia has advanced IP rights in place and is a signatory to many international treaties.³⁸⁹ On a global comparative basis it scored a rank of 12th out of 45 countries, ahead of Canada's 17.³⁹⁰ Furthermore, Australia has enacted specific legislation and regulation related to cybersecurity. The Cyber Policy and Intelligence Division of the Attorney General's Department is the officially recognized agency responsible for implementing the national Plan to Combat Cybercrime and Cyber Security Strategy.³⁹¹ On a comparative basis, it achieved a global rank of 3rd, almost identical Canada's global rank of 2nd.³⁹²

Finally, we note that Australia is extremely favourable towards attracting and retaining talent, especially in the fintech space. On a global comparative basis, Australia ranked sixth on the global talent competitiveness index compared to Toronto's rank of 13.³⁹³ Especially with regards to fintech, Canada does not have anything comparable to Australia's Entrepreneur Visa³⁹⁴ which can attract and retain fintech entrepreneurs.

Singapore

Singapore is considered to have an excellent regulatory and policy environment for fintech businesses. This is evident from a number of international reports comparing fintech jurisdictions around the world: on the 1-5 ranking of the fintech hubs in our model, with 5 representing a first-rate regulatory and policy environment, Singapore scored the highest possible 5. In addition, in the global comparative study of 44 innovation hubs, Singapore ranked first (tied with London) whereas Toronto ranked 10th.³⁹⁵ Similarly, in a smaller survey of regulatory regimes, Singapore ranked second out of seven major fintech jurisdictions on the metric of policy (Canada was not ranked).³⁹⁶

With respect to its regulatory approach, the Monetary Authority of Singapore ("**MAS**") has adopted an increasingly progressive regulatory response to fintech compared to regulators worldwide.³⁹⁷ In particular, it has enacted both a regulatory sandbox and a dedicated fintech office that provides tailored advice to fintech start-ups looking to navigate the regulatory system in Singapore, among other things. This fintech office, established in May 2016, is a cross-agency body which serves as a one-stop for all fintech-related matters for new and existing businesses, and coordinates various funding schemes administered by various government agencies.³⁹⁸ While the dedicated office appears to be fairly similar to programs of this nature launched by other regulators, including the OSC Launchpad (which we note is limited due to its securities focus), Singapore's regulatory sandbox is much broader than that available in Canada in that MAS, like the FCA, retains the discretion to determine the specific legal and regulatory requirements that it is prepared to relax for that particular business.³⁹⁹ By way of contrast, the CSA regulatory sandbox can only provide exemptive relief from securities legislation.

Outside of the regulatory sandbox, Singapore additionally offers a range of programs and initiatives, including The Financial Technology and Innovation Proof of Concept scheme, which aims to (a) promote the undertaking of more experimentation within the financial services sector, and (b) accelerate the development and dissemination of nascent innovative technologies in the financial services. Through the scheme, MAS provides funding support of up to 50-70 percent of qualifying costs (dependent on project type), up to a maximum of S\$200,000, for up to 18 months to Singapore-based financial institutions as well as technology or solution providers working with Singapore-based financial institutions for the early stage development of novel solutions to financial industry problems.⁴⁰⁰ This is in contrast to Canada where businesses rely on the SR&ED tax credit which, subject to certain criteria being met, provides a refundable tax credit at an enhanced rate of 35 percent up to C\$3 million and a lower rate of 15 percent on amounts over C\$3 million.⁴⁰¹

MAS has also established a FinTech Innovation Lab, which will enable it to work and consult with financial institutions on specific fintech solutions as well as broader areas of interest, including regulation.⁴⁰² Meanwhile Toronto has a suite of fintech incubators (MaRS, Communitech, the Digital Media Zone),⁴⁰³ none are as integrated with the governing regulatory authority as the one in Singapore.

On the previously mentioned global comparison for burden of regulation, Singapore achieved a substantially better score of 5.6 out of 7 compared to Canada's 3.8.⁴⁰⁴ Similarly, on the global comparison for regulatory focus on ensuring stability in the financial markets, Singapore achieved a slightly worse score of 6.3 out of 7 compared to Canada's score of 6 out of 7.⁴⁰⁵ Lastly, on the global comparison for the development of laws related to ICT, compared to other jurisdictions globally, Singapore achieved a better score of 5.7 compared to Canada's score of 5.3.⁴⁰⁶

Singapore is also fairly advanced in the areas of intellectual property, cybersecurity and information technology. It has an advanced national intellectual property framework in place and the patent enforcement regime is generally applied.⁴⁰⁷ On a global comparative basis it achieved a rank of eighth out of 45 countries, a fair degree better than Canada's ranking of 17.⁴⁰⁸ Further, specific legislation and regulation related to cybersecurity has been enacted in Singapore. The National Infocomm Security Committee is the national-level committee responsible for steering cybersecurity and The National Cybersecurity Masterplan 2018 provides an overarching strategic direction to help Government and organizations in strengthening resilience against cyber threats.⁴⁰⁹ On a comparative basis, it achieved a global rank of sixth, just behind Canada's global rank of second.⁴¹⁰

Lastly, we note that the Singapore is extremely favourable towards attracting and retaining talent, especially in the fintech space. On a global comparative basis, Singapore ranked 2nd on the global talent competitiveness index compared to Toronto's rank of 13.⁴¹¹ In the UK comparative study of fintech hubs mentioned above, Singapore was also ranked second with respect to talent availability.⁴¹² This was partly due to its world-leading access to foreign talent and supportive skilled immigration regime, based on the speed, flexibility and simplicity of its visa programmes.⁴¹³

New York and Silicon Valley, United States

While there are various fintech hubs in the United States, which differ to some extent in their quality, overall, the United States offers a good regulatory and policy environment for fintech entities. New York and Silicon Valley each scored a 4 on the 1-5 ranking of the fintech hubs in our model, with 5 representing an excellent regulatory and policy environment for fintech businesses. In addition, in the global comparative study of 44 innovation hubs, New York ranked third and Silicon Valley ranked fourth whereas Toronto ranked 10th as being conducive to fintech growth.⁴¹⁴ However, when comparing it from a strictly regulatory perspective, in a smaller survey of regulatory regimes, New York ranked seventh and California ranked sixth out of the seven major fintech jurisdictions on the metric of policy (Canada was not ranked).⁴¹⁵

With respect to its regulatory approach, like Canada, the United States lacks a "fintech champion," resulting in multiple actors weighing in on the issue of fintech development and overall resulting in a siloed regulatory approach.⁴¹⁶ Furthermore, as discussed earlier, similar to Canada, the United States has a number of overlapping regulatory bodies with overlapping jurisdictions⁴¹⁷ which is considered difficult to deal with due to a lack of clarity as to which regulator has jurisdiction.⁴¹⁸ Indeed, while the regulatory landscape for traditional banking-sector participants is well-established, it is less clear which federal and State agencies govern marketplace lending and other fintech activities.⁴¹⁹ One regulatory advantage the United States has over Canada is the existence of a national securities regulator, whereas in Canada each province has its own separate securities regulators (resulting in differing provincial securities legislation and adding to the regulatory burden).

In addition, we note that Canada's financial sector has a well-known reputation for financial stability.⁴²⁰ As a result, Canadian banks weathered the 2008 financial crisis. However, the focus on stability has led towards a more conservative approach amongst prudential regulators. Similarly, post-2008, US regulators have focused on systemic risk and consequently created more regulatory hurdles for fintech business.⁴²¹

With respect to substantive regulations specific to fintech, the United States does not offer a regulatory sandbox regime. In contrast to most other jurisdictions that offer fintech-specific regulations, including Toronto, the regulatory approach in the United States largely consists of fintech businesses requesting no-action letters from either the U.S. Securities and Exchange Commission or the Consumer Financial Protection Bureau.⁴²² The no-action relief is limited to the requester and the specific facts and circumstances set forth in the request and is not binding on the regulator.

In terms of government support or incentives to encourage fintech, these vary significantly depending on which fintech hub you are looking at. For instance, New York is considered to be one of the cities in the United States with the highest level of government support.⁴²³ The State government offers various programs to help small-to-medium enterprises thrive. For example, "START-UP NY" offers new and expanding businesses the opportunity to operate tax-free for 10 years on or near eligible university or college campuses in New York State.⁴²⁴ Also, the "Innovate NY Fund Program" is a venture capital fund supported by New York State and Goldman Sachs which invests in seed-stage businesses to support innovation, job creation and high-growth entrepreneurship. However, we note that the 2017 federal budget is bringing some of these types of initiatives to Canada, such as the previously mentioned Venture Capital Catalyst Initiative.⁴²⁵

On the previously mentioned global comparison for burden of regulation, the United States achieved a slightly better score of 4 out of 7 compared to Canada's 3.8.⁴²⁶ Similarly, on the global comparison for regulatory focus on ensuring stability in the financial markets, the United States achieved a better score of 5.4 out of 7 compared to Canada's score of 6 out of 7.⁴²⁷ Lastly, on the global comparison for the development of laws related to ICT, compared to other jurisdictions globally, the United States achieved a comparable score of 5.2 against Canada's score of 5.3.⁴²⁸

The United States is also a global leader in the areas of intellectual property, cybersecurity and information technology. The United States is considered to have one of the world's most sophisticated regimes for intellectual property rights. More specifically, the United States provides a supportive environment for technology transfer and licensing of intellectual property rights, which is further confirmed by the country's commitment to and implementation of international treaties. Key intellectual property rights, including sector-specific rights, are generally in place.⁴²⁹ On a global comparative basis it achieved a rank of first out of 45 countries, a significant degree better than Canada's ranking of 17.⁴³⁰ In other words, Canada provides an intellectual property environment that is more comparable to that of middle-income economies like Mexico or Malaysia as opposed to that of fintech leaders like the United Kingdom or the United States.⁴³¹ Furthermore, the United States was an early adopter of significant measures to address cybersecurity and national and sector-specific cybersecurity frameworks have been enacted.⁴³² On a comparative basis, it achieved a global rank of first, just ahead of Canada's global rank of second.⁴³³

Lastly, we note that the United States is favourable towards attracting and retaining talent, especially in the fintech space. On a global comparative basis, the United States ranked fourth on the global talent competitiveness index compared to Toronto's rank of 13.⁴³⁴ In the smaller comparative study of fintech hubs mentioned above, California ranked first and New York ranked third with respect to talent availability.⁴³⁵ This was partly due to the fact that there are many large global technology leaders based in the United States, resulting in a broad talent pool of technical talent.

Shanghai, China

Overall, China offers a poor regulatory and policy environment for fintech businesses compared to Toronto. For example, Shanghai scored a 1 on the 1-5 ranking of the regulatory environments for fintech hubs in our model, one of only two jurisdictions to score the lowest possible rating. In addition, in the global comparative study of 44 innovation hubs, Shanghai ranked 27th whereas Toronto ranked 10th as being more conducive to fintech growth.⁴³⁶

However, we note that Chinese regulators led by China's primary banking regulator, The People's Bank of China, developed the "Guiding Opinions on Promoting the Healthy Development of Internet Finance"⁴³⁷ which provided the first detailed regulation of Internet finance in China.⁴³⁸ The guiding opinions set down basic rules that must be complied with on matters such as Internet payment, Internet insurance, online lending, crowd funding and online sale of funds. This is in contrast to Canada, which has yet to achieve regulatory cooperation on the same scale for fintech. Furthermore, it has been noted that in certain select areas, such as peer-to-peer platforms Chinese regulators may be less onerous than leading fintech regulators such as Singapore and the United Kingdom.⁴³⁹

We note that unlike the United States where fintech is driven by either start-ups or financial institutions, in China Internet giants have been a main source of capital for fintech businesses. This is due in part, to a regulatory environment that is generally facilitative to industry verticals.⁴⁴⁰ In contrast, Canada's Competition Bureau is still searching for its role in the regulation of fintech and has launched a market study to assist in that determination.⁴⁴¹

On the previously mentioned global comparison for burden of regulation, China achieved a slightly better score of 4.1 out of 7 compared to Canada's 3.8.⁴⁴² Similarly, on the global comparison for regulatory focus on ensuring stability in the financial markets, China achieved a better score of 4.5 out of 7 compared to Canada's score of 6 out of 7.⁴⁴³ Lastly, on the global comparison for the development of laws related to ICT, compared to other jurisdictions globally, China achieved a worse score of 4.4 compared to Canada's score of 5.3.⁴⁴⁴

China has basic intellectual property rights in place but infringements of intellectual property is at historic levels and growing.⁴⁴⁵ Despite the growing expertise and awareness of the value of intellectual property across different levels of government and enforcement agencies, the interpretation of intellectual property laws by administrative and judicial authorities is sometimes inconsistent with international standards.⁴⁴⁶ However, new and proposed patent and copyright reforms should extend protection and strength of enforcement.⁴⁴⁷ On a global comparative basis China achieved a rank of 27th out of 45 countries, a fair amount worse than Canada's ranking of 17.⁴⁴⁸ Furthermore, China has fared poorly against other fintech hubs with regards to cybersecurity.⁴⁴⁹ On a comparative basis, it achieved a global rank of 14th, far behind Canada's global rank of second.⁴⁵⁰

In addition, we note that China is extremely poor at attracting and retaining talent, especially in the fintech space. On a global comparative basis, China ranked 54th on the global talent competitiveness index compared to Toronto's rank of 13.⁴⁵¹

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- ⁶⁴ See e.g. Office of the Superintendent of Financial Institutions Act, RSC 1985, c 18 (3rd Supp), Part I, s 3.1, 4(2); Financial Consumer Agency of Canada Act, SC 2001, c 9 s. 3(2); Proceeds of Crime (Money Laundering) and Terrorist Financing Act, SC 2000, c 17, s 3(d). One notable exception is Payments Canada. One of its stated statutory objects is to "facilitate the development of new payment methods and technologies": Canadian Payments Act, RSC 1985, c C-21, s 5(c).

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Please note that McMillan contributed those parts of the report dealing with the legal and regulatory aspects of the fintech ecosystem while Accenture contributed to those parts dealing with the economic and technological aspects of the ecosystem.

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