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Issues in Bringing Canadian Fintech to the International Stage

James W. Hinton, Domenico Lombardi and Joanna Wajda

Key Points

- For Canada to be a contender in financial technology (fintech), Canadian policy makers need to target both domestic growth and international expansion of the sector.
- In addition to increasing the availability of funding, removing regulatory uncertainty and taking the lead on a national fintech strategy, policy makers should assess the merits of access to data and payments systems for stimulating domestic fintech growth.
- Increased patent generation and ownership, greater integration of Canadian technology in standards and international agreements with regulators will allow Canadian fintechs to build on their success internationally.

Introduction

For the first time, fintech is on the Group of Twenty (G20) agenda.[1] G20 leaders will discuss fintech at the Hamburg summit on July 7 and 8, 2017, following a presentation by the Financial Stability Board (FSB) on its financial stability implications.[2] Given fintech's priority on the global stage, and the Canadian federal budget's focus on innovation and the middle class, now is the time for Canada to assess its position and develop a national strategy on fintech. The aim of this policy brief is to provide a general description of the fintech industry in Canada, and to describe and draw attention to two complementary aspects of developing a fintech strategy for Canada: first, encouraging domestic fintech innovation — through open data and payment systems — and second, encouraging international expansion — through international agreements among regulators and comprehensive intellectual property (IP) strategies.

This brief begins by describing the nature of fintech, and its potential benefits, using the example of lending to small and medium enterprises (SMEs).[3] Following is an introduction to the literature recommending which fintech needs Canadian policy makers should prioritize to expand the sector. Finally, the brief focuses on ways policy makers can encourage domestic fintech innovation and international expansion. The United Kingdom and Australia serve as examples of best practices in these areas.

1 Fintech is the application of technology to financial services. It includes online marketplace (or peer-to-peer) lending, robo-advisors, crypto-currencies, blockchain and smart contracts, mobile banking and improvements in international transfers.

2 See the FSB's report on fintech credit (FSB and BIS 2017), and subsequent report on the financial stability implications from fintech (FSB 2017), published at the time this brief went to press and thus not covered.

3 Enterprises with fewer than 250 employees.

About the Authors

James W. Hinton is a research consultant with CIGI's Global Economy Program. He is a lawyer and patent and trademark agent with Bereskin & Parr LLP and an assistant professor at Western University.

Domenico Lombardi is the director of CIGI's Global Economy Program. Prior to that, he was a senior fellow at the Brookings Institution and served as an executive board member at the International Monetary Fund (IMF) and the World Bank.

Joanna Wajda is a CIGI research associate in the Global Economy Program. She holds a B.A. from the Honours Arts and Business (Economics) Program at the University of Waterloo and an M.A. in economics from the University of Toronto.

Acronyms and Abbreviations

APIs	application program interfaces
BIS	Bank for International Settlements
CIPO	Canadian IP Office
fintech	financial technology
FRFIs	federally regulated financial institutions
FSB	Financial Stability Board
G20	Group of Twenty
GFCI	Global Financial Centres Index
IMF	International Monetary Fund
IP	intellectual property
IPC	International Patent Classification
ISED	Innovation, Science and Economic Development Canada
NPP	New Payments Platform
OSC	Ontario Securities Commission
PSD2	Revised Directive on Payment Services
SEPs	standard-essential patents
SMEs	small and medium enterprises

Characteristics of the Fintech Sector and Potential Improvements in SME Lending

Before discussing a Canadian fintech strategy, this brief outlines how fintech differs from traditional financial services, and uses the example of SME lending to describe the benefits and risks of fintech.

For many decades before fintech became a hashtag, banks have been investing in technology to cut costs and improve operations and customer experiences. What makes recent trends any different? Improved technology capabilities, such as big data analysis and cloud computing; widespread adoption of the internet and mobile phones; and lower levels of trust in banks have contributed to major shifts that have enabled new entrants, such as smaller firms and start-ups, to offer financial services directly to consumers. These new providers thus can enter the market on a larger scale than previously feasible, making fintech more visible to the public. Despite this, fintech has captured only a small percentage of the financial services market. Globally, as a share of banking revenues, this varies from two percent of large corporate account management to 25 percent of retail payments (McKinsey & Company 2015). Furthermore, while 33 percent of digitally active consumers globally have adopted fintech, that number is only 16.6 percent in Canada (Ernst & Young LLP 2017b). This does not necessarily indicate low potential demand; focusing only on current market capture is a narrow way to assess the industry when new entrants may take time to have an impact.

The potential for new entrants is especially important given Canada's risk-averse, concentrated financial services industry, in which five banks held 93 percent of bank assets over the past decade (Canadian Bankers Association 2016). The 2012 figure is slightly less than Australia's financial services concentration in 2012, but more than that of the United Kingdom (about 75 percent) and the United States (about 60 percent) (IMF 2014). Greater concentration equals less competition and less incentive to innovate.

One area where fintech may have a positive impact is in filling the unmet credit needs of SMEs. Many SME loans are not serviced by banks, because the process, and therefore costs, for small and large loans are the same, which means SME loan volume is seen as unprofitable. There is evidence in the United States and United Kingdom that close to four-fifths of marketplace borrowers attempted to get a loan from a bank, but only one-fifth had been offered one (FSB and Bank for International Settlements [BIS] 2017). According to the statistics available for Canada, SMEs make up 97 percent of the number of Canadian businesses, account for half of employment and contribute close to one-third of GDP (Organisation for Economic Co-operation and Development 2017; Statistics Canada 2017; Innovation, Science and Economic Development Canada [ISED] 2016). The smaller the company, the lower the ratio of the loan amount authorized to the amount requested. While the ratio is 97 percent for those with 20 to 99 employees, it is 93 percent for enterprises with 10 to 19 employees, and only 88 percent for enterprises with fewer than 10 employees (ISED 2015a). Moreover, it is likely that the statistics understate the barriers to finance faced by SMEs, when some are discouraged from filing an application in the first place. Of enterprises with fewer than 20 employees, more than 40 percent did not seek external financing in 2014 (ISED 2015b). Taken together, these statistics indicate that, particularly where SMEs are concerned, there may be a gap to be filled — and that this gap could have non-negligible effects on the economy.[4]

Potential alternatives for filling this gap for SMEs come with their own financial stability concerns, however. These include expectations of easy liquidity for investors, increased vulnerability to cyber risk, relatively untested new credit risk models, and the reliance on a continuous stream of investors that puts marketplace lending platforms at risk of default if investors lose confidence (FSB and BIS 2017). Policy makers need to balance potential benefits with stability concerns for fintech in general; this may allow the industry to grow but it also means bringing it under regulation.[5] Currently, in Canada, marketplace lending is considered dealing in securities, and the operation of lending platforms with retail (versus institutional or accredited) investors is severely limited.[6] Canada has a choice of regulatory models to follow for fintech credit. For example, Germany, Hong Kong, the Netherlands and Singapore require fintech credit platforms to apply for bank, credit or securities licences, just as incumbent financial institutions do. In the United States, lending platforms may need to apply for state licenses, and are subject to federal anti-money laundering, securities or consumer protection laws according to their servicing activity (ibid.).

Of course, increased credit for SMEs is not the only possible benefit. The potential for fintech in general is greatest if policy makers and regulators at multiple levels of government can come together to develop a niche market for Canadian fintech globally.

Review of Policy Recommendations

There is already a growing literature advising on the way forward for Canadian fintech. This section identifies areas of concern on which the literature is most vocal before engaging in a deeper discussion of select issues.

Policy focus on Canadian fintech has been regional. Several reports examine the fintech sector in Toronto (Breznitz, Breznitz and Wolfe 2015), the Toronto-Kitchener-Waterloo corridor (Accenture and McMillan LLP 2017), Montreal (Ernst & Young LLP 2017a) and British Columbia (Digital Finance Institute and McCarthy Tetrault

4 Further analysis is required to determine if the more flexible fintech credit platforms are better able to service SME loans at a reasonable cost.

5 Entity-based regulations do not cover the disaggregated services offered by fintechs. For example, the Office of the Superintendent of Financial Institutions oversees federally regulated financial institutions (FRFIs), but fintech firms providing payment processing services slip through the cracks since they do not fit into any of the FRFI categories (Johnson and Panjwani 2017). Fintech firms may be exempt from the letter of the law in these cases, but this does not mean that their activities could not be brought under the umbrella of existing regulations in the future.

6 Lending Loop originally began operating outside of these regulations, stating that its business model did not apply; as a result, it was shut down for most of 2016. By the time the platform began posting loans again in October 2016, it had spent six months to register with securities regulators in all applicable provinces (Sharp 2016).

2016). They either identify a need to modernize the regulatory framework or a need for greater government support to stimulate growth in the fintech sector, or both. For Montreal and British Columbia, this includes calls for a regulatory "sandbox," where concepts can be tested in the short term with regulatory leeway where required, as implemented in the United Kingdom. In Ontario, the Ontario Securities Commission (OSC) has already implemented its own version of a regulatory sandbox.

Although the reports vary in their specific recommendations, funding for fintech start-ups is clearly a key concern. Problems range from a lack of awareness of available funding, to insufficient sophisticated venture capital and other seed and later-stage funding, to a need for direct government funding programs targeted at fintech. There are practical concerns about affordable space in proximity to financial institutions; these relate directly to the need for greater collaboration and integration between fintech start-ups and incumbent financial institutions. The need for safe but enabling modernized regulations, government involvement, domestic funding, and more collaboration between fintech and incumbents has also been identified at the national level, with emphasis on cooperation between federal and provincial governments (Armstrong 2016; Redican 2016; Sharma 2016). The Toronto report further specifies that governments, universities and businesses must encourage commercialization of research. This is an important consideration, as fintech companies and banks need to patent financial innovations and have defensive strategies to increase their freedom to operate — both in foreign markets, and in the Canadian market if foreign firms have sought IP protection in Canada. The reports push for brand development to help raise awareness of fintech, but suggest efforts be at the national level to present a united sector with a competitive advantage in a chosen niche. A suggested solution is a federal political champion for fintech, nominated to consult with the private financial sector and its stakeholders and co-ordinate strategies at the federal and provincial levels (King 2017).

The United States has an active fintech sector without significant government involvement, but Canada should instead look to the example of policy makers in the United Kingdom and Australia. Figure 1 compares the 2007 and 2017 Global Financial Centres Index (GFCI) for centres located in select fintech hub countries and Canada.[7] According to the chart, Canada lags behind London and New York, but its financial centres are comparable to Australia's. Furthermore, the Australian fintech experience is especially relevant based on similarities in market size and government system, and a government proactive on fintech policy.[8] While the United Kingdom has a larger and more competitive financial services industry, and the benefit of being the first mover in the fintech scene, its strategy still serves as a meaningful example of proactive government nurturing a nascent industry.

Encouraging Domestic Fintech Innovation

The literature recommending policy for the Canadian fintech industry emphasizes concerns about funding, engagement with the incumbent financial services industry, uncertain regulatory impacts and lack of policy action to nurture the industry. Issues of funding may be easier to resolve than others that challenge the current stability of the financial system. The regulatory aspect raises questions as to whether more regulation would stifle fintech's advantage over regulated entities, or encourage its growth by removing uncertainty about future regulations.[9] More detailed analysis of the regulatory deficits and implications of new regulations is needed, but outside the scope of this brief. This section does, however, explore one policy lever policy makers need to consider: the issue of open data and payment systems for fintech.

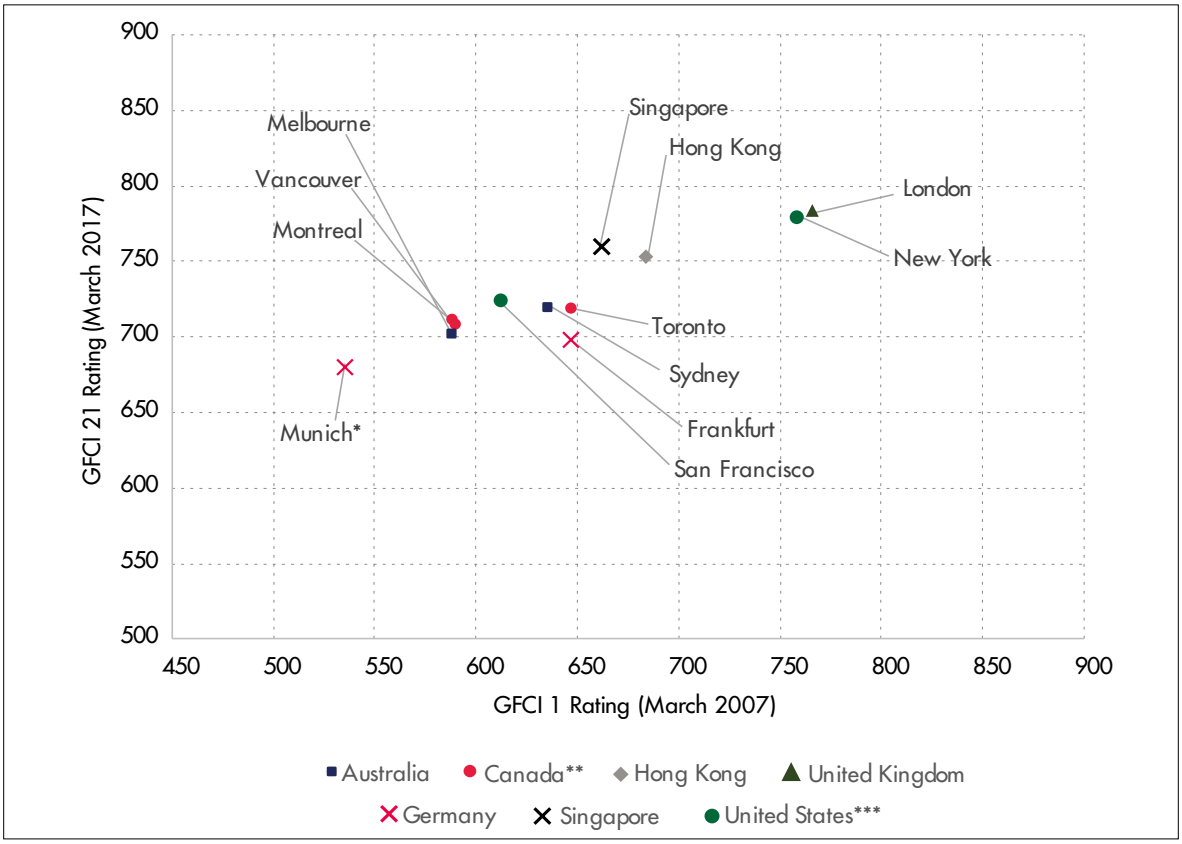
Access to data for development, testing and compliance is vital for fintechs, and requires an industry-wide effort. Canadian banks enjoy a balance of power in their stockpile of financial

7 Fintech hubs as identified by Ernst & Young's 2016 report "UK Fintech: On the Cutting Edge" (Ernst & Young LLP 2016).

8 Canada has not yet joined Australia in executing a national, comprehensive strategy on fintech, although individual institutions such as the Bank of Canada, the Competition Bureau of Canada and the OSC have launched studies and initiated fintech strategies.

9 In the United Kingdom, the Financial Conduct Authority has been issuing new regulations while maintaining contact and transparency with the industry, including through its regulatory sandbox. Australian authorities are following suit.

Figure 1: GFCI Development of Canada vs. Fintech Leaders



Data source: Z/Yen Group, 2007 and 2017, www.longfinance.net/programmes/global-financial-centres-index/publications.html.

Notes: The GFCI is based on online surveys and instrumental factors assessments on human capital, business environment, financial sector development, infrastructure, reputational and other, general factors. * Munich's *x*-axis value is the GFCI 2 rating. **Calgary was added as a global financial centre in 2012; its GFCI 21 rating is 627. ***Los Angeles was added as a global financial centre in 2015; its GFCI 21 rating is 705.

and user data, which is held as confidential information or protected by copyright. Yet, this data is the fuel for developing new technologies, such as artificial intelligence and machine learning. Where banks are unwilling or unmotivated to collaborate, implementing rules on open data can remove barriers to innovation. This, however, comes with its own challenges and risks, as it requires banks to give up their proprietary data. The risks revolve around privacy concerns, increased cybersecurity threats and possible adverse effects of data misinterpretation.[10]

Payments Canada announced a plan to modernize Canada's payment systems in late 2016, at a time when many countries were already implementing their own advanced plans. In the current plan, access to the system is limited to financial institutions, although expanding access is under consideration. Other countries are already implementing more advanced systems that reflect changing technology and business practices and open data requirements; they can serve as a blueprint for fintech inclusion. These include the Revised Directive on Payment Services (PSD2) in the European Union, the Open Banking Standard in the United Kingdom and the New Payments Platform (NPP) in Australia. PSD2 requires that banks provide access to their customers' accounts via application program interfaces (APIs). It defines two new types of financial service providers:

10 Opening access to data leads to loss of control over its interpretation and use. Negative news can spread throughout the system and lead to coordinated behaviour that threatens financial stability. As well, with richer data comes the possibility for rating algorithms to discriminate on factors that appear legitimate but further economic divides.

account information service providers and payment initiation service providers. It gives fintech companies access to bank data and infrastructure. In the United Kingdom, the Open Banking Standard outlines standards and processes for the creation and use of open and shared access banking data via APIs. Australia's NPP limits system access to authorized institutions under Australia's banking act, forcing fintechs to collaborate with incumbents on "overlay services."[11] The United States does not have an open banking standard, although without direct access to payment systems or APIs, fintech firms do find ways to access the data via "screen scraping" (accessing customers' bank accounts with the password provided and using their own program to collect the data from the banks' websites indirectly). However, there has been push back from banks citing security concerns, and it could be only a matter of time until an official stance on the sharing of bank data is developed in the United States.

Encouraging International Expansion of Canadian Fintech Firms

Facilitating innovation at the domestic level can be partially accomplished by providing fintechs with the technical resources they need, but this is not sufficient to help fintech firms expand internationally, where the most value can be gained for the Canadian economy. Policy makers must consider mechanisms to protect Canadian fintech firms from foreign enterprises' patent strongholds, and work out agreements with foreign regulators.

The government needs to develop fintech IP infrastructure that enables the creation, acquisition and licensing of key technology assets, as through a patent collective or sovereign patent fund devoted to fintech (Clarke 2017). Encouraging patent collectives can help companies commercialize and provide freedom to operate for Canadian companies in key international markets.[12] Further, freedom to operate cannot happen without a role in the standards-setting process for fintech technologies. Canadian fintech must be strategically included in fintech standards; inclusion of Canadian IP in standards encourages adoption of Canadian innovations, and the ownership of standard-essential patents decreases Canadian reliance on foreign patent holders. This is an opportunity for the Standards Council of Canada to play a strategic role.

Patenting in general is essential if Canadian fintech firms wish to expand internationally. Figure 2 illustrates the top filing jurisdictions for international fintech patent assets. Although fintech patents are being filed in Canada (the eighth-most popular filing destination), Canadian companies are not capturing the home market. Of all Canadian-issued granted patents in 2016, 87.4 percent are foreign owned. Figure 3 shows the top assignees of Canadian fintech patent assets; only one Canadian firm is registered in the top 20. Outside of Toronto Dominion Bank, Canadian banks have been very reluctant to patent and own almost no patents (Figure 4).[13] Canadian incumbents and new entrants are not patenting in fintech to the same extent as foreign financial institutions and foreign fintech firms (see Figure 5; Canada's rate of patenting is 16 percent of that of the United States). They may have to obtain patent licenses from their competitors to operate in foreign markets. Policy makers can encourage patenting in fintech by revisiting the current eligibility rules for fintech patents, which are particularly vulnerable to being classed as non-patentable subject matter, since they are often characterized as "business method patents." Despite admonitions from the courts that business methods are not excluded from patentability, the Canadian IP Office (CIPO) continues to impose strict and overreaching tests for patentable subject matter (Horbal and De Vries 2017), which may discourage firms from pursuing patents, even for legitimate innovative activity.[14] Fintech firms should be

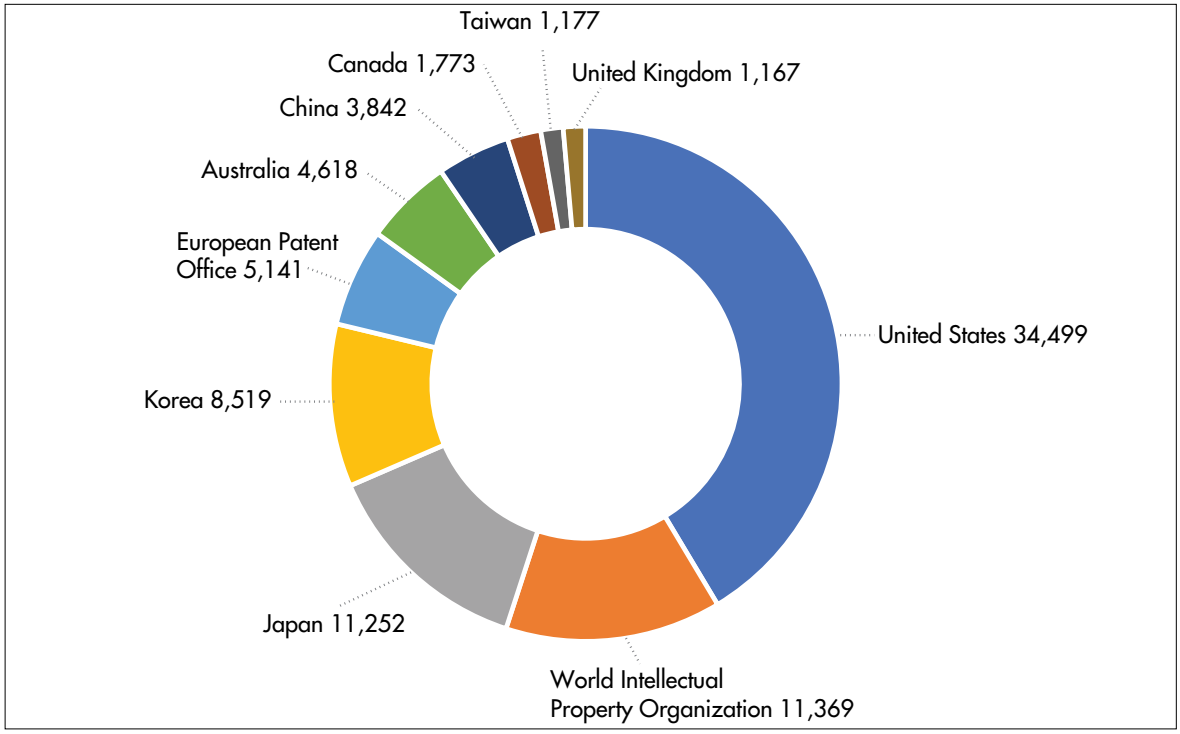
11 Overlay services provide additional payment-related services by building on the basic infrastructure of the payments system.

12 Patent collectives, also known as sovereign patent funds, are organizations that seek to acquire patents in the service of national economic interests. They have an array of objectives and strategies and are purpose-built to allow direct state involvement in patent markets (Clarke and Hinton 2017).

13 The Royal Bank of Canada and the Bank of Nova Scotia were recently ranked the most focused on fintech of the five banks (Alexander 2017), yet the Bank of Nova Scotia's patent holdings are minimal and activity by Royal Bank of Canada has been limited to only the past couple of years.

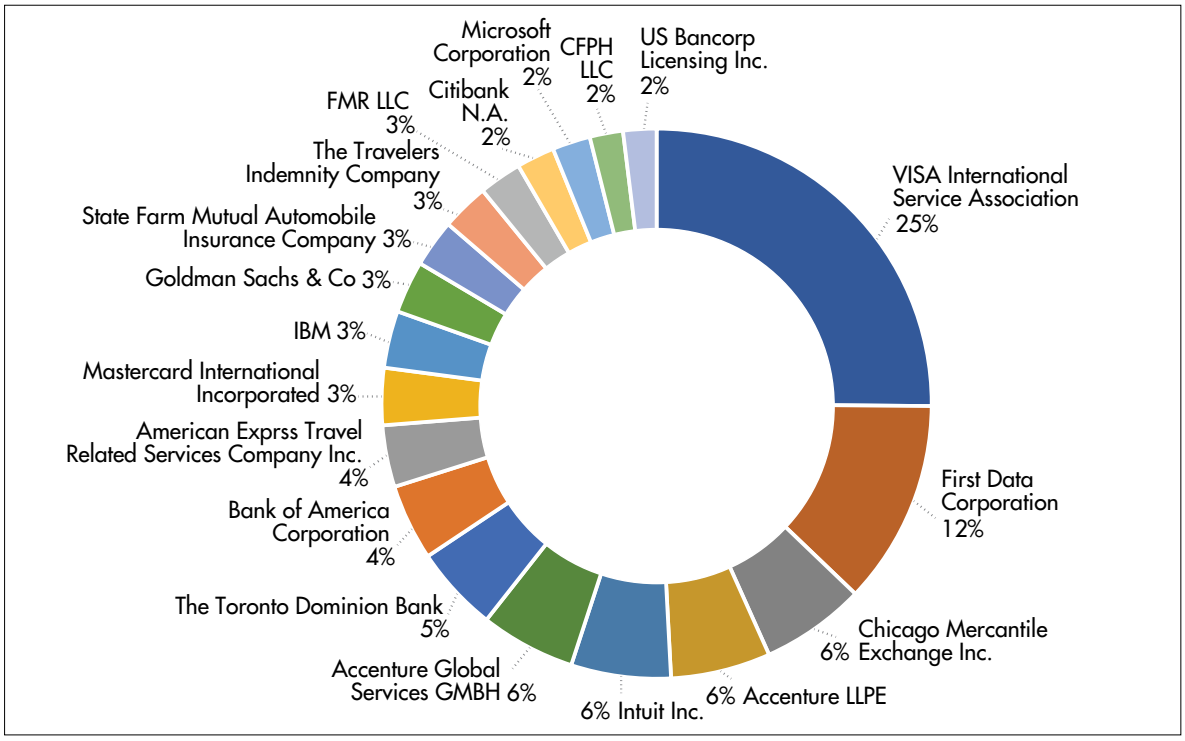
14 See *Canada (Attorney General) v Amazon.com, Inc.*, 2011 FCA 328, http://canlii.ca/t/fp53r.

Figure 2: Top Filing Jurisdictions for Fintech Patent Assets



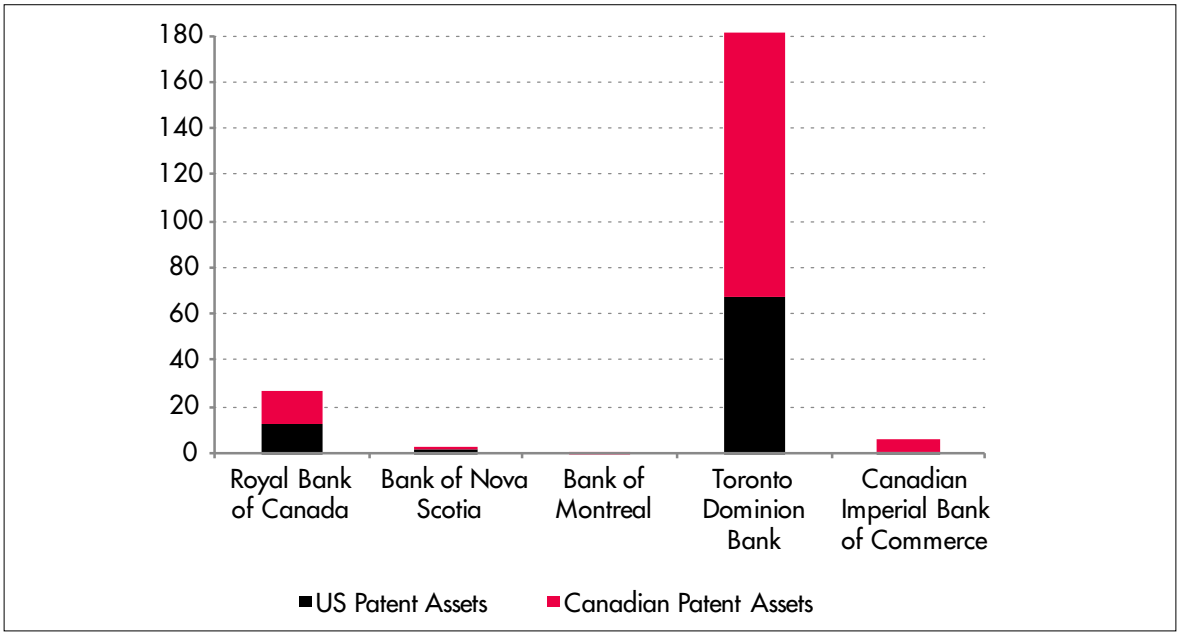
Data source: Published applications and registered patents from national patent offices. Fintech patents are distinguished by International Patent Classification (IPC).

Figure 3: Top Holders of Canadian Fintech Patent Assets



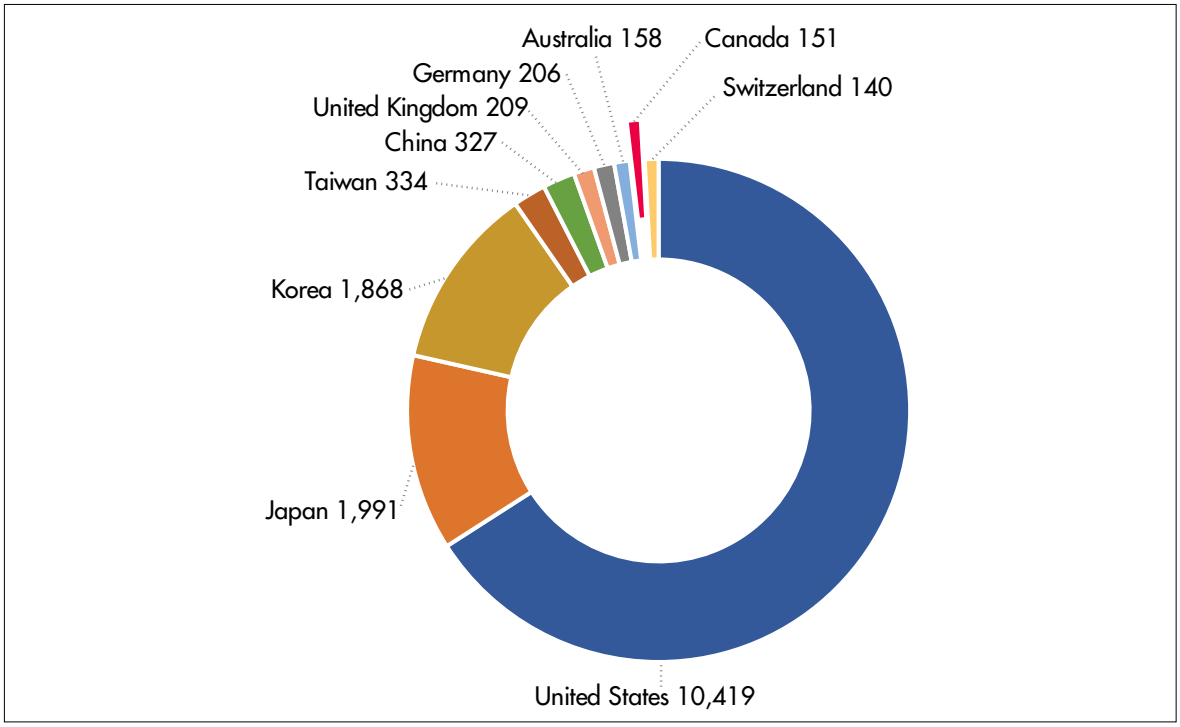
Data source: Published applications and registered patents from CIPO. Fintech patents are distinguished by IPC.

Figure 4: Number of Patent Assets Held by "Big Five" Canadian Banks



Data source: Published applications and registered patents from Canadian and US patent offices by assignee.

Figure 5: Top Countries Holding International Fintech Patent Assets



Data source: Registered patents from national patent offices' databases. Fintech patents are distinguished by IPC.

encouraged to patent domestically and at foreign offices to gain a foothold in international markets.

Fintech firms looking to expand also face a learning curve in a new regulatory environment. Australia and the United Kingdom have been soliciting foreign fintech firms to move their operations, and have been equally supportive of their own firms expanding internationally. One way to provide such support is by establishing agreements with other regulators to share information and refer fintech firms for expansion into each other's markets. As of June 2017, there are 23 such agreements among 16 countries, nine with Singapore and eight with the United Kingdom. In Canada, only the OSC has established agreements, with the United Kingdom and Australia. Regulatory hurdles and the need for industry connections make it difficult for smaller start-ups to accomplish this on their own; without active involvement by policy makers and regulators, Canadian fintech is unlikely to cross borders at the same pace as fintech in other countries.

Conclusion

Canadian policy makers have been called on to encourage the development of the Canadian fintech sector. They must address potential benefits of a more competitive and customer-responsive financial services sector, and also concerns about upending the stability of the Canadian financial system. The upcoming Hamburg G20 Summit presents an opportunity to become more informed about the potential financial stability implications from countries already pursuing national fintech strategies. Policy makers should be considering both how to grow the fintech sector domestically and how to ease its expansion into the global market. In Canada in particular, special attention should be paid to open data and payment systems access, comprehensive IP strategies and international regulator agreements.

Authors' Note

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Nos programmes de recherche ont trait à la gouvernance dans les domaines suivants : l'économie mondiale, la sécurité et les politiques mondiales, et le droit international, et nous les exécutons avec la collaboration de nombreux partenaires stratégiques et le soutien des gouvernements du Canada et de l'Ontario ainsi que du fondateur du CIGI, Jim Balsillie.

CIGI Masthead

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Centre for International Governance Innovation

67 Erb Street West
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