EXCERPT FROM THE

ANNUAL REPORT ON FINANCIAL INSTITUTIONS 2017

AUTORITÉ DES MARCHÉS FINANCIERS

This document is an excerpt from the *2017 Annual Report on Financial Institutions* that presents only quick facts about Québec's financial sector and discusses the challenges and issues facing financial institutions and the regulatory environment.

The full report contains a complete statistical and financial picture of the industry as well as detailed data for each financial institution. It was produced in French only and is available on the AMF's website at www.lautorite.qc.ca as are the registers of insurers and deposit institutions.

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PREAMBLE

As a mandatary of the State whose mission is to administer the various laws related to the financial sector, the *Autorité des marchés financiers* (the "AMF" or the "Authority") is publishing the information required under the laws governing financial institutions[1] with the release of the *2017 Annual Report on Financial Institutions*. In addition to providing statistics[2] relating to financial services cooperatives, trust companies, savings companies, insurers of persons and damage insurers, including automobile insurers, the report presents data on voluntary retirement savings plans ("VRSPs").

This excerpt from the report discusses the major issues faced by financial institutions carrying on business in Québec. These issues afford challenges and risks for financial institutions but are also sources of opportunities. In the following pages, the AMF analyzes these issues and presents the oversight actions taken as well as the measures applied to support market growth and protect consumers of financial products and services.

The complete version of the report (in French only), as well as the registers for financial institutions, is available on the AMF's Website at www.lautorite.qc.ca.

QUICK FACTS ABOUT QUÉBEC'S FINANCIAL SECTOR

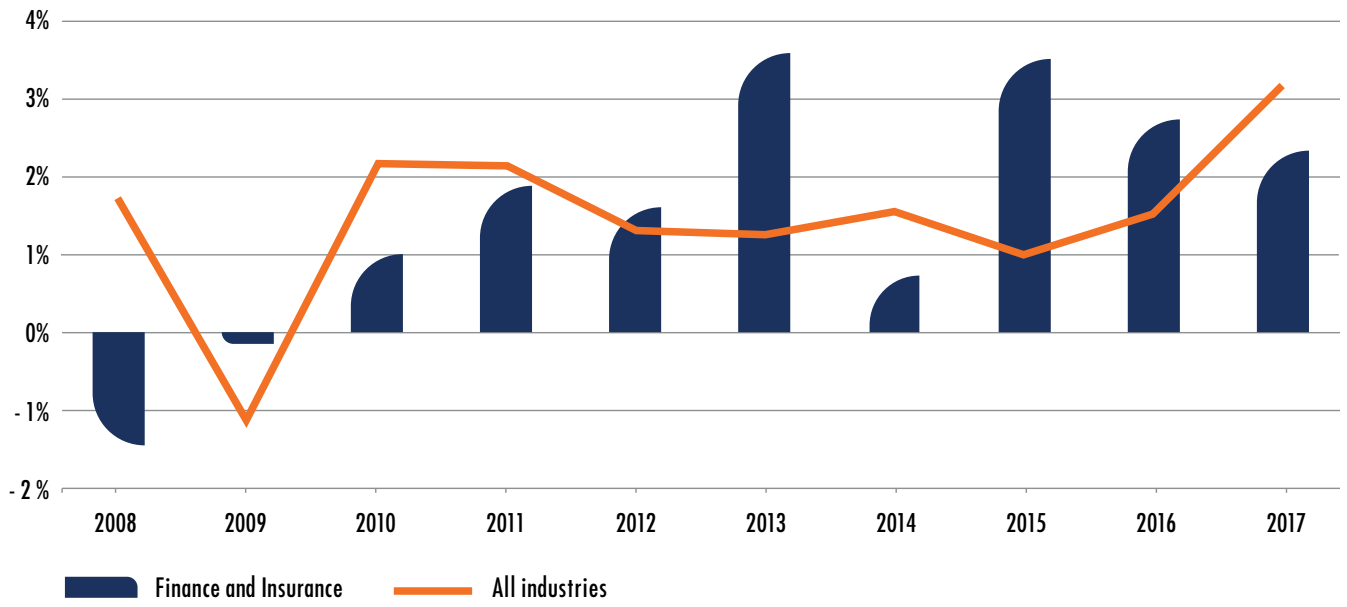
The financial sector plays a key role in Québec's economic development. The Finance and Insurance[3] industry represents 6.2% of gross domestic product (GDP), contributing $20.7 billion to the province's economy. Deposit and insurance institutions alone account for 80% of this industry. Note that the AMF oversees all the financial institutions that carry on business in Québec, excluding banks.

After performing as one of the main growth drivers of Québec's economy for several years, Finance and Insurance lagged the overall economy in 2017. Indeed, Québec's GDP grew by a robust 3.1%—its best performance in the past 15 years—compared with 2.3% growth in the industry in 2017. Last year, the pace of growth in the industry in Québec, which represents close to 17% of Canada's Finance and Insurance industry, was once again slower than the rest of Canada.

Over the past five years, Finance and Insurance grew by 2.5% on average, outpacing all sectors that make up Québec's GDP, which rose by an average of 2% during that same period.

Graph 1

GDP by Industry – Québec (%)[4]



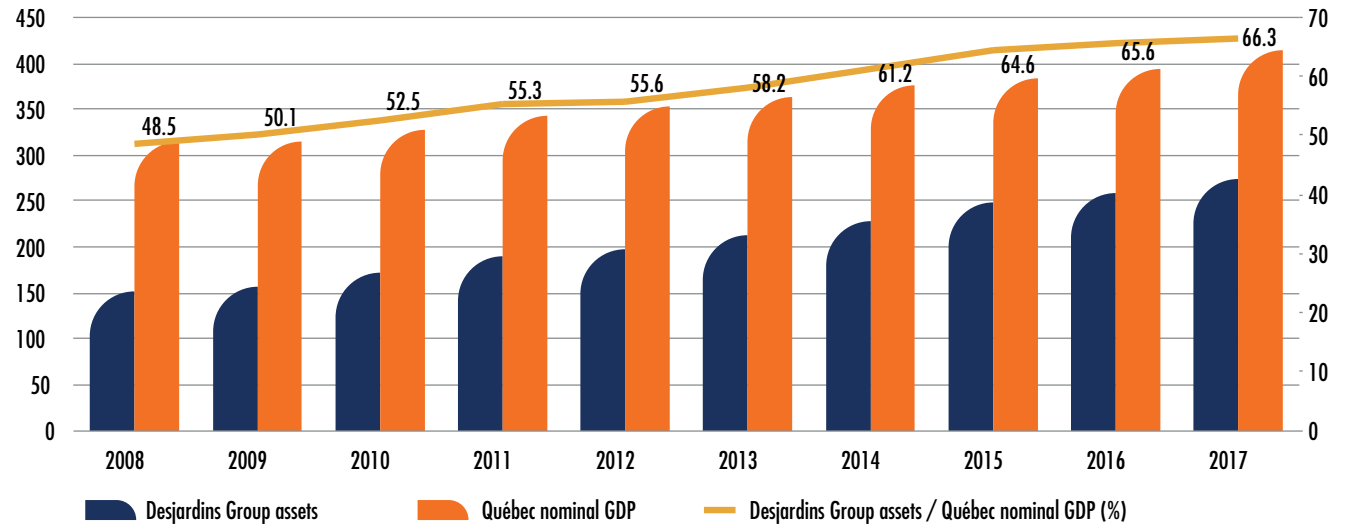
The number of people employed in the Finance and Insurance industry in 2017 totalled 149,500, or 4.1% of the Québec labour force. Although on a downward trend since 2011, employment in the industry recovered slightly in 2017 with the creation of 3,000 new jobs.

DESJARDINS GROUP

Designated by the AMF as a domestic systemically important financial institution (DSIFI) in June 2013, Desjardins Group is a key contributor to Québec's economy. Graph 2 shows the relative importance of this financial institution in Québec.

Graph 2

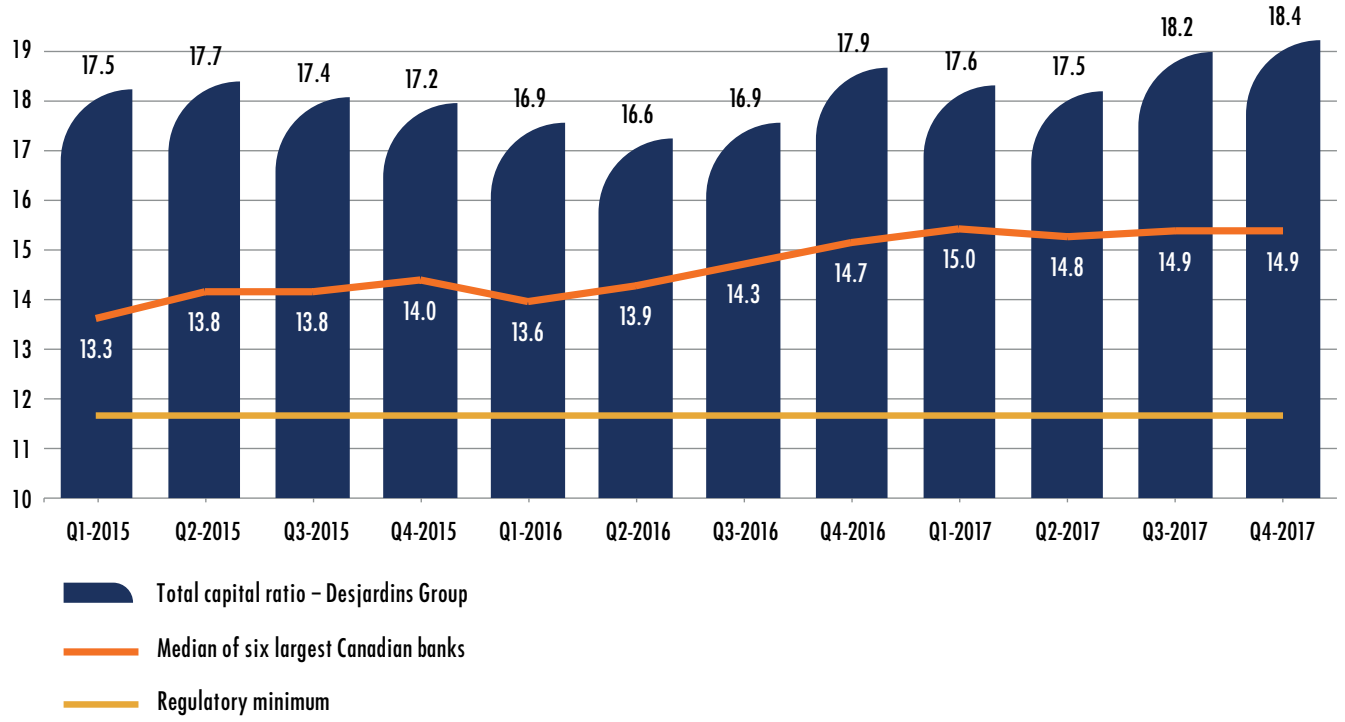
Evolution of Desjardins Group assets and Québec nominal GDP in billions of dollars[5]



Desjardins Group assets have grown steadily over the past few years. Although Québec's nominal GDP rose by an average of 3.24% over the past five years, Desjardins Group assets appreciated by an annual 6.95% during that same period. As at December 31, 2017, the Group's assets represented 66.3% of the province's nominal GDP.

Graph 3

Evolution of total capital ratio – Desjardins Group v. median of six largest Canadian banks (%)[6]



Subject to similar capital requirements as for the six largest Canadian banks, Desjardins Group maintained a capital ratio above the minimum requirements in 2017. As shown in Graph 3, the total capital ratio of Desjardins Group increased from 17.6% in the first quarter of 2017 to 18.4% at the end of its fiscal year. Moreover, the highest ratios of the past three years were recorded in the last two quarters of 2017. Given its cooperative nature, Desjardins Group does not have access to the same capitalization instruments available to Canadian banks, e.g. by way of equity share issues. Therefore, maintaining capital above the median ratio of the six largest Canadian banks allows it to ensure its resilience and financial soundness, while meeting the AMF's expectations.

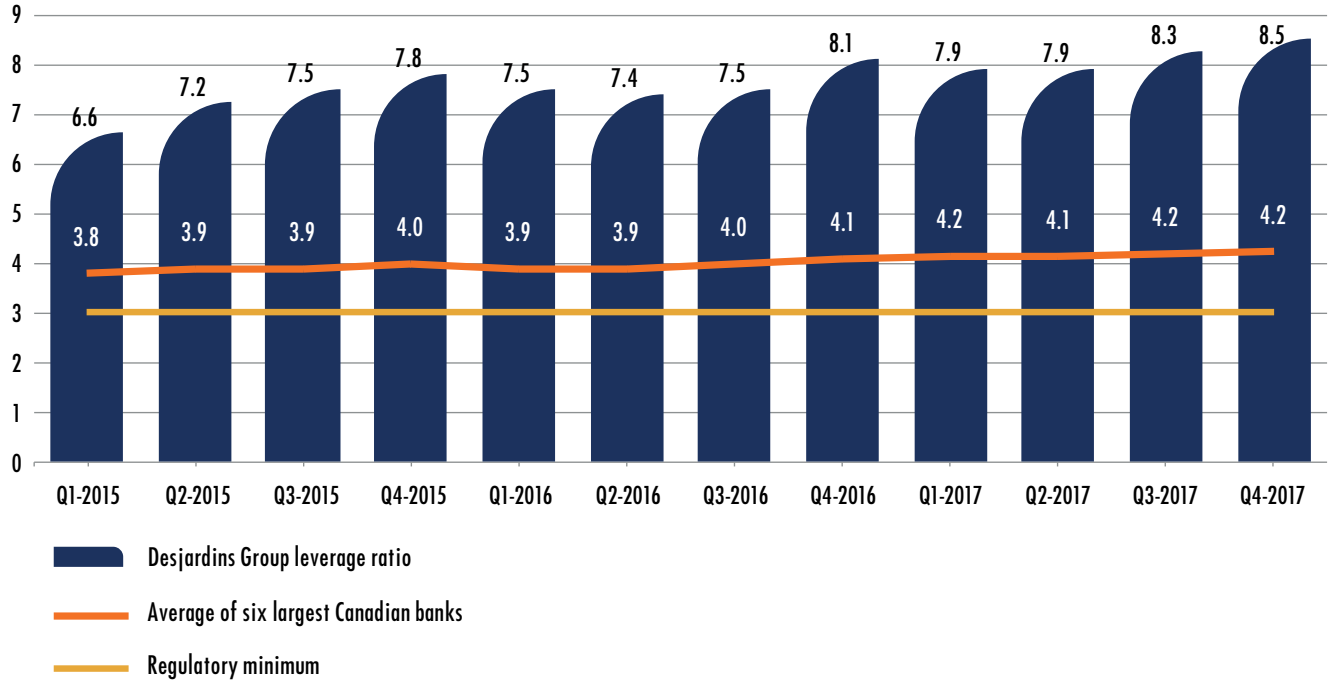
Over the past year, the AMF has pursued its work to develop a resolution plan for Desjardins Group. This plan provides for resolution actions and instruments that the AMF could implement to ensure an orderly resolution of Desjardins Group in the event of a major crisis.

For example, the AMF has continued to develop non-viability contingent capital requirements as well as implement a specific internal recapitalization (or "bail-in") regime. Using these instruments could help re-establish the capital level of Desjardins Group through the conversion of debt securities into capital in the event of default, thus avoiding the use of public funds to absorb the institution's losses.

In this regard, Bill 141 contains bail-in measures that would provide Desjardins Group with a similar framework to that available to Canadian banks.

Graph 4

Evolution of leverage ratio – Desjardins Group v. average of the six largest Canadian banks (%)[7]



Graph 4 presents Desjardins Group's leverage ratio as well as the average ratio of the six largest Canadian banks. The minimum requirement is to maintain a leverage ratio (defined as the capital measure[8] divided by the exposure measure[9]) greater or equal to 3%. As at the end of 2017, Desjardins Group's leverage ratio was 8.5%, up slightly year over year and more than twice as high as the average of the six largest Canadian banks (4.2%).

OVERVIEW OF CHANGES IN FINANCIAL SECTOR

Table 1

Key statistics – Québec financial institutions, 2007 to 2017

Industries	2007	2017	Change
Insurance			
Number of insurers	314	253	-19.4%
Market share of companies incorporated in Québec - insurance of persons - damage insurance	48.9% 48.5%	52.4% 45.1%	7.2% -7.0%
Direct written premiums - insurance of persons - damage insurance	$10.3B $7.3B	$16.9B $9.9B	64.1% 35.6%
Automobile insurance			
Number of vehicles insured in "private passenger vehicle" category	4,356,498	5,132,743	17.8%
Market share of insurers incorporated in Québec	60%	56%	-6.7%
Average premium under "private passenger vehicle"	$566	$564	-0.4%
Financial services cooperatives			
Number of financial services cooperatives in Québec	517	283	-45.3%
Total personal deposits (ISQ)	$60.9B	$93.7B	53.9%
Total mortgage loans (ISQ)	$56.8B	$109.2B	92.3%
Trust companies			
Number of trust companies	37	35	-5.4%
Total deposits in Québec	$10.2B	$14.2B	39.2%
Total mortgage loans in Québec	$4.9B	$0.9B	-81.6%
Savings companies			
Number of savings companies	7	7	---
Total deposits in Québec	$11B	$10.8B	-1.8%
Total mortgage loans in Québec	$11B	$6.4B	-41.8%
VRSPs			
Number of registered plan administrators	n.a.	10	n.a.
Number of employers	n.a.	9,733	n.a.
Number of participants	n.a.	71,547	n.a.
Total assets	n.a.	$61,491,952	n.a.

ECONOMIC ISSUES

The uptrend in the global economy produced a gradual return of inflation and a measured hike in the key policy rates of central banks, notably in the United States, Canada and the United Kingdom.

Despite the recent strength of the economy, the current U.S. administration's protectionist policies and instability have weighed heavily on international relations. The protectionist measures have raised the spectre of a trade war and triggered concerns about a slowdown in global economic growth.

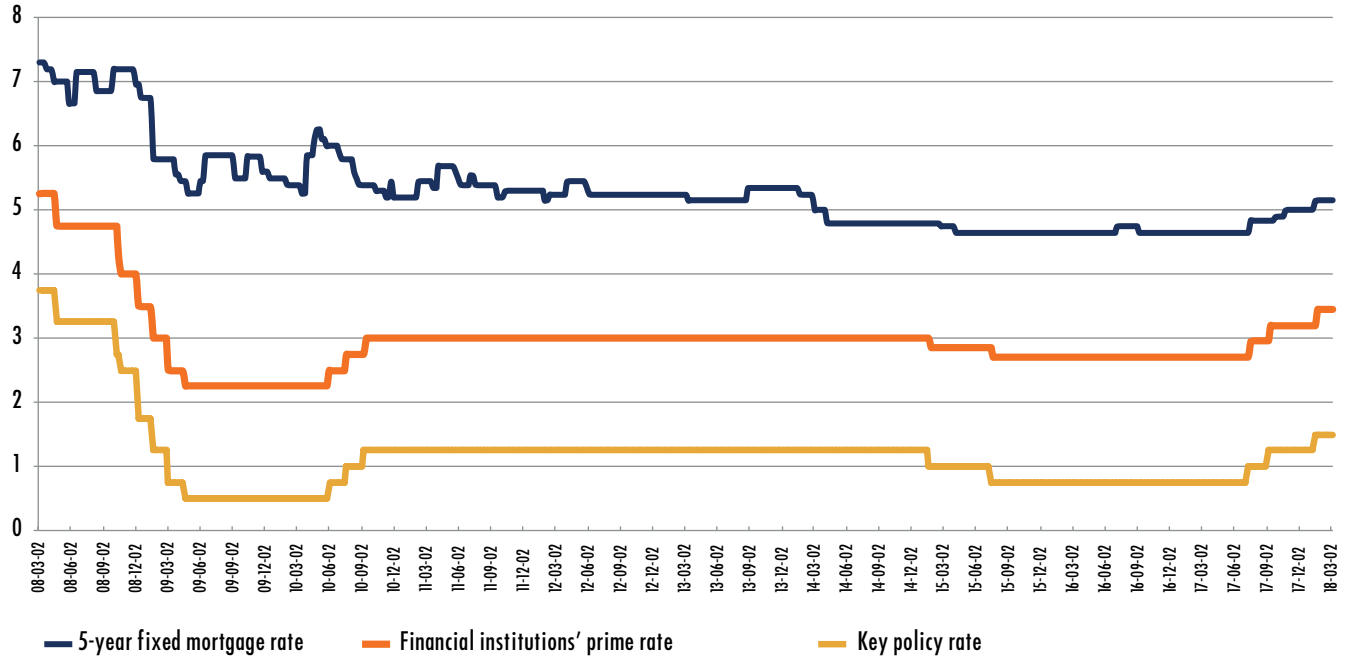
Overall, the Canadian economy was particularly robust in 2017, although it showed signs of losing steam in the last quarter of the year and the first quarter of 2018. On the one hand, imbalances in the real estate market and household debt remain two soft spots of the Canadian economy. On the other, U.S. tax and trade policies, including the arduous renegotiation of the North American Free Trade Agreement, could have an impact on Canada's economy.

Interest rates

In light of the recent strength of the Canadian economy, including the fine performance of Québec, which posted its highest growth rate in the past 15 years, the Bank of Canada gradually tightened its monetary policy. Graph 5 illustrates the stability of interest rates over the past few years as well as their recent increase.

Graph 5

Canadian interest rates (%)[10]

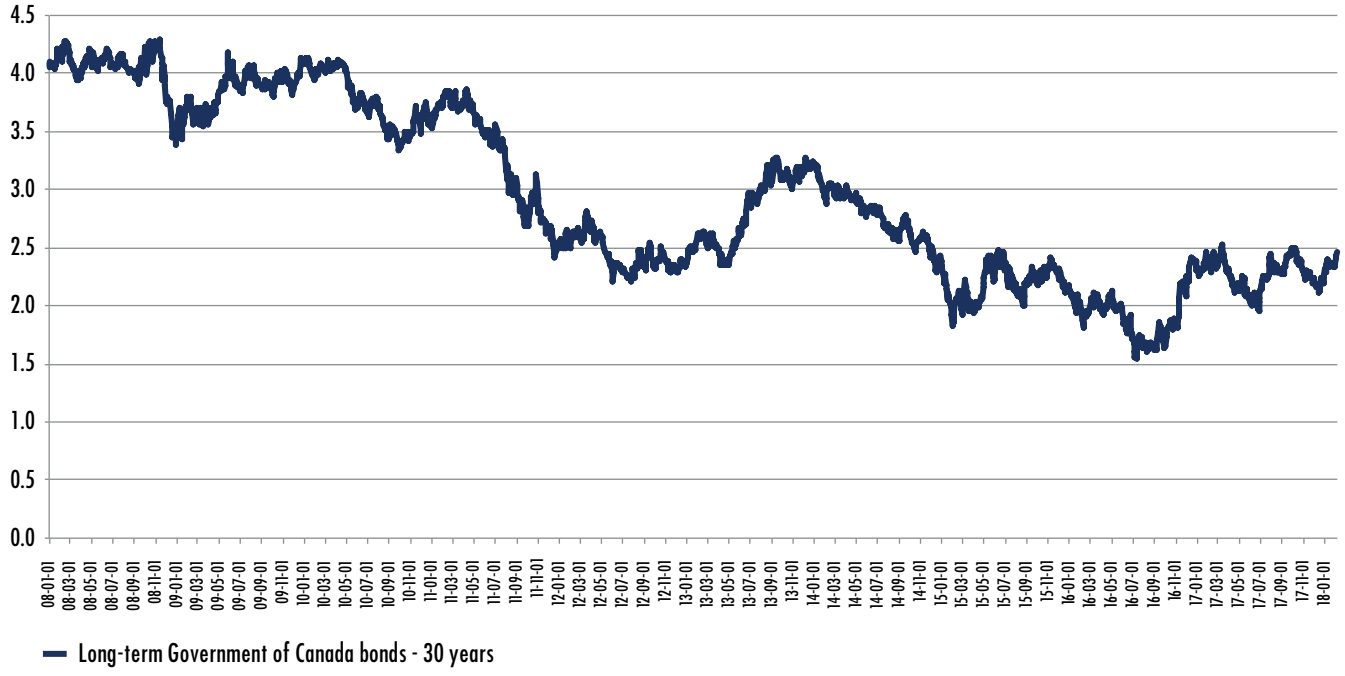


Following the recent hikes by the Bank of Canada, its key policy rate now stands at 1.25%, the highest level in nearly a decade. Given the current economic environment, many economists expect as many as three policy rate increases by the end of 2018. Despite such forecasts, recent signs of slower economic growth may suggest a more gradual tightening of Canadian monetary policy than anticipated. The soft spot relating to household debt and the still unclear impact of the latest macroprudential measures on the real estate market could influence the policy actions taken by the Bank of Canada. Meanwhile, the prime rate offered by financial institutions, which is based on the key policy rate, also rose in recent months, reaching 3.45% in March 2018.

Interest rate developments are a constant source of concern for insurers of persons (life and health insurers) given the long-term nature of some of their products. Actuarial liabilities are calculated based on assumptions related to changes in long-term rates (bond yields), and any deviation could have an impact on insurers' financial statements. Despite fluctuations in 2017, long-term bond yields ended the year relatively unchanged from a year earlier. Consequently, the net impact of the past year was not significant for insurers of persons.

Graph 6

Yields for long-term (30-year) Government of Canada bonds (%) [11]



However, as long-term rates have remained at historically low levels for many years, the Canadian Institute of Actuaries ("CIA") lowered its ultimate rates [12] used to value actuarial liabilities. This resulted in an upward adjustment to the actuarial liabilities for the entire insurance of persons sector.

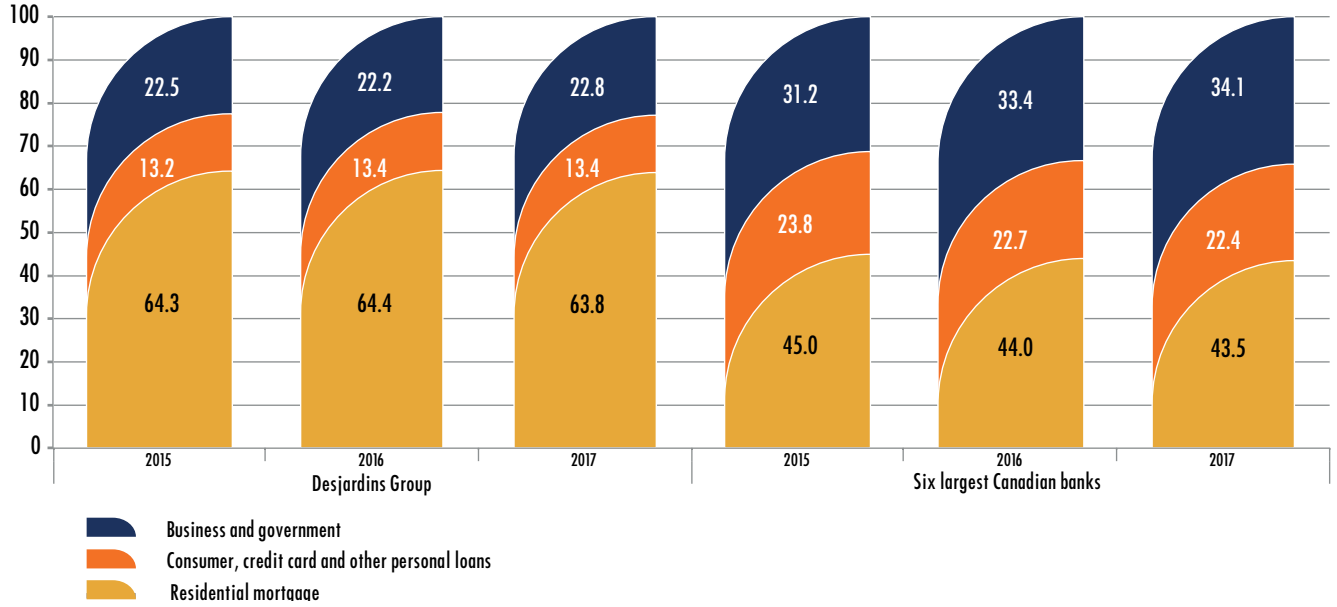
Given the persistently low interest rates in recent years, many insurers of persons adjusted their investment portfolios, shifting their strategies toward riskier assets such as equities and infrastructure. Some of these insurers have also adjusted their pricing and product offerings in response to the low yield environment. The AMF continues to closely monitor interest rate developments and their impact on this sector.

Household debt

A sharp hike in interest rates could have an impact on consumers who are already significantly indebted. In this context, the AMF is paying special attention to how financial institutions manage their credit risk, particularly in cases where the exposure to residential mortgages is high. Graph 7 illustrates the loan portfolios of the main lenders, i.e. Desjardins Group and the six largest Canadian banks, over a three-year period.

Graph 7

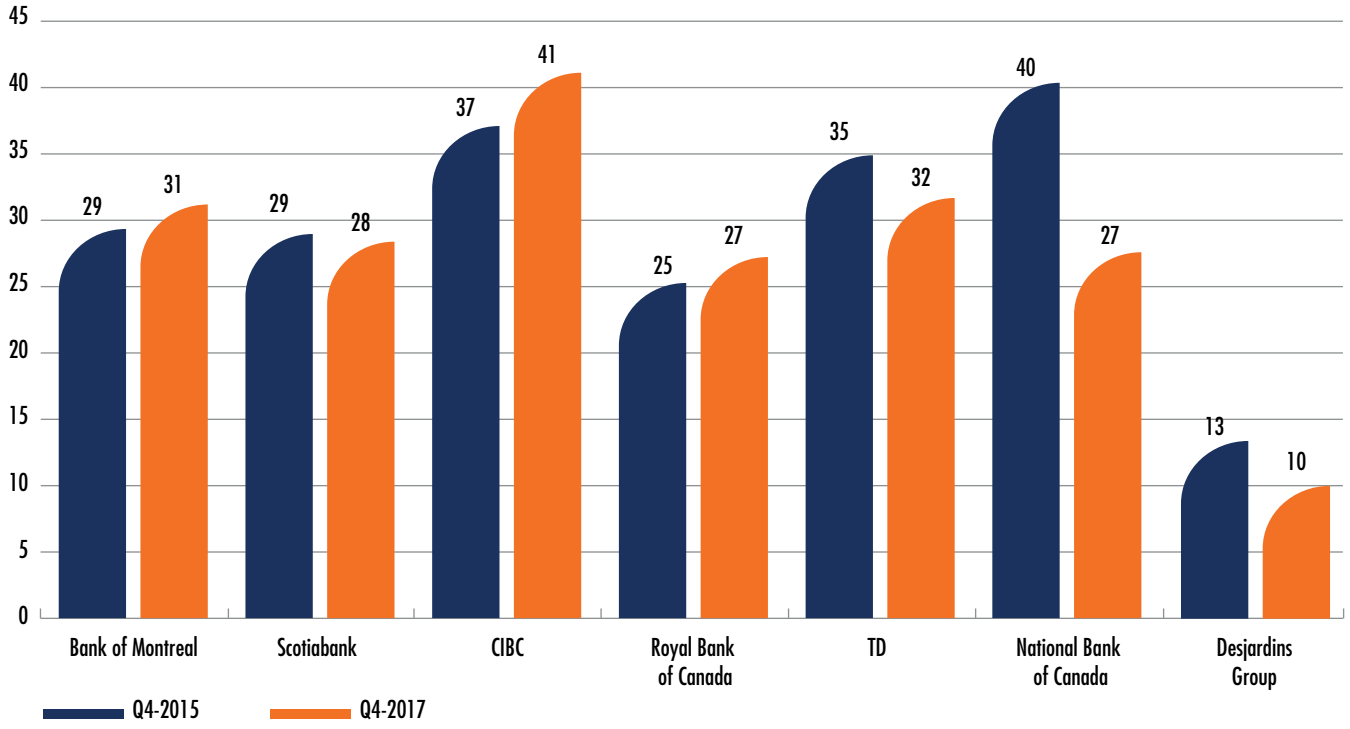
Loan portfolios of Desjardins Group and the six largest Canadian banks[13] (%)



Compared with the average of the six largest Canadian banks, Desjardins Group's loan portfolio comprises a larger proportion of mortgage (hypothecary) loans. However, Graph 8 shows that, in 2017, only 10% of Desjardins Group's residential mortgages had amortization periods of more than 25 years. By comparison, the average of the six largest Canadian banks was 31%.[14]

Graph 8

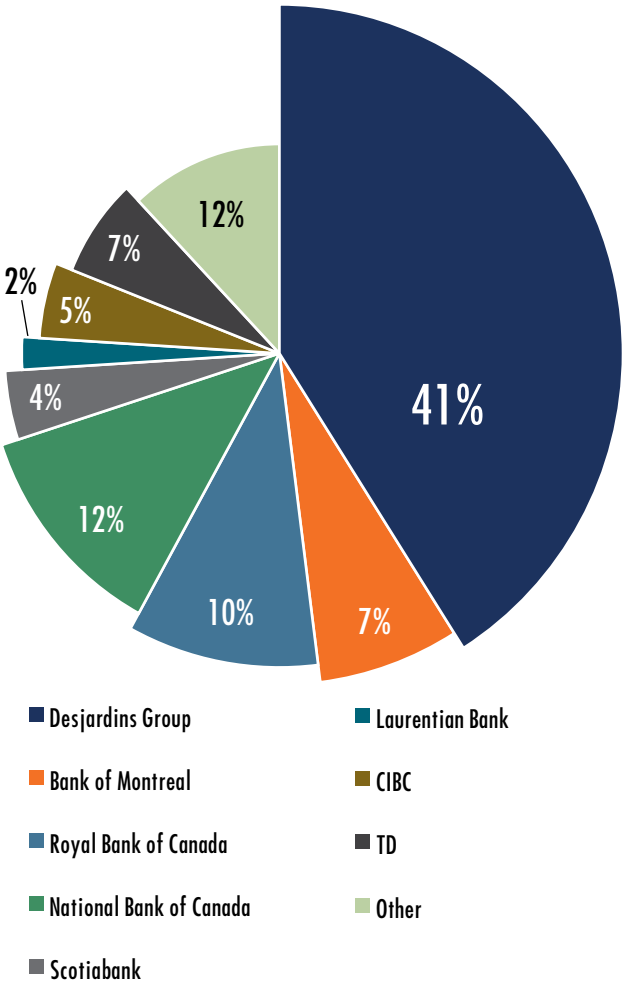
Proportion of mortgage loans with amortization periods of more than 25 years (%)



Desjardins Group continued to boast a strong performance in mortgage financing for home purchases. Graph 9 shows that it held more than 41% of the residential mortgage market for new purchases in Québec in 2017. By comparison, its closest competitor held a 12% market share for this type of loan.

Graph 9

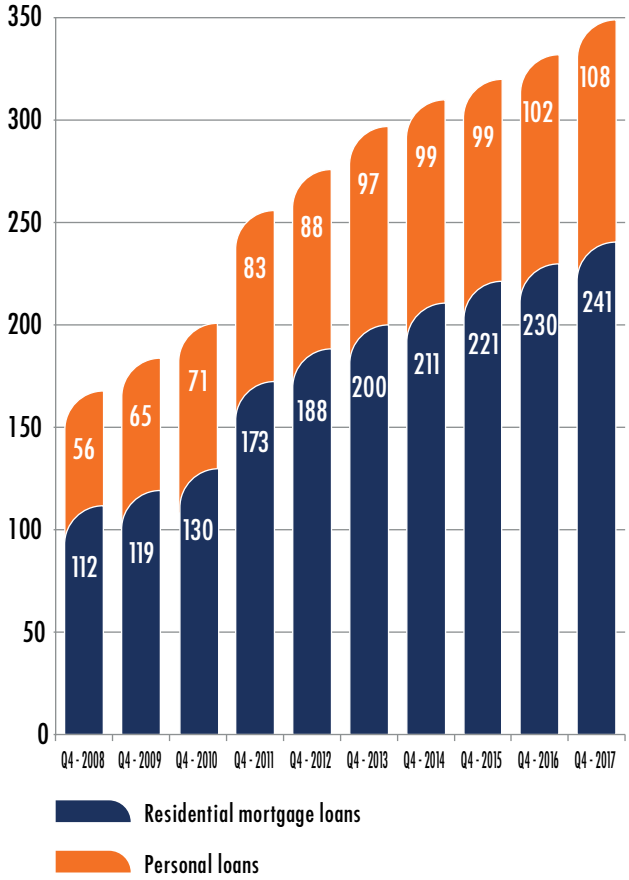
Mortgage market share – Province of Québec (new purchases in 2017)[15]



At over 170% of disposable income,[16] Canadian household debt continues to fuel concerns about the ability of borrowers to meet their financial commitments over the medium term. Indeed, consumers have taken advantage of flexible lending conditions in the market over the past few years. Graph 10 shows a steady rise in the value of consumer loans granted by deposit institutions in Québec.

Graph 10

Value of consumer loans held by deposit institutions in Québec (billions)[17]

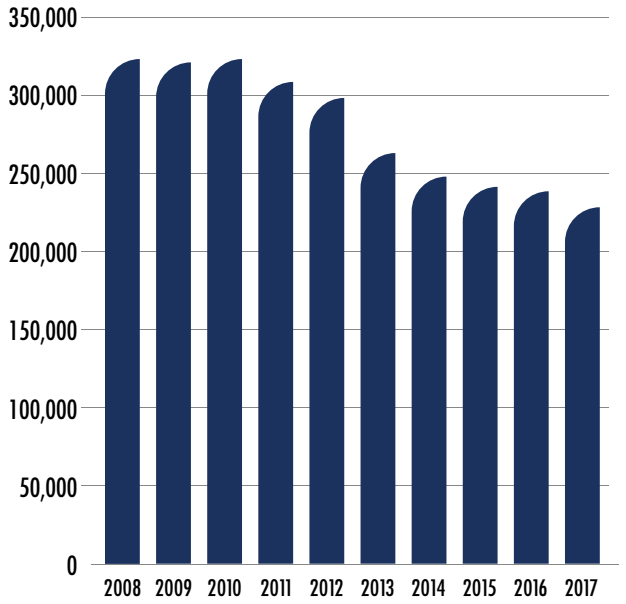


The high level of household borrowing can be explained by several factors, including the marketing and popularity of revolving credit, especially home equity lines of credit, as well as historically low interest rates. However, despite the easy access to credit, the total household debt service ratio[18] in Canada remained flat at 13.8% in the fourth quarter of 2017.[19]

It has become common practice to use the real net worth attributable to the rise in residential property value (or home equity) as financial leverage for consumer spending. Considering that a mortgage loan can be amortized over the long term and that home equity lines of credit only require borrowers to make interest payments, mortgage financing minimizes borrowers' short-term payments. However, in addition to paying interest over a long period, consumers run the risk of overindebtedness since they could have to keep making payments beyond the useful lives of the assets financed by the mortgage credit. Despite the greater use of residential properties as financial leverage, Graph 11 shows a decrease in the number of mortgages published in the Québec land register in recent years.

Graph 11

Number of mortgages published in the Québec land register from 2008 to 2017

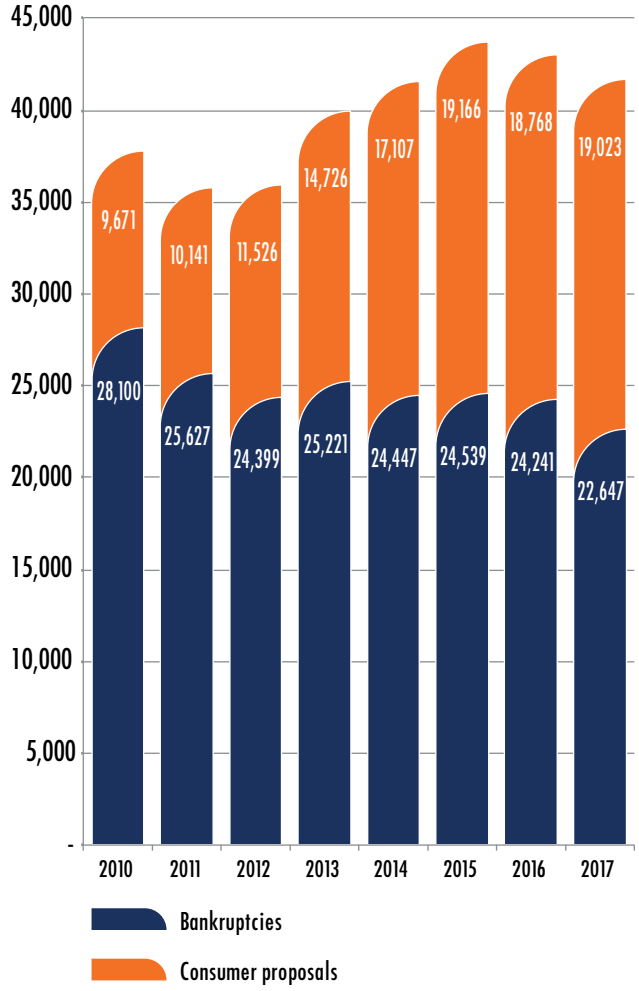


This trend is particularly attributable to the growth in so-called "umbrella" mortgages and related home equity lines of credit offered in recent years. As permitted under the Québec Civil Code since 1994,[20] these kinds of mortgages (hypothecs) allow consumers to increase their mortgage credit beyond the amount initially granted, without the requirement to publish another mortgage. Unlike a conventional mortgage, an "umbrella" mortgage subsists notwithstanding the final payment of the principal loan. The purpose of an umbrella loan is to secure, with the financial institution that holds the mortgage, any future debt a consumer may contract, including current consumption expenditures (tied to credit cards, lines of credit and personal loans), and sometimes even the debts of relatives (e.g. as part of a personal suretyship).

In this context, the household debt level remains a concern for the AMF, even more so since the number of consumer proposals has increased by more than 100% in recent years. In contrast, the number of consumer bankruptcies has declined slightly. Although more than 40,000 insolvencies have been filed annually since 2013, that number edged down in 2016 and 2017 following four consecutive annual increases. The AMF is closely following this trend because it usually takes a few years for the impacts of higher interest rates to be felt. Graph 12 presents changes in the number of insolvencies filed over the past eight years.

Graph 12

Insolvencies filed by consumers in Québec [21]



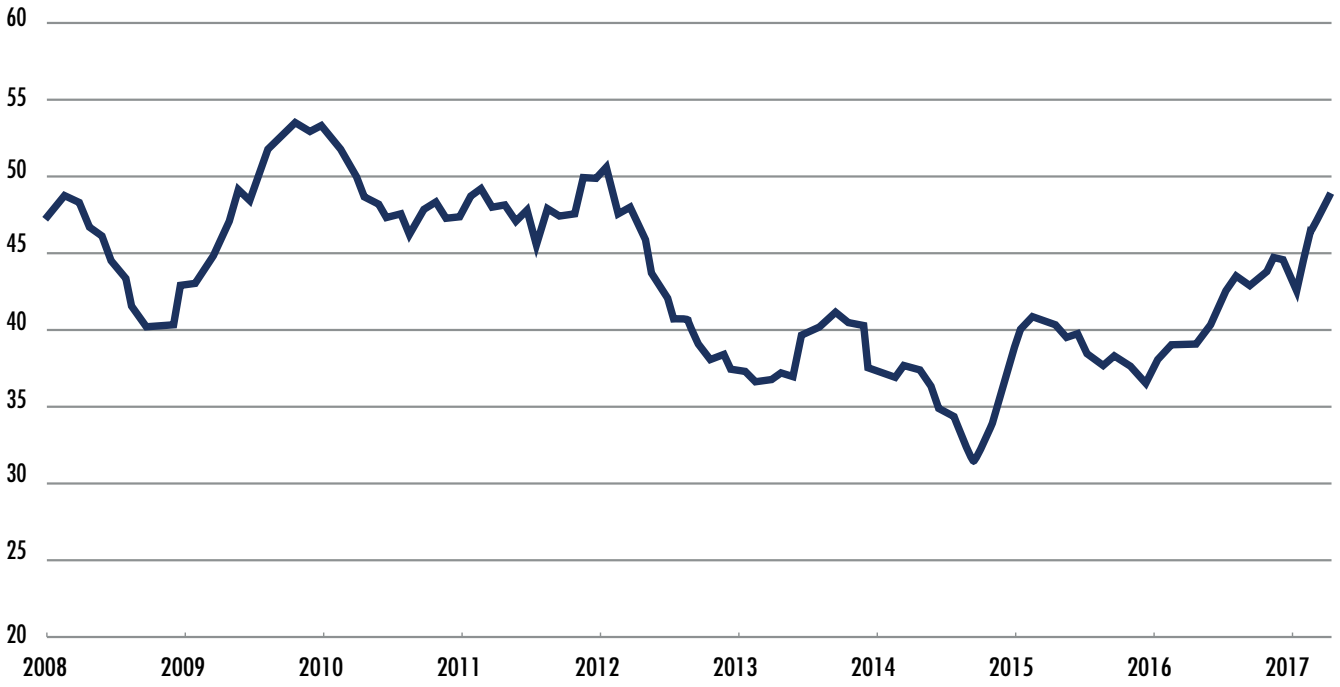
The AMF issued the draft Fair Consumer Credit Practices Guideline *for comment in early 2018. With the co-operation of the* Office de la protection du consommateur, *the AMF spearheaded this initiative in conjunction with Bill 134, which was assented to on November 15, 2017.*[22] *This guideline clearly sets out the AMF's expectations with respect to the commercial credit practices of the financial institutions it oversees. It addresses central themes related to the issue of indebtedness, such as the assessment of repayment capacity and information for consumers.*

REAL ESTATE MARKET

The past year reflected a solid performance by the Québec real estate market. The average price of properties in Québec climbed 6.8% year over year, and the condominium market regained momentum, with sales surging about 15%. There were 49,000 housing starts in 2017, some 10,000 units more than in 2016, as shown in Graph 13.[23]

Graph 13

Six-month moving average of housing starts in Québec (thousands)

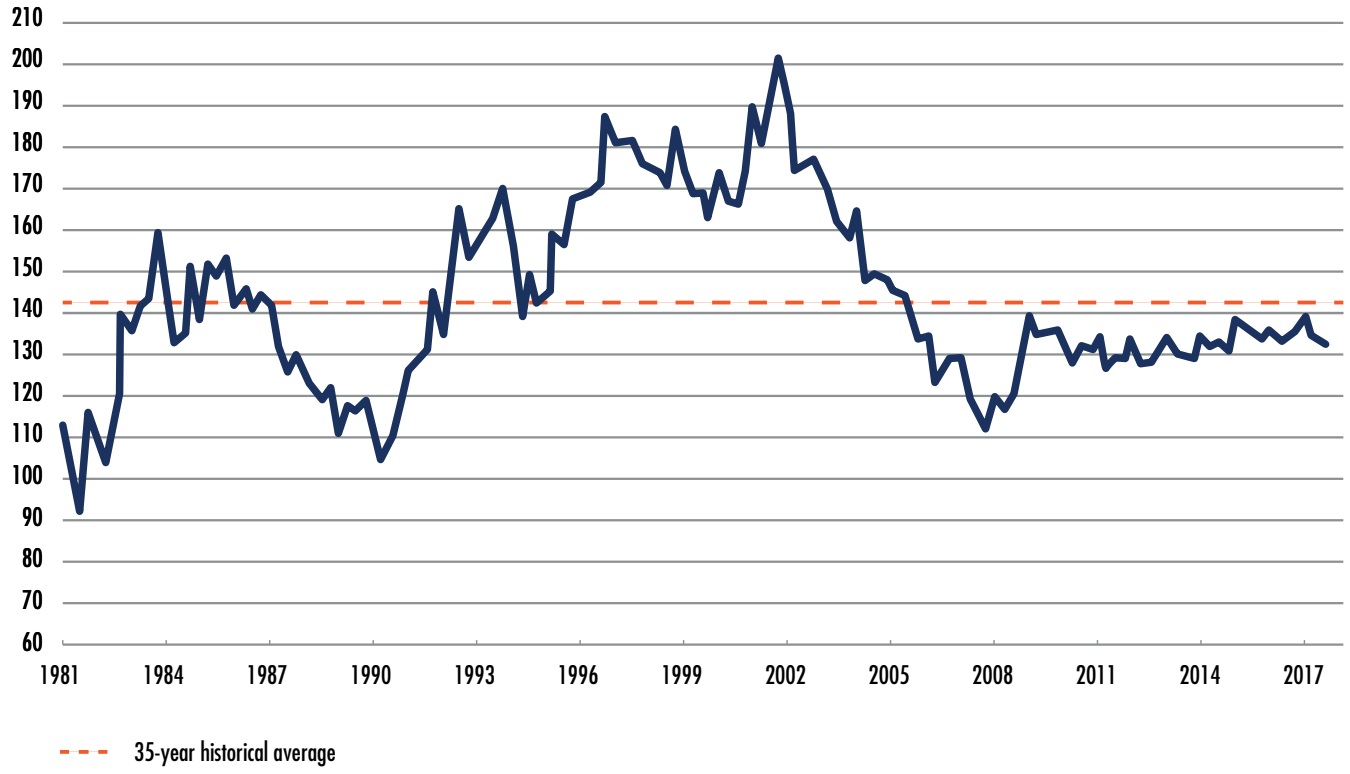


The AMF adopted an internal index to measure the capacity of Québec consumers to purchase property. This index considers such factors as property prices, mortgage rates, general property-related discretionary spending and household disposable income. For illustrative purposes, the higher the affordability index,[24] the more attractive the market is to homebuyers. In contrast, the lower the index, the more difficult it is to buy a property. As shown in Graph 14, the index's historical average of 143 indicates that, on average, consumer income is 43% higher than the qualifying income needed to buy a home at the average market price.

The affordability index has been relatively stable since the 2007-2008 financial crisis. Indeed, despite the higher property values, affordability has been bolstered through low interest rates. Nonetheless, the market in 2017 remained slightly less accessible than the historical average calculated since 1981.

Graph 14

Québec affordability index (Ratio of average household disposable income to qualifying income)[25]



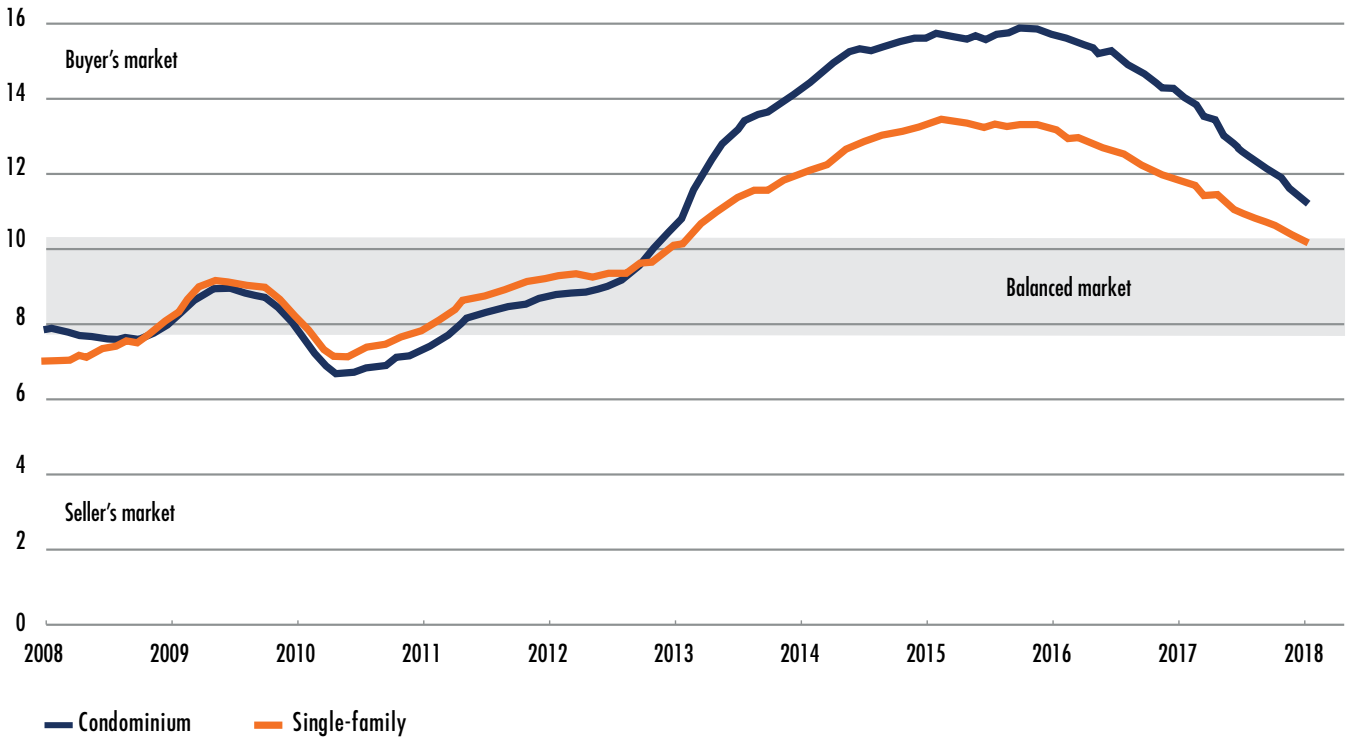
In March 2017, the hike in insurance premiums by the Canada Mortgage and Housing Corporation ("CMHC") came into effect for homeowners. In March 2018, the AMF updated its *Residential Hypothecary Lending Guideline* by introducing similar provisions to those applicable to federally chartered financial institutions. Among the changes with the biggest impact on consumers, the AMF now expects institutions to carry out stress testing on uninsured residential mortgages, i.e. generally speaking, those with a loan-to-value ratio equal to or less than 80%. Based on these new expectations, a financial institution must now use an interest rate at least equal to the greater of the rate published by the Bank of Canada or the rate offered by the financial institution plus 2% in order to simulate a surge in interest rates. Applicable to both newly originated and acquired residential mortgages, these new prudential guidelines took effect on March 15, 2018. As a domestic systemically important financial institution and like its banking counterparts, Desjardins Group has applied these provisions since January 1, 2018. Note that stress testing using the benchmark rate published by the Bank of Canada was already required for all insured loans.

The impact of these changes, combined with a potential increase in interest rates, could contribute to a slowdown in the real estate markets of major cities such as Toronto and Vancouver. However, repercussions could also be felt in Québec.

The Québec real estate market has been a buyer's market since 2013, with a large inventory of available properties, especially in the condominium sector. Graph 15 shows that the market in 2017 was nearing a balanced scenario and that this trend will continue in 2018. The current number of months of inventory tends toward an average selling time of between eight and ten months, which is considered normal for a balanced market. This trend should continue, due to the healthy state of Québec's economy, notwithstanding the updates to *Guideline B-20 – Residential Mortgage Underwriting Practices and Procedures* of the Office of the Superintendent of Financial Institutions ("OSFI") and the AMF's *Residential Hypothecary Lending Guideline*.

Graph 15

Ratio of houses for sale to houses sold in Québec (number of months)[26]



TECHNOLOGY ISSUES

New technologies encompass innovations in data storage volumes and processing speeds as well as data transmission through new telecommunication methods (fibre optics, cable, satellites, wireless). These innovations have numerous ramifications, particularly on lifestyles and the economy. The production and utilization of these new technologies account for a growing portion of the GDP of emerging and developed economies.

Emerging trends and technologies

The World Economic Forum[27] identified 12 key emerging technologies from among broad, long-term trends in computing technology, data storage and communication capacity. Technologies used in the financial sector ("fintech") include artificial intelligence ("AI"), blockchains and distributed ledgers, virtual and augmented realities, ubiquitous linked sensors ("Internet of Things") and new computing technologies ("quantum computing"), which enhance parallel systems for processing big data.

These technologies have the potential to reduce operating costs, generate new revenue sources and foster customer engagement and retention. They are driving forces behind innovations in a wide range of sectors, including lending, deposit-taking, payment and investment services within deposit institutions as well as risk quantification and customer targeting and segmentation in the insurance industry. Graphs 16 and 17, prepared respectively by the Basel Committee on Banking Supervision and PwC, describe the main sectors of innovation and trends identified in 2017 for deposit institutions and insurers.

Graph 16

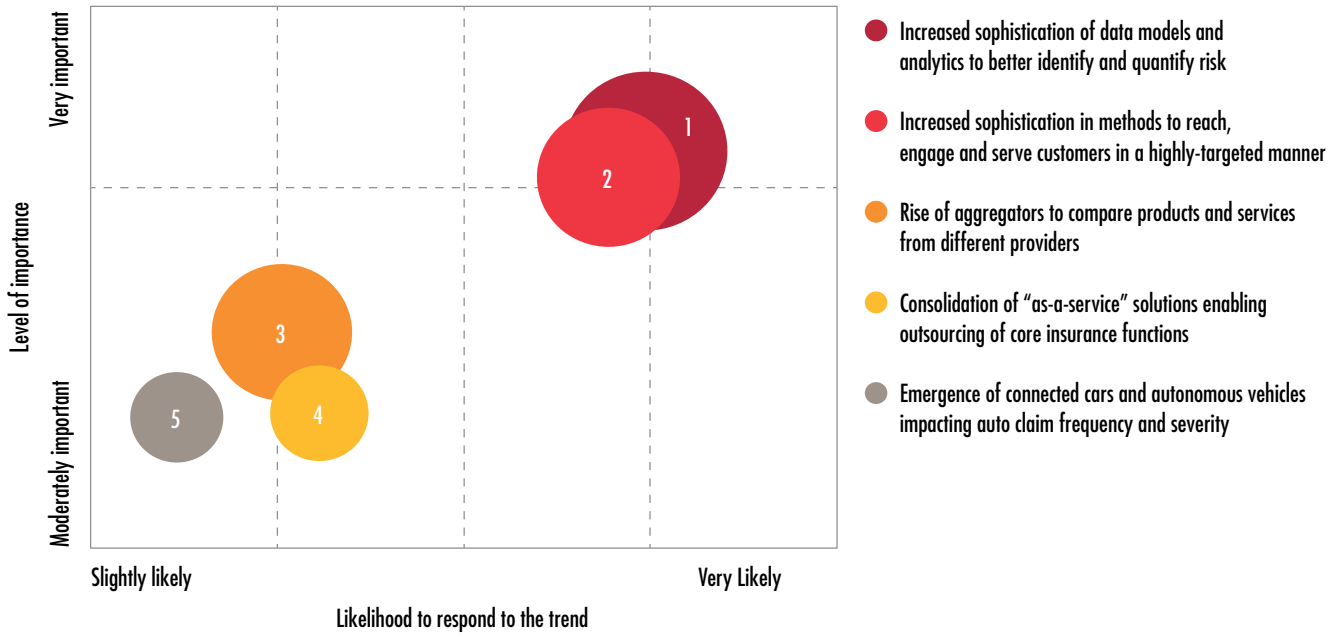
Main sectoral innovations within deposit institutions, as identified by the Basel Committee on Banking Supervision[28]

	SECTORAL INNOVATIONS			
	Credit, deposit and capital-raising services	**Payments, clearing and settlement services**		**Investment management services**
	Crowdfunding	Retail	Wholesale	High-frequency trading
	Lending marketplaces	Mobile wallets	Value transfer networks	Copy trading
	Mobile banks	Peer-to-peer transfers	FX wholesale	E-trading
	Credit scoring	Digital currencies	Digital exchange platforms	Robo-advice
Market support services	Portal and data aggregators			
	Ecosystems (infrastructures, open source, APIs)			
	Data applications (big data analysis, machine learning, predictive modelling)			
	Distributed ledger technology (blockchain, smart contracts)			
	Security (customer identification and authentication)			
	Cloud computing			
	Internet of things / mobile technology			
	Artificial intelligence (bots, automation in finance, algorithms)			

Graph 17

Main insurance innovation trends, as identified by PwC[29]

The size of the bubbles is proportional to the number of related FinTech companies as assessed by the DeNovo platform.



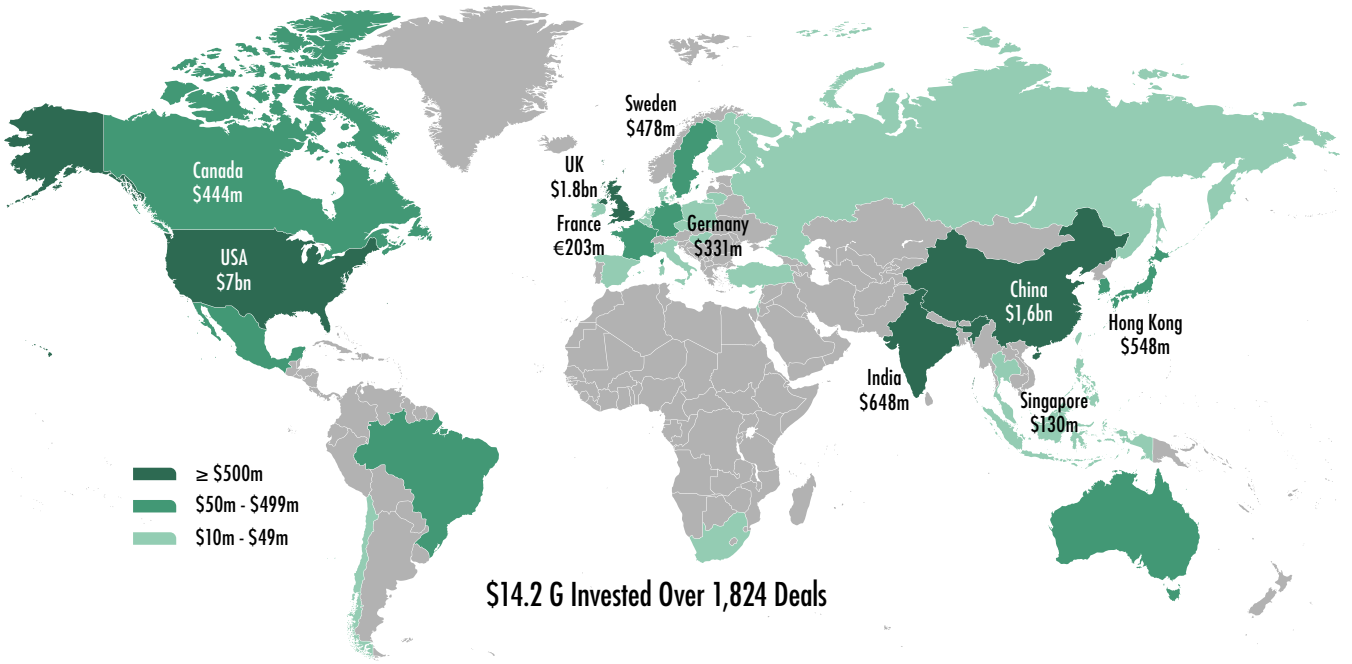
Advances in many emerging technologies are fostering and even amplifying the progress and development of other technologies. For example, enhancements to data warehouses are made possible through the application of AI algorithms to data in storage. As well, the Internet of Things enables the production of security applications through the use of miniature devices as data sharing nodes, while furthering the use of wireless technology.

Opportunities

New technologies provide financial institutions with opportunities to refine their business processes. These technologies can be used directly by the institutions themselves or through partnerships with specialized firms or start-ups. Graph 18 illustrates the scope of global investments in fintech. In a global market that saw 1,824 deals attracting US$14.2 billion in 2017,[30] Canada ranked seventh in capital invested (US$444 million) and fifth in deal volume (63 deals). Fintech investments are meant to set up innovation labs, organize hackathons,[31] create specialized teams and, of course, conduct business acquisitions in the technology sector.

Graph 18

Global FinTech VC Investment Deal Value 2017 [32]



Risks

The risks posed by these technologies and related innovations are very real and are globally considered to be among the most significant strategic and operational risks facing financial institutions. For example, many jurisdictions, including Québec, have recognized the importance of the following: cyber risk, the skills shortage in information and communications technology ("ICT"), ICT complexity, business continuity, vendor management, transformation programs, and data quality and architecture.

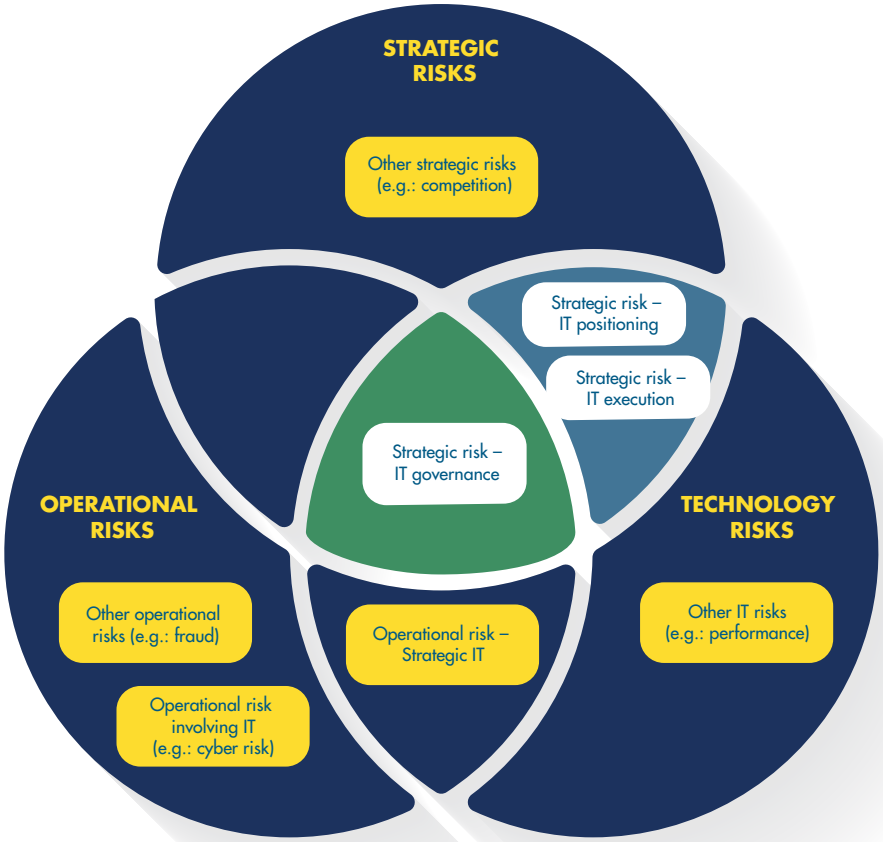
These findings have been broadly disseminated in publications by consulting firms, think tanks[33] and regulators. Much attention has also been focused on the urgent need to develop technological expertise among members of the boards and senior management of financial institutions. Moreover, a major strategic issue is the rapid emergence of disruptive innovations and technologies that could impel financial institutions to significantly change their business models in order to remain competitive and effectively manage their risks.

Therefore, all major ICT risks, which have been highlighted by such bodies as the World Economic Forum, the European Central Bank and the European Banking Authority, must now be managed prospectively, and ICT risk management must be integrated into the business objectives of financial institutions.

The engagement and accountability of all financial institution stakeholders and the implementation of international practices and standards can help mitigate ICT risks and ensure a holistic approach to risk management. As shown in Graph 19, technology and its associated risks are ubiquitous across all financial institution processes.

Graph 19

Relationships between strategic, operational and technology risks[34]



As financial institutions increasingly adopt new technologies, ICT developments are likely to raise specific issues involving consumer protection, privacy, anti-money laundering and ethics.

To date, technology risks have not had systemic effects. Nevertheless, extra vigilance is required following many recent incidents, including the hacking of consumer data at Equifax and the numerous intrusions against the SWIFT[35] interbank payment system.

Likewise, the emergence of cryptocurrencies and the open structure of the Internet increase the likelihood of operational incidents, e.g. fraud and denial of service attacks. For example, the *WannaCry* ransomware attack in May 2017 spread to more than 150 countries by targeting an operating system, encrypting data and demanding ransom payments to decrypt files. According to a report by Aon Benfield, the demand for cyber insurance products has grown tremendously following such incidents, generating premiums of approximately US$1.7 billion and annual product and coverage growth of 30% to 50%.

Furthermore, the *2018 Global Economic Crime and Fraud Survey–Canadian Insights*[36] reveals that 55% of Canadian businesses experienced an incident of economic crime in the past 24 months, up from 37% in 2016. This can be explained in part by the fact that cybercrime has become the most reported economic crime in Canada (46% of Canadian respondents have experienced cybercrime, compared with 31% of global respondents). In an increasingly interconnected world, theft of assets is shifting to new, international channels and perpetrators.

> *In connection with cybercrime incidents, the AMF systematically intervenes with respect to the financial institutions it oversees to determine the extent to which they may be affected and inquire about the measures taken.*

Evolving oversight

Implementing ICT risk monitoring frameworks and initiatives is a central concern of regulators. Trends that have been observed include the increasing use of questionnaires and self-assessment tools by regulators, "red team" intrusion testing of computer systems and the publication of more detailed frameworks.

> *The AMF will be no exception among regulators. Its new principles-based* Guideline on Information and Communications Technology *(ICT) Risk Management will address these matters. Drawing on best international practices and principles, this guideline will cover issues identified during the AMF's supervisory interventions and various fintech initiatives of recent years, particularly those pertaining to information security and the protection of personal information.*

Participating in international committees helps the AMF strengthen its framework and ICT monitoring tools. It actively contributes to the following:

- The development of an *Application Paper on Cybersecurity* as part of the Financial Crime Task Force of the International Association of Insurance Supervisors ("IAIS").
- The development of an *Issues Paper on Digitalisation of the Insurance Business Model* within the IAIS Market Conduct Working Group. This document mainly addresses the impact of digital technologies on the design, promotion, sales and distribution of products.
- The drafting of documents of the International Financial Consumer Protection Organization ("FinCoNet") on the digitalization of credit and the use of on-line and mobile payment channels. The AMF has also contributed to work on a risk-based approach to supervise digital payments.

Moreover, as an integrated regulator, the AMF seeks to develop frameworks with a harmonized approach to the various sectors under its jurisdiction. Therefore, in addition to the financial institutions sector, the AMF considers the work performed by the International Organization of Securities Commissions ("IOSCO") and the Canadian Securities Administrators ("CSA"), in particular with respect to cyber resilience.

Sharing economy

The sharing economy continued to grow in 2017, but it remains challenging to predict what the real impact will be on the insurance industry, in particular. A survey conducted by PACICC[37] in 2016 shows that the chief risk officers of damage insurance companies identified the sharing economy as the fourth most important emerging risk confronting their industry.

Current insurance coverages are often not compatible with the new, unconventional business models of the sharing economy. In order to foster adequate consumer protection, it is essential to adapt insurance to the needs of sharing economy participants.

For example, drivers for a ride sharing company or homeowners listing their property on an accommodation sharing site have had difficulty finding adequate insurance coverage. Indeed, until very recently, conventional automobile and home insurance did not cover new sharing economy businesses, where personal property is used for occasional business purposes. Over the past year, however, some insurers have developed or adapted their products to offer coverage designed for both the sharing platforms and the persons who provide the goods or services as well as for consumers/users. Therefore, given the expansion of the sharing economy, the insurance industry would do well to seize the opportunities and meet the insurance needs arising from this growth sector.

> *The AMF considers that some current automobile insurance products that are ownership based are not designed to suit the needs of non-owner users. In response to the requirements of the sharing economy, in collaboration with the* Groupement des assureurs automobiles *(GAA), the AMF has set up a working group to review the wording of Q.P.F. No. 2 – Driver's Form so as to meet the needs of these new clients.*
>
> *More generally, the AMF believes that the introduction of group damage insurance provisions would help meet the growing needs of the sharing economy.*

Autonomous vehicles

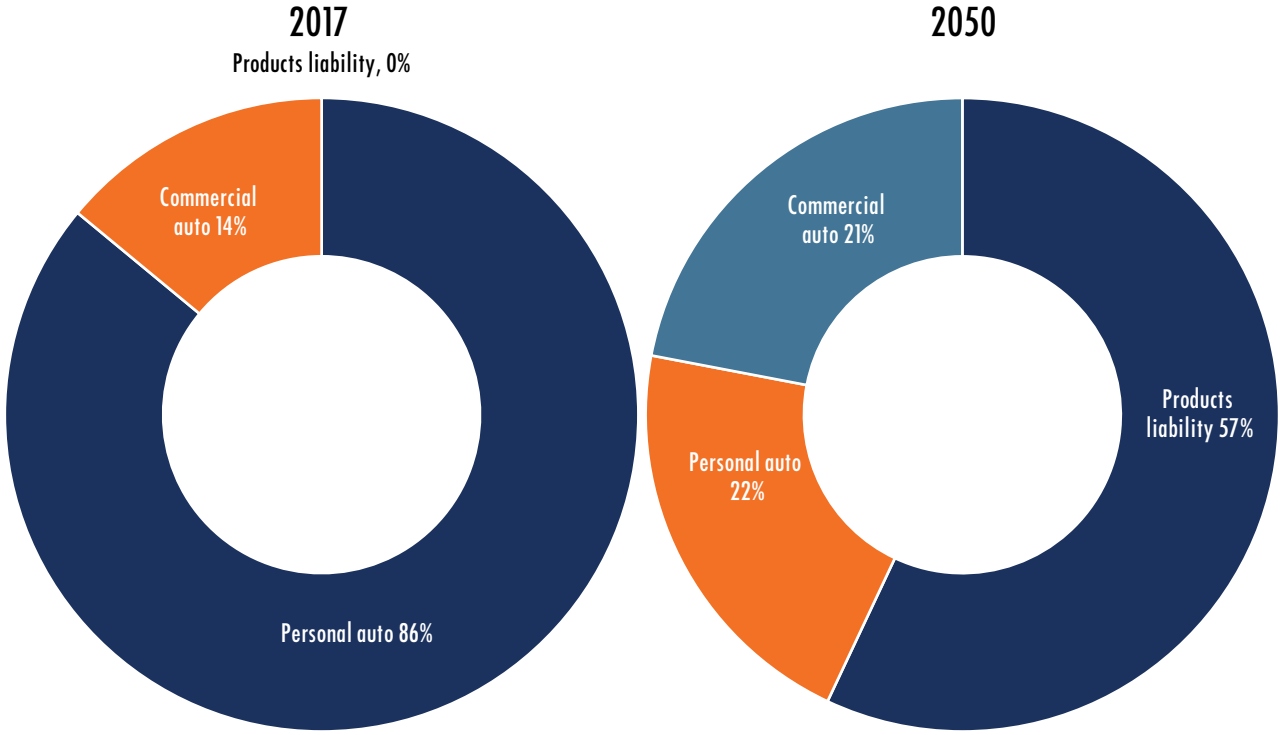
The automotive sector has also seen its share of technological advances, such as the integration of computers, software and sensors in vehicle design. Some recent models are already equipped with connected technologies and advanced driver assistance systems, including obstacle detection, lane departure warning, traffic sign recognition, reverse parking assistance (backup camera) and intelligent speed adaptation. In addition to these driver-assisted vehicles, the first generation of autonomous vehicles is already on the roads. These developments are such that the automobile insurance industry will undergo significant transformation in the next few years, particularly with respect to coverage, pricing and claims processing. In fact, the integration of driver assistance systems, combined with the growing number of distractions at the wheel (cell phones, personal navigation assistants and other electronic devices), has already led to an increase in claim frequency and average cost per claim. These matters are discussed in greater detail in the section on automobile insurance rates (see the complete report (in French only), available at www.lautorite.qc.ca).

The recent introduction of connected and autonomous vehicles raises concerns, especially regarding cybersecurity and the protection of personal information. For example, despite the financial opportunities related to holding consumer data, fundamental questions are raised about the ownership of such data, which is considered private information by many. A recent survey has revealed that 84% of consumers want direct monetary benefits in exchange for their data. According to the same survey, 45% of automobile executives believe that they do not need to offer anything to consumers in exchange for their data.[38]

To date, human error remains the primary cause of traffic collisions. However, because of the gradual automation of vehicles, the main challenge will be to determine liability in the event of collision. Computer errors and equipment malfunction will need to be considered when making such a determination. Depending on the level of automation, a driver's liability could be transferred in whole or in part to the manufacturer, as shown in Graph 20.

Graph 20

Loss splits between personal auto, commercial auto and products liability[39]



For insurers, vehicle automation could mean a migration from personal policies and coverage to manufacturer-centred (commercial) coverage. Likewise, insurance needs could migrate toward liability and cybersecurity protections. It is also plausible that car manufacturers will become insurance companies to insure their own autonomous vehicles or will partner with well-established technology firms to provide automobile insurance. In short, vehicle automation will create many challenges for the insurance industry, regulators and other industry stakeholders, particularly on account of the speed at which change will occur.

The presence of autonomous vehicles on the Québec road network will cause the AMF to adapt approved automobile insurance forms based on the risks represented by these vehicles, especially regarding the apportionment of liability following a collision. The AMF is thus closely following developments surrounding vehicle automation and, through its fintech working group, will analyze the impact autonomous vehicles will have on the insurance industry.

ENVIRONMENTAL ISSUES

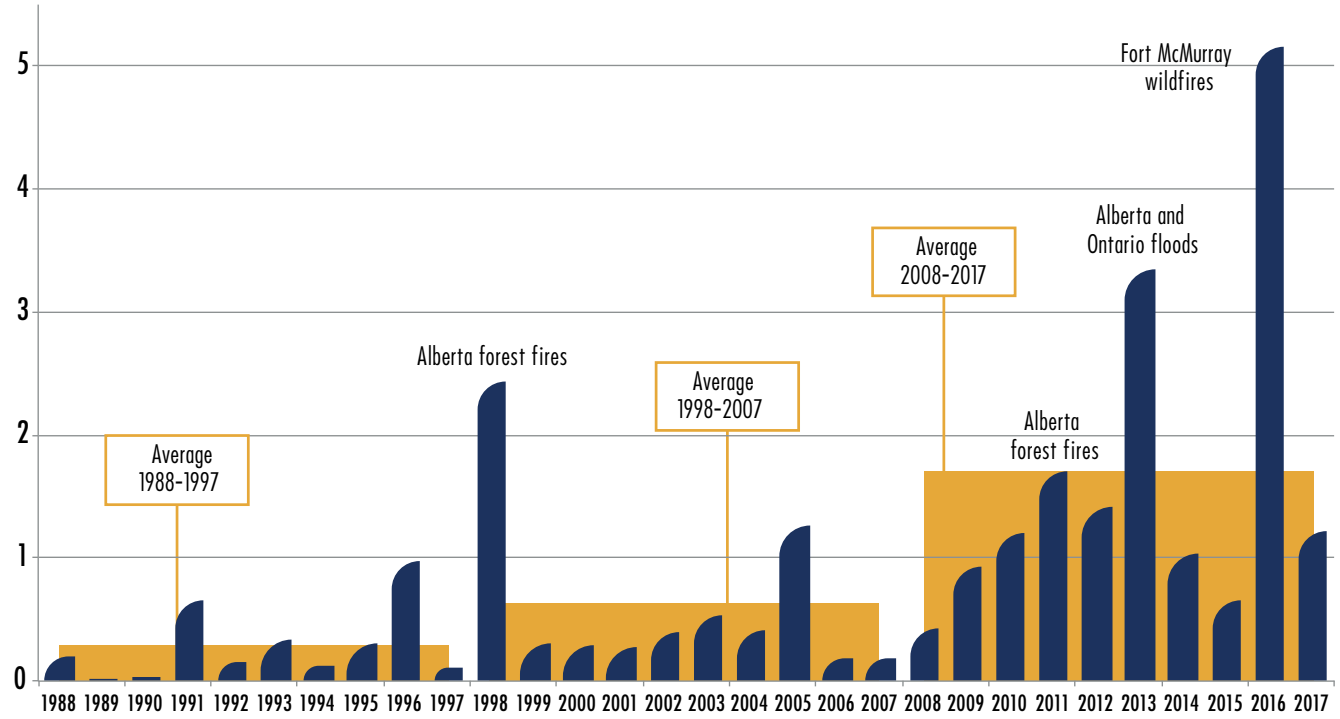
Natural catastrophes

In Canada, reinsurance capital and protection related to risks covered by damage insurers have been sufficient to deal with natural disasters in recent years. At $3.7 billion in insurable losses, the wildfire that destroyed a large part of Fort McMurray in 2016 was the costliest natural catastrophe in Canadian history.

Notwithstanding the current funding adequacy, the upward trend in catastrophic losses, as illustrated in Graph 21, represents a challenge for the industry.

Graph 21

Evolution of catastrophic losses in Canada over the past 30 years (billions of dollars)[40]



Some risks, e.g. environmental pollution damage, are by nature unpredictable and difficult to measure in terms of losses incurred and cannot be covered by the "traditional" insurance market. Others, such as flooding-related risks, are generally uninsurable in zones located near waterways or with a historically high recurrence of water damage.

Where such risks are insured, however, coverage is often limited and premiums are very high. A case in point is earthquake risk. The following factors can explain the low rate of coverage against earthquake risk:

- **Risk perception**. A minority of Quebeckers perceive this risk as being very significant,[41] and yet a study commissioned by the Insurance Bureau of Canada ("IBC") concluded that there was a non-negligible chance that a strong earthquake will strike in Québec in the next 50 years.[42]
- **Misunderstanding of insurance coverage**. As most owner and tenant insurance policies include protection against the risk of fire following an earthquake, policyholders wrongly believe that they are covered for all other damage caused by an earthquake.[43]
- **Cost and adequacy of insurance coverage**. On the one hand, the premium charged may be deemed too expensive for what is perceived to be a low risk. On the other, in the event of major earthquake damage, many Quebeckers think they are covered under government disaster financial assistance programs.[44]

Considering that 70% of Québec's population lives in seismic zones,45 damage from an earthquake could be very substantial. According to the latest report on the matter by Swiss Re, "a magnitude 7.3 earthquake in the Charlevoix seismic zone near Québec City could cause private residential property losses of up to CA$10.6 billion. And a repeat today of the magnitude 5.8 earthquake in the city of Montréal in 1732 would lead to even higher losses, estimated at CA$[45] billion."[46] Such a catastrophe could have major effects on the industry[47] and could even disrupt the financial system since most homes are not covered for earthquake risk.[48]

STRATEGIC PLAN

As part of its 2017-2020 Strategic Plan*, the AMF has undertaken a special project to analyze and measure the impacts of earthquake risk. It will also determine options to mitigate the related consequences and make recommendations to ensure better consumer awareness and protection. Lastly, the AMF will recommend and co-ordinate actions taken with stakeholders to implement the adopted solutions.*

Moreover, the action plan calls for a review of models implemented by other regulators, the collection of data from insurers and consultations with various organizations and associations from government, industry, academia and other interested parties.

Furthermore, the AMF also participated in forums and discussion panels on the topic, including as part of the official launch of the Swiss Re report in June 2017.

Flooding

Water damage has increased very significantly as a result of the rising number of extreme weather events. Witness the flooding in Québec in spring 2017. The government of Québec confirmed that those floods were the province's most damaging in the past 55 years. Indeed, the city of Montréal recorded over 400 millimetres of rain in spring 2017, beating records dating back to the 1870s.

In the wake of this flooding, the IBC together with a number of insurers launched several initiatives to improve flood insurance coverage, including the marketing of a new endorsement in June 2017.

In Québec, flooding and earthquake risks are of particular concern. The AMF has been closely monitoring these important issues for many years, and it believes that insurers must step up their efforts to better cover and mitigate these risks.

The AMF works on these issues as a member of the Canadian Council of Insurance Regulators ("CCIR"). In particular, it contributed to a report issued in 2017 that assesses the impact of natural catastrophes on insurance offerings.[49] In response to a lack of understanding of these risks and confusion regarding insurance coverages, government disaster relief programs and the need to prepare for such events, a working group was created to propose solutions and recommend concrete measures to raise consumer awareness of these risks.

Climate change

Most experts believe there is a correlation between global warming, climate change and the intensification of extreme weather events in recent years. The Paris Agreement, which went into effect in 2016, was ratified by all countries except the United States, which withdrew from the agreement in 2017. This international mobilization reflects the willingness of governments to fight climate change and reduce its impact on society.

As the cause of natural disasters and environmental damage, climate change also represents a risk for financial markets and affects the investment returns of several asset classes, such as those dependent on fossil fuel use and increased greenhouse gas emissions. In response to a request from the G20 to determine how the financial sector should take account of climate-related issues, the Financial Stability Board ("FSB") announced the creation of an international task force to measure climate change risks and develop a climate-related financial risk disclosure regime to provide consistent information to investors. The task force's final report was released in June 2017.

As an integrated regulator, the AMF formed a working group on climate change in fall 2017. This multidisciplinary team is tasked with studying climate-related risk issues, including those pertaining to direct physical damage, indirect impacts on financial institutions and global warming as well as covering the measurement of global warming, climate risk disclosure and the development of climate finance.

AMF ACTIONS WITH RESPECT TO COMMERCIAL PRACTICES

In 2017, the AMF played an active role on a number of CCIR committees. It led the development of the Annual Statement on Market Conduct (the "Annual Statement"), which was introduced by CCIR members in spring 2017. This statement is the result of a harmonized approach across Canada to assess the insurance marketplace and insurer conduct.

During the statement's first year, data were collected from insurers representing the majority of market share in damage insurance and insurance of persons in Canada for 2016. For its second year, all insurers carrying on business in Canada will be required to complete the Annual Statement. The AMF was mandated by CCIR members to collect the data. In this regard, work done under the CCIR's *Framework for Cooperative Market Conduct Supervision in Canada* led to greater information sharing and harmonized intervention among regulators.

One of the priorities of the CCIR's *2017-2020 Strategic Plan* is to harmonize provincial and territorial regulations with international core principles. A working group, chaired by the AMF, was set up in fall 2017 to establish the common expectations of CCIR members pertaining to market conduct and the fair treatment of customers, while considering the respective roles and responsibilities of insurers and intermediaries.

> *Following the work done across Canada, the AMF will update its Sound Commercial Practices Guideline. The purpose will be not only to ensure maximum harmonization with national and international developments, but also to consider observations made in the course of its supervisory activities and the revised laws under its administration as well as developments in the digital distribution of financial products.*

During the year, the AMF published an issues paper entitled *Managing Conflict of Interest Risk in Relation to Incentives*. This document is part of the work undertaken by the AMF following the publication of the *Sound Commercial Practices Guideline*. In an effort to align incentive practices and frameworks, the AMF will take into account related work performed by the CSA, in particular.

Work by the AMF helped determine that some progress has been made in implementing the principles set out in the *Sound Commercial Practices Guideline*. This assessment includes an appraisal of governance and corporate culture in connection with the fair treatment of consumers ("FTC"), an analysis of the FTC-related strategies, policies, procedures and control mechanisms implemented as well as an examination of complaints and reports. The most frequent findings concern an absence of FTC-related management tools, incentives based solely on sales volume, products designed primarily for profit without taking consumers' real needs into account, and a lack of information necessary for informed decision-making. In short, notwithstanding the progress made, these findings show that implementing an FTC culture within financial institutions remains a challenge.

In this regard, the AMF carried out specific interventions following reports made or issues detected in the course of its oversight, monitoring and investigation work, most of which resulted in recommendations to specific financial institutions or, in some cases, administrative sanctions totalling $2.7 million.

STRATEGIC PLAN

Also in the area of commercial practices and to demonstrate the AMF's related leadership, which is a clear orientation in its *2017-2020 Strategic Plan*, the AMF became a member of FinCoNet in spring 2017. FinCoNet is an international organization of supervisory authorities that is mandated by the G20 and the Organisation for Economic Co-operation and Development ("OECD"). Its work is focused on the market conduct supervision of deposit institutions.

Lastly, as part of the *2017-2022 Governmental Action Plan to Counter Elder Abuse*, the AMF led public consultations with insurers, intermediaries and consumer groups. These consultations will help the AMF provide the industry with tools to better meet the needs of vulnerable clienteles. In this regard, the AMF will publish a guide to foster good practices with persons in vulnerable situations. It expects to release this guide within the coming year.

CHANGES TO THE STANDARDS FRAMEWORK

Accounting standards review

Canada's Accounting Standards Board ("AcSB") adopted International Financial Reporting Standard 17 – *Insurance Contracts* ("IFRS 17") in March 2018 following publication of the final version by the International Accounting Standards Board. The AcSB thus confirmed its application in Canada for fiscal years beginning on or after January 1, 2021.

The implementation of this standard is a large-scale operation that will have a major impact on the industry, more specifically on insurers' financial positions, operating results and management functions.

IFRS are principles-based and offer certain accounting policy choices to prepare financial statements. Accordingly, IFRS 17 does not explicitly or prescriptively specify the treatments to be applied to insurance contracts or other transactions. So, while the principles may be mastered, these accounting choices and their application may prove to be difficult and impact many industry stakeholders including insurers, actuaries, accountants and external auditors.

STRATEGIC PLAN

The AMF works in close collaboration with various stakeholders, including the insurance industry in Québec and Canada, other regulators and the IAIS Accounting and Auditing Working Group, to identify and resolve implementation issues in order to foster a certain uniformity in applying the standard and preparing financial statements. As these serve as the basis for calculating regulatory capital, this exercise will help better determine and quantify the impacts with respect in particular to capital adequacy requirements, primarily for insurers of persons. This collaboration with the various stakeholders is in keeping with the orientations of the AMF's 2017-2020 Strategic Plan, namely, sharing its expertise and contributing to discussions on accounting and audit practices.

Actuarial standards review

Mortality

For over 20 years, mortality rates in Canada have trended downward, both for men and women, albeit to different degrees. Although this decline has been favourable to insurers for previously issued life insurance products, it has been unfavourable for previously issued, longevity-sensitive products such as annuities.

In 2017, the Canadian Institute of Actuaries ("CIA") published a new mortality improvement scale that provides greater consistency with data from recent years and contributes to stronger balance sheets for some insurers.

In its prudential role, the AMF has concerns about the projected long-term (ultimate) rates that are quickly reached, and their fairly low levels for very high ages compared with current rates. This situation may result in underestimating mortality improvement for those ages. Consequently, the AMF continues to monitor mortality rate improvement compared with insurers' assumptions, particularly for longevity insurance products.

Lapse

Some life insurance products are lapse sensitive, i.e. they are sensitive to the number of policyholders who decide not to maintain their insurance until the expiry of their contracts. In the normal course of business, insurers make assumptions in this regard and any deviation results in a gain or a loss.

In 2015, the CIA published two studies on lapse-supported product experience. The findings of these studies showed much lower lapse rates than many insurers had assumed, which led to significant increases in their actuarial liabilities. Since then, some insurers have continued to report lapse losses for those products, thus resulting in higher actuarial liabilities in 2017.

The AMF continues to closely monitor changes in actual lapse rates compared with insurers' assumptions as well as any product that may likely generate material lapse-related losses. As well, it is following the development of a secondary market where individuals can sell their policies to third parties, a situation that could also influence lapse rates and insurers' profitability.

Compliance with the Deposit Insurance Act[50]

The AMF pursued work to effectively intervene in the event of a crisis striking a financial institution. In the case of institutions registered under the *Deposit Insurance Act*, the AMF must be able to determine the amount of guaranteed deposits for each depositor.

Since June 2017, registered institutions must comply with the regulatory provisions regarding deposit insurance data requirements in order to provide the AMF with all relevant information about their depositors. The AMF validated compliance with these regulatory provisions by each institution under its supervision. Overall, financial institutions have met the AMF's expectations and continue to refine the quality of their information.

STRATEGIC PLAN

This enhanced information sharing will enable the AMF to quickly acquire a detailed picture of all deposits, account balances and amounts guaranteed to depositors in the event of intervention, resolution or repayment of deposits. This initiative is in step with the *2017-2020 Strategic Plan* that aims to strengthen the AMF's role as a local regulator close to its markets.

CHANGES TO OVERSIGHT OF FINANCIAL INSTITUTIONS

Over the past year, the AMF has continued to prepare for the scheduled visit in 2018 by the International Monetary Fund ("IMF") as part of the Financial Sector Assessment Program ("FSAP"). An FSAP assessment is a comprehensive and in-depth analysis of a country's financial sector by a team of IMF experts. More specifically, IMF teams examine the resilience of the overall financial sector, the quality of regulatory and oversight frameworks as well as the ability to manage and effectively respond to a financial crisis. Based on these assessments, micro- and macroprudential findings and recommendations are made and adapted to the specific characteristics of the existing frameworks.

Following the IMF assessment conducted in 2013 and in preparation for the upcoming analysis, the AMF has been performing a self-evaluation exercise in line with international guiding principles for all the sectors it oversees. The following table lists the relevant international organizations and the number of guiding principles issued by each.

International organization	Number of guiding principles
International Association of Deposit Insurers	16
International Association of Insurance Supervisors	26
Bank for International Settlements	29
International Organization of Securities Commissions	38

Although a necessary component of the IMF assessment, this advance exercise helps identify any gaps in the AMF's framework or supervisory approach. Indeed, it has helped to update existing or develop new guidelines, plan implementation of framework-related activities and reinforce the AMF's supervisory tools and operational capacity to properly carry out its mandate.

For example, the AMF updated its *Compliance Guideline* to better reflect the most recent guiding principles and orientations from international bodies as well as evolving practices adopted by financial institutions. Special attention was paid to ensure consistency with other AMF guidelines, particularly those on governance and integrated risk management. As stated in the *Compliance Guideline*, adopting and fostering a compliance culture is critical for financial institutions to ensure sound and prudent management and sound commercial practices. It may also serve to mitigate any risks arising from non-compliance.

As well, the AMF updated the *Financial Institutions Supervisory Framework*, which sets out the approach taken by the AMF to adequately fulfill its mandate to supervise financial institutions. It is updated every three years or more frequently as needed based on developments in the financial sector and findings made in the course of the AMF's supervisory work as well as on regulation, new risks and emerging trends. The most recent version was published in December 2017.

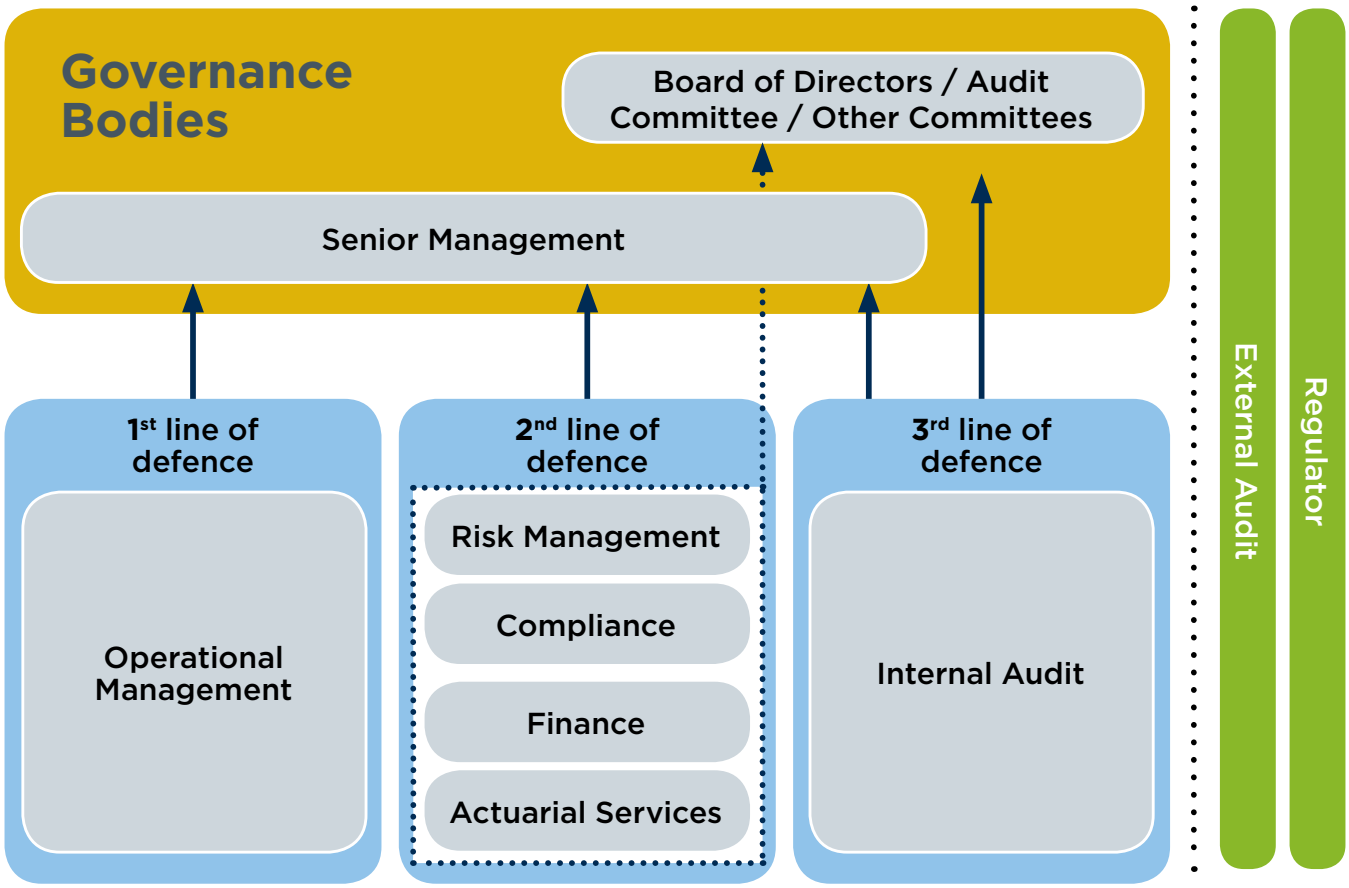
The supervisory framework reflects upgrades to the AMF's regulatory tools, particularly the guidelines pertaining to governance, integrated risk management and compliance. These guidelines are considered to be the foundation stones for the sound and prudent management and sound commercial practices of financial institutions and, consequently, the basis for the prudential framework of the AMF.

These upgrades integrate the three lines of defence model (as shown in Graph 22). Its adoption as a governance model enables the AMF to assess the quality of a financial institution's risk management function. This model, which helps delineate the roles and responsibilities of stakeholders, is suitable for all types of financial institutions and can be adapted according to their nature, size, complexity and risk profile.

Moreover, since the supervisory framework is an extension of the AMF's supervisory approach, the sources used for updating the framework are the same as those used to develop such tools as the guidelines. These sources are essentially the core principles and guidance published by the Basel Committee on Banking Supervision,[51] the IAIS[52] and other international bodies.[53]

Graph 22

Governance based on the three lines of defence model[54]



AMF CONTRIBUTIONS TO WORK OF NATIONAL AND INTERNATIONAL BODIES

Canadian Council of Insurance Regulators

The AMF Superintendent, Solvency, has served as chair of the CCIR since March 2015. His mandate was renewed in March 2017 for a period of two years.

The AMF also chairs the Electronic Commerce Committee ("ECC"), a CCIR working group whose mandate is to focus on the electronic commerce of insurance products. In 2017, the ECC completed its work on the use and deployment of electronic proof of automobile insurance ("EPAI") and, in January 2018, the CCIR published a news release recommending that EPAI be made available across Canada. Insurers will thus be able to use EPAI-related smart phone apps.

In 2017, the CCIR released its *2017-2020 Strategic Plan* containing various initiatives, including the creation of a fintech working group. One of the objectives of this group is to promote information sharing as well as co-ordinate research and even interventions by CCIR members, the goal being to propose harmonized regulations on the use of emerging new technologies. Working group members will draw on research carried out by various international regulators. The AMF is also bolstering its leadership within the CCIR by chairing this new committee.

In December 2017, the CCIR published a position paper presenting the findings from its consultation targeting the gaps between the regulatory frameworks for segregated funds and mutual funds, and their implications for fair treatment of customers. As part of its recommendations, the CCIR outlines the information that is to be provided to contract holders as part of their annual statements, in addition to the disclosure of fees, account performance and current value of guarantees applicable to the contract.

Following publication of the position paper, the CCIR's working group pursued its work on a client annual statement template for use by insurers. The AMF has been instrumental in developing this template.

The new statement template was presented to various focus groups in fall 2017 to assess customers' understanding of the document. A final version of the template will be published in 2018. Following this work, the AMF will undertake a review of its framework for segregated funds.

International Association of Insurance Supervisors

In 2011, the IAIS launched a comprehensive review of the Insurance Core Principles ("ICPs") to provide regulators with guidance on the development and maintenance of regulatory frameworks that foster both the protection of policyholders and beneficiaries and the stability of the financial system.

More recently, the IAIS published new versions of certain ICPs. The AMF actively contributed to the revision of ICP 18, *Intermediaries* and ICP 19, *Conduct of Business*, which will serve to update the AMF's work on commercial practices. Given its continuous involvement in the IAIS, the AMF also worked on the new version of ICP 13, *Reinsurance and Other Forms of Risk Transfer*. The new versions of these three principles were adopted in November 2017.

Moreover, assuming a proactive role within the IAIS, the AMF is contributing to discussions on a draft application paper on the role and composition of an insurer's board of directors. This paper deals mainly with formal and behavioural issues that regulators could face as part of a Board evaluation. The final version will be published in 2018. As the regulator of a diversified insurance market in Québec, both in terms of size and organizational structure of financial institutions, the AMF can contribute solid expertise to help advance the discussions and move the work forward.

STRATEGIC PLAN

Also in connection with the IAIS, the AMF helps develop international insurance capital standards as well as measures and guidelines applicable to global systemically important insurers. This collaboration allows the AMF to perform a leadership role as an influential thinker and contributor on current and emerging issues, in accordance with its *2017-2020 Strategic Plan*.

International Association of Deposit Insurers

As a member of the International Association of Deposit Insurers ("IADI"), the AMF sits on the Core Principles and Research Council Committee, which oversees core principles research, development and promotion. This key committee provides an opportunity for the AMF to position itself as an influential stakeholder.

The AMF has chaired the Subcommittee on Resolution Issues for Financial Cooperatives ("SRIFC") since its creation by the IADI in June 2014. This subcommittee comprises 17 IADI deposit insurers and resolution authorities. The AMF led the drafting of a research paper entitled *Resolution Issues for Financial Cooperatives – Overview of Distinctive Features and Current Resolution Tools*, which was published in January 2018. This paper sets out the fundamentals of the issues faced in adapting traditional resolution tools developed for banks to financial cooperatives. The analyses and conclusions are based in particular on the findings of a survey distributed in 2015 to more than 100 deposit insurers and resolution authorities around the world. It is also based on 17 case studies conducted by IADI members.

The SRIFC's initial research demonstrated that financial cooperatives are major players in the global financial system. Some, including Desjardins Group, were designated as either global or domestic systemically important financial institutions. Financial cooperatives have specific characteristics that set them apart from traditional banks, particularly in terms of objectives, ownership structure, participation in the decision-making process, business model and access to capital. The impact of these characteristics is such that certain resolution instruments, especially those that pertain to the capital structure, such as convertible capital instruments (i.e. non-viability contingent capital and bail-in eligible instruments), represent operational challenges for resolution authorities and thus require that adjustments be made for this type of organization.

The AMF will continue to share its expertise as the resolution authority and deposit insurer for Canada's largest cooperative financial group. It will also remain engaged in the many forums that provide it with insights into resolution frameworks.

Notes de fin

1 *Act respecting insurance*, CQLR, c. A-32, s. 321; *Automobile Insurance Act*, CQLR, c. A-25, s. 182; *Act respecting financial services cooperatives*, CQLR, c. C-67.3, s. 597; *Act respecting trust companies and savings companies*, s. 313.

2 Unless otherwise indicated, results presented in the report are as at December 31, 2017. Since the annual report is released in mid-year following that date, the AMF outlines the concerns and issues that it has identified and that occurred in early 2018, primarily those resulting from efforts deployed in 2017.

3 As defined by the *Institut de la statistique du Québec* ("ISQ"), this category covers deposit institutions (including banks), insurance and securities.

4 Sources: ISQ and AMF.

5 Sources: ISQ and AMF. Nominal GDP from previous years may differ owing to adjustments by the ISQ.

6 Sources: 2015, 2016 and 2017 annual reports of Canada's six largest banks and AMF. Note that Desjardins Group and the banks have different fiscal year-end dates (respectively, December 31 and October 31) and therefore their fiscal quarters do not coincide.

7 See Note 6.

8 Includes Tier 1A and Tier 1B capital.

9 The exposure measure corresponds to the balance sheet carrying amount adjusted for off-balance sheet items.

10 Source: Bank of Canada: The promotional interest rates of financial institutions may differ from those provided by the Bank of Canada.

11 Source: Bank of Canada.

12 Ultimate rates represent interest rates at which insurers assume they can reinvest their assets in 20 years or more.

13 Sources: 2015, 2016 and 2017 annual reports of the six largest Canadian banks as at October 31 and the Financial Report of Desjardins Group for the quarter ended September 30, 2017.

14 Source: Moody's Investors Service, March 13, 2018.

15 Source: JLR Solutions Foncières.

16 Source: Statistics Canada.

17 Source: ISQ.

18 Corresponds to the total required principal and interest payments relating to mortgage and non-mortgage loans divided by household disposable income.

19 Source: Statistics Canada.

20 Sources: Chambre des notaires and Civil Code.

21 Source: Government of Canada, *Insolvency Statistics in Canada–December 2017*.

22 *Act mainly to modernize rules relating to consumer credit and to regulate debt settlement service contracts, high-cost credit contracts and loyalty programs*.

23 Sources: CMHC and AMF.

24 The affordability index corresponds to the ratio of average household income over qualifying income.

25 Source: AMF.

26 Sources: Québec Federation of Real Estate Boards and AMF.

27 Source: World Economic Forum, The Global Risks Report 2017, 12th Edition.

28 Source: Basel Committee on Banking Supervision, *Consultative Document – Sound Practices: Implications of Fintech developments for banks and bank supervisors,* August 2017.

29 Source: PwC, *Global InsurTech Report 2017*.

30 Source: Innovate Finance, *2017 VC FinTech Investment Landscape* – February 2018.

31 A hackathon is an event bringing together a group of volunteer software developers over several days to collaborate on computer programming. This is a frequently used creative process in the field of digital innovation.

32 Source: *PitchBook*, January 19, 2018.

33 A policy institute or laboratory of ideas, independent of government and, in principle, non-profit, made up of experts whose main activity is to produce studies and develop proposals, mostly in the fields of public policy and economics.

34 Sources: Patrick McConnell, *Strategic Technology Risk*, Risk Books, 2017, and AMF.

35 Source: Office of Financial Research, *2017 Financial Stability Report*.

36 Source: PwC, *2018 Global Economic Crime and Fraud Survey–Canadian Insights*.

37 Source: PACICC, *ERM Benchmark Survey Report, 2016*.

38 Source: KPMG, *Global Automotive Executive Survey 2017*.

39 Source: KPMG LLP actuarial analysis, *The Chaotic Middle: The autonomous vehicle and disruption in automobile insurance, 2017*.

40 Source: IBC.

41 Source: Nathalie de Marcellis-Warin and Ingrid Peignier, *Perception des risques au Québec - Baromètre CIRANO 2017*, February 2017 (available in French only).

42 Source: IBC / Air Worldwide, *Study of Impact and the Insurance and Economic Cost of a Major Earthquake in British Columbia and Ontario/ Québec*, July 2013.

43 Source: La *ChADPresse*, according to IBC official, Summer 2015.

44 Source: Canadian Underwriter, *Quake Stakes* ("Many respondents are counting on another source, with almost 40% reporting that they would rely on government financial assistance"), November 2014.

45 Source: Maurice Lamontagne, *Earthquakes in eastern Canada a threat that can be mitigated*, Natural Resources Canada, 2008.

46 Source: Swiss Re Institute, *Earthquake Risk in Eastern Canada: Mind the Shakes*, July 2017.

47 Through PACICC's compensation mechanism in the event an insurer becomes insolvent.

48 Source: Le Journal de l'Assurance, *Tremblements de terre : le Québec plus à risque que la Colombie-Britannique*, October 1, 2016 (available in French only).

49 Source: CCIR, *Findings Report & Position Paper: Natural Catastrophes and Personal Property Insurance*, August 2017.

50 CQLR, c. A-26.

51 Source: Basel Committee on Banking Supervision, *Core Principles for Effective Banking Supervision*, September 2012.

52 Source: IAIS, *Insurance Core Principles, Standards, Guidance and Assessment Methodology*, October 2011, amended November 2015.

53 These bodies include the Bank for International Settlements, the FSB, the IADI, the OECD and FinCoNet.

54 Adapted from Federation of European Risk Management Associations / European Confederation of Institutes of Internal Auditing, *Guidance on the 8th EU Company Law Directive, article 41*.

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