CANADA AFTER BASEL III: KEY PROPOSITIONS TO STRENGTHEN FINANCIAL SECTOR REGULATION

by

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Abstract

The years after the financial crisis of 2007/08 have witnessed substantial global reforms aimed at minimizing the chances of its recurrence, and the heavy costs associated with it. The Financial Stability Board, in collaboration with the Basel Committee on Banking Supervision and G20 national regulators, concentrated its efforts on enhancing the resilience of financial institutions. To this end, efforts were made to increase capital and liquidity standards, end "too big to fail," strengthen oversight of shadow banks and over-the-counter derivatives, as well as introduce macroprudential policies to contain systemic risks. Advocates of the reforms praise the improvements made to financial stability, while critics claim that benefits do not justify the substantial costs of the heightened regulations. This divide calls into question the appropriateness of the changes made, since the crisis, to Canadian financial regulation, and what needs to change going forward. This paper attempts to answer these questions by looking at Canada's experience with the crisis and the developments that took place thereafter. It begins with a description of the current regulatory framework in Canada, the reforms performed to date, and literature views on these changes. Subsequently, three recommendations are made to address current weaknesses: 1) Regulators should combine rules and principles-based regulation in a way that allows principles to be the primary active tool, supported by minimum Basel III requirements as a backstop; 2) An independent entity should be provided with a financial stability mandate. The paper contributes to the literature in this area by proposing the statutory powers and governance structure this entity needs to best fulfil this mandate; 3) Independence of the Bank of Canada and OSFI should be strengthened by making them directly accountable to Parliament. These recommendations, if acted upon, could significantly enhance the financial sector's resilience to future threats.

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List of Abbreviations

ABCP	Asset-Backed Commercial Paper
BA	The Bank Act
BCBS	The Basel Committee on Banking Supervision
BOC	The Bank of Canada
CDIC	The Canada Deposit Insurance Corporation
CET 1	Common Equity Tier 1 Capital
CMHC	Canada Mortgage and Housing Corporation
CMRA	The Capital Markets Regulatory Authority
CSA	The Canadian Securities Administrators
DOF	The Department of Finance Canada
D-SIB	Domestic Systemically Important Banks
ESRB	European Systemic Risk Board
FCAC	The Financial Consumer Agency of Canada
FISC	Financial Institutions Supervisory Committee
FPC	Financial Policy Committee
FSAP	Financial Sector Assessment Program by the IMF
FSB	Financial Stability Board
FSOC	Financial Stability Oversight Council
FSR	The Bank of Canada Financial System Review
G20	The Group of 20 major economies
HLA	Higher Loss Absorbency
HOA	Heads of Agencies Committee
HQLA	High Quality Liquid Asset
IMF	International Monetary Fund
LCR	Liquidity Coverage Ratio
LR	Leverage Ratio
LTV	Loan-to-Value
MOF	The Minister of Finance
NSFR	Net Stable Funding Ratio
NVCC	Non-Viable Contingent Capital
OSFI	The Office of the Superintendent of Financial Institutions
RWA	Risk-Weighted Asset
SAC	The Senior Advisory Board

1. Introduction

At the 2009 London Summit, a year after the largest financial crisis since The Great Depression, G20 Leaders committed to a series of reforms designed to address systemic risks and minimize the chances of financial crises recurring in the future. The Financial Stability Board (FSB)[1] was established in 2009 by G20 Leaders to coordinate the development of reforms and monitor their progress internationally. These reforms center around four key elements: Basel III Core Principles, which is a set of rules increasing financial institutions' capital and liquidity requirements, resolution planning to end too-big-to-fail and minimize risks faced by tax payers, enhanced supervision of over-the-counter (OTC) derivatives, and improving oversight of shadow banks. Additionally, considerable effort has been put towards establishing a macroprudential framework in many jurisdictions to address systemic risks. All these changes have the common goal of reducing the significant costs to output and employment associated with crises.[2] However, this work is far from complete.

The Canadian regulatory framework is highly touted by international peers. The World Economic Forum has ranked Canada's financial sector the soundest in the world for nine consecutive years, from 2007 to 2015. Relative to other advanced economies, Canada has come out of the crisis unscathed and without any financial institution requiring bail out from the government. The reasons behind this more favourable experience are widely debated in the literature. Some of the more compelling reasons put

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[1] Previously the Financial Stability Forum. The FSB is headed by Mark Carney and is membered by international regulators including the Office of the Superintendent of Financial Institutions (OSFI), the Bank of Canada (BOC), and the Department of Finance (DOF).

[2] Compared to pre-crisis output, the estimated loss of output since the crisis is close to 25% of one year's worth of world GDP (FSB's Implementation and Effects of the G20 Financial Regulatory Reforms, 2016).

forward are: the more stringent capital requirements in the years preceding the crisis, the Office of the Superintendent of Financial Institutions' (OSFI) emphasis on principles-based supervision as opposed to bright-line rule making, Canadian bankers' conservative approach to risk-taking, and satisfactory mortgage regulations (albeit not without weaknesses which will be elaborated on later). That said, the crisis exposed a few vulnerabilities in the regulatory framework. Liquidity in the Asset-Backed Commercial Paper (ABCP) market quickly dried up in the aftermath of the crisis, calling for improvements to be made to securities regulation. Furthermore, a macroprudential approach to regulation, capable of monitoring and correcting systemic risks, was lacking.

Even though Canada fared relatively well, as members of the FSB, Canadian regulators have committed to implement much of the reforms put forward by the Board. In fact, Canadian regulators were aggressive in imposing some aspects of the reforms. For instance, OSFI has asked all federally regulated financial institutions to meet the new Basel III capital by January 2013 and liquidity requirements by January 2015, well before the agreed upon 2019 date.[3] Other changes, such as resolution planning and OTC derivatives reforms, are being implemented inline with the Basel III timeline. While, there is no sign, as of yet, of establishing a formal macroprudential framework to address systemic risks in the economy.

The literature on reforms is divided between supporters and critics. International regulators and politicians are among the strongest supporters of the new requirements. In Canada, the most notable advocates include the current Bank of Canada (BOC) Governor, Stephen Poloz, former Governor John Crow, and former Deputy Governors, David

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[3] This applies to the tier 1 common equity capital ratio, capital conservation buffer requirements, and the liquidity coverage ratio. The countercyclical capital buffer and the net stable funding ratio are being phased in according to the Basel III timeline.

Longworth and Paul Jenkins.[4] On the other hand, former BOC Governor, David Dodge, expressed discontent with many of the proposed reforms. In his view, policy makers have demanded stability at any cost and have lost sight of the importance of efficiency in the financial system.[5] Key views in the literature will be explored in further detail in the literature review section below.

This paper was developed in response to the recent federal consultation document for the review of the federal financial sector framework. Three key conclusions are reached with respect to strengthening the current framework.[6] First, Canadian regulators should be careful not to rely heavily on Basel III capital rules. While more stringent capital and liquidity requirements make financial institutions more resilient, there is a direct trade-off between stability and efficiency. I make the claim that a hybrid approach to regulation, one that is primarily focused on principles, and backed by capital rules, is most suitable in Canada's case. Second, an independent entity should be given the mandate for financial stability. The focus here is not on who should be given responsibility, nor the tools required for macroprudential oversight.[7] Rather, this paper contributes to the existing literature by proposing the governance structure and statutory powers required to best achieve this mandate. Lastly, federal regulators, particularly OSFI, can benefit from enhancing their independence from the political process. Emphasis will be given to improving the accountability structure of the federal framework, in its entirety, after incorporating the macroprudential regulator.

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[4] See Crow (2012); Jenkins and Longworth (2015).

[5] See Dodge (2015).

[6] Sunset clauses under the Bank Act (BA) requires the review of the financial sector framework every five years. In the Budget Implementation Act, 2016, No. 1, Parliament extended the most recent revision by two years until 2019 to facilitate the review process.

[7] Both topics have been covered extensively in the literature.

The remainder of this paper is structured as follows. Sections 2,3, and 4 help readers gain a good grasp of background information to put the recommendations that follow into context. Specifically, section 2 provides an overview of the current Canadian regulatory system. Section 3 discusses the major reforms made in Canada since the crisis of 2007/08, as well as work still in progress. Section 4 is a literature review of the main arguments made for and against the new regulations. Section 5 elaborates on the three propositions made above to increase the resilience of the Canadian financial sector. And section 6 concludes.

2. Financial Sector Regulation in Canada

This section provides an explanation of how the regulatory system works in Canada. It serves to help the reader understand who the regulators are, what legislations govern them, and how they all come together to make up the federal regulatory framework.

2.1 Legislation

The Bank Act (BA) is the principal federal statute governing all aspects of the financial system in Canada. Its main purposes, as listed in the act, are to: foster a strong and efficient banking sector; promote competition and the resilience of financial institutions; and maintain the public's confidence in the financial system. The BA governs, among other things, the ownership and governance structures of financial institutions, the capital they hold, and their liquidity requirements.

Regulations under the BA cover all schedule 1 domestic banks, as well as subsidiaries of foreign financial institutions (schedule 2 banks). Schedule 3 banks can operate in

Canada, but unlike schedule 1 and 2 banks, they are not incorporated under the BA and hence, face certain restrictions.

2.2 Federal Regulators

Supervision responsibilities are divided among federal and provincial regulators. Banks are wholly regulated at the federal level, whereas all securities markets are regulated provincially.[8] Insurance, credit unions, and trust and loan companies can be incorporated, and therefore, supervised, at either level. Credit unions and caisses populairs in Quebec were traditionally supervised by provincial regulators. However, in December 2012, the BA was amended to allow credit unions to be federally incorporated and become subject to OSFI's supervision.

Federal level regulation is encompassed within the following five federal agencies, each with distinct and complementary mandates:

The Minister of Finance (MOF) is responsible for the overall stability of the financial system. The Department of Finance (DOF) supports the minister in achieving this mandate. Under the BA, the minister has overarching authority over all matters pertaining to financial sector legislation, including the governing legislation that grants powers to the other four federal regulatory agencies.

The Office of the Superintendent of Financial Institutions (OSFI) was incorporated on the 2nd of July 1987, under the OSFI Act. OSFI is a de facto independent agency. It reports to Parliament through the MOF. The agency regulates and supervises all federally incorporated financial institutions and private pension plans. As such, OSFI was

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[8] The focus of the paper is on regulation at the federal level and therefore, detailed explanations of provincial regulation will not be provided.

responsible for the implementation of Basel II, 2.5, as well as the current Basel III reforms. Moreover, in 2012, Parliament granted OSFI limited powers to monitor and report on the Canada Mortgage and Housing Corporation's (CMHC) commercial activities, as well as to access its books and records.[9] However, OSFI's enforcement powers do not apply to CMHC.[10]

The Bank of Canada's (BOC) primary mandate is to achieve price stability by keeping inflation low and stable. It does so using monetary policy to influence the supply of money circulating in the economy. The Bank also promotes the stability of the financial system by providing liquidity, regulating payment and settlement systems, and recommending policies to strengthen financial stability in its semi-annual Financial System Review (FSR) publication.

The Canada Deposit Insurance Corporation (CDIC) is Canada's federal deposit insurer. It is a Crown corporation established in 1967 by the CDIC Act. The agency insures deposits at all federally-regulated deposit-taking institutions. It is also the resolution authority responsible for the winding down of financial institutions should they become insolvent. In this capacity, CDIC is heavily involved in architecting Basel III's resolution planning and bail-in reforms for Canada.

The last regulator making up the federal regulatory framework is the Financial Consumer Agency of Canada (FCAC). This is a federal agency with a clear mandate to protect consumers from financial fraud and promote financial literacy.

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[9] The CMHC is a Crown corporation providing mortgage insurance and securitization products to Canadian mortgage lenders. It is accountable, and reports directly to, the DOF.

[10] This is despite the significant systemic risks posed by CMHC's securitization programs. The CMHC's National Housing Act Mortgage-Backed Securities (NHA-MBS) and Canada Mortgage Bonds (CMB) make up the largest component of the Canadian shadow banking sector (Gravelle, Grieder, and Lavoie, 2013; IMF FSAP, 2014).

In addition to the five federal regulators, three committees exist to enhance cooperation and information sharing between them (See Table 1). The Financial Institutions Supervisory Committee (FISC) is the only statutory committee. It has a mandate to facilitate the exchange of information between regulators. The Senior Advisory Committee (SAC) is made up of heads of the 5 regulatory agencies with the purpose of identifying and addressing systemic risks. SAC is Canada's informal macroprudential regulator. The third committee is the Heads of Agencies Committee (HOA), which serves to enhance coordination between federal and provincial regulations.

Table 1 - *Federal Regulatory Committees*

	Senior Advisory Committee (SAC)	Financial Institutions Supervisory Committee (FISC)	Heads of Agencies Committee (HOA)
Chair	Deputy Minister of Finance	Superintendent of Financial Institutions	Governor of Bank of Canada
Members	DOF; BOC; OSFI; CDIC; FCAC	DOF; BOC; OSFI; CDIC; FCAC	DOF; BOC; OSFI; Heads of Ontario Securities Commission, British Columbia Securities Commission, Alberta Securities Commission, Autorité des Marchés Financiers; Canadian Securities Administrators (CSA) Chair[a]
Mandate	Monitor risks; share information; discuss policies to maintain safety of financial sector	Share information concerning the regulation of federally regulated financial institutions	Exchange information and enhance coordination between federal and provincial regulators

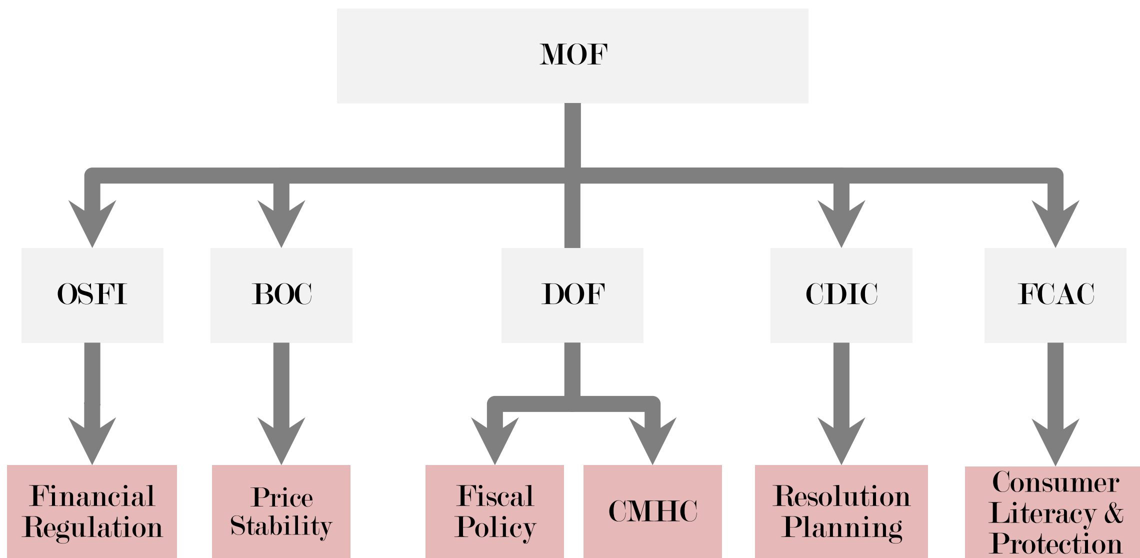
Legal Status	Non-statutory	Statutory	Non-statutory

Note. All three committees meet quarterly or as frequent as necessary.
[a] The CSA is an umbrella organization of provincial securities regulators that meet to coordinate regulatory activities across provinces.
Source: Adapted from IMF's FSAP.

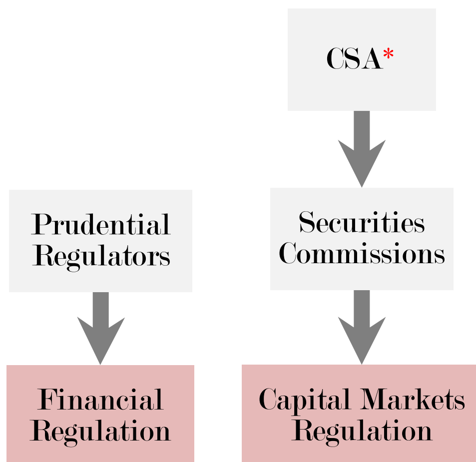
Figure 1 below brings it all together and illustrates how the current framework is set up. In section 5, I will be referring to figure 1 as I make specific recommendations to enhance the current framework.

Figure 1 - *Current Regulatory Framework in Canada*

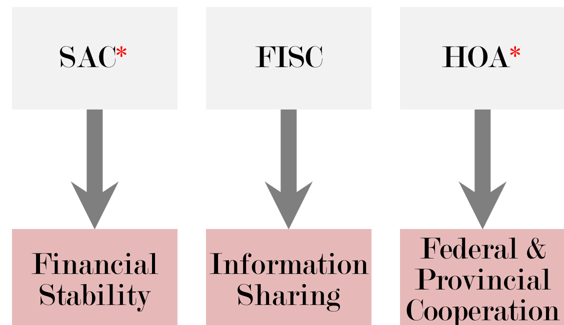
Federal Framework



Provincial Regulators



Committees



Note. * Non-statutory. Source: Author

2.3 The Informal Macroprudential Framework

Canada lacks a formal macroprudential framework to address financial stability risks. The current structure depends on the SAC, whose members share information and views on emerging issues when they meet. Based on the information shared, they decide whether actions to contain risks are warranted or not.[11] Therefore, the SAC does not follow a systematic procedure to identify and monitor system risks. Besides the BOC's semi-annual FSR, there is no formal body with a clear mandate to monitor risks on a regular basis. Likewise, there is no indication as to what tools should be used for macroprudential regulation, nor is there clear accountability for who is responsible for financial stability in Canada.

2.4 OSFI's Principles-Based Regulation

The BA empowers the Superintendent of OSFI to set minimum prudential standards for financial institutions. To set these standards, OSFI uses guidelines and advisories which articulate its supervisory requirements in the form of expectations.[12] The guidelines set out what OSFI considers appropriate regarding matters such as capital and liquidity requirements, exposure limits, accounting standards and best business practices.

The use of guidelines, as opposed to black letter rules, provides OSFI with two benefits. First, OSFI is able to swiftly react to emerging threats with flexibility and outside of the bureaucratic and, possibly lengthy, legislative process. Second, it enables

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[11] Recent examples of actions taken by SAC members include restricting mortgage rules to curb housing market risks.

[12] Other tools occasionally used by OSFI are rulings, public letters, and discussion papers.

OSFI to practice close-touch supervision with banks, whereby both can cooperate to address emerging threats.

Even though these guidelines and advisories are not legally binding per se, OSFI has sufficient authority under the BA to compel compliance if standards are not met. For example, if an institution is deemed non-compliant, the BA permits OSFI to respond by conducting special examinations, enforcing prudential agreements, applying to a court for an order of compliance, and/or ultimately taking full control of the institution.[13] Therefore, provided non-compliance, guidelines and advisories can be made indirectly enforceable in law, subject to OSFI's sole reasonable discretion.

3. Progress of Reforms in Canada

This section covers the reforms underway in Canada. Some reforms have been completed and are in force, while others are still in the consultation process. Most FSB reforms are planned to be completed in all G20 jurisdictions by January 2019.

3.1 Basel III Requirements

The focus of Basel III is on increasing capital and liquidity requirements. More emphasis, however, is given to the former. Equity capital serves two main functions. First, equity is the first absorber of losses, which shields creditors from default on their debt instruments. Second, provided there exists proper governance structures that align

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[13] OSFI has a four-stage intervention framework to bring a bank into full compliance. In the first stage OSFI provides an early warning. In the second stage, OSFI may require corrective actions to be taken. In the third stage, it is anticipated that the bank will fail and OSFI prepares for regulatory administration of the bank. The final stage denotes the bank as no longer viable and OSFI commences restructuring to sell the bank's assets to another institution.
See Bank of International Settlements RCAP Assessment of Basel III Regulations - Canada (2014).

incentives of managers and stockholders, higher equity also encourages prudent risk management. Thus, by increasing capital, Basel III aims to make financial institutions more resilient to shocks.

To implement Basel's capital requirements, OSFI uses three capital-to-assets ratios. First, financial institutions are required to hold, as a minimum, Common Equity Tier 1 (CET 1) capital of 4.5% of risk-weighted assets (RWAs).[14] This is up from the 2% requirement in Basel II. Additionally, banks are required to hold not less than 6% of their RWAs in Tier 1 Capital.[15] Finally, total capital of banks, that is, Tier 1 plus Tier 2 Capital, should be at least 8% of RWAs.

On top of the minimum capital ratios, Basel III introduced two capital buffers that act as safeguards in periods of stress. A capital conservation buffer of 2.5% of RWAs is required on top of the 8% Total Capital Ratio above. This buffer can be drawn down in difficult times as a supplementary form of financing. Internationally, the capital conservation buffer was to be phased-in over 2016-2019. However, OSFI required Canadian banks to meet the all-in capital requirement of 10.5% (Total Capital + capital conservation buffer) by 2013.

The other buffer is the countercyclical capital buffer. This is a macroprudential tool to be used intermittently by OSFI to take account of the macroprudential environment in which financial institutions operate. At OSFI's sole discretion, it can be deployed during periods of excessive credit growth in order to reduce systemic risks. Applying the buffer is expected to work like this: after first consulting with SAC, OSFI may decide that

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[14] Appendix A contains an explanation of the risk weights used by OSFI.

[15] Tier 1 is the strictest definition of capital that is subordinate to all other types capital. It consists of Common Equity Tier 1 + other Tier 1 Capital. For a comprehensive explanation of the capital definitions used by OSFI, see Chapter 2 of the Capital Adequacy Requirements Guideline (2016).

intervention is warranted to curb credit growth. If so, an additional 0 – 2.5% of RWAs in additional capital will be imposed as a buffer.[16] This requirement is currently being phased-in, and expected to be in effect by January 2019.

Furthermore, Canada's largest six banks are subject to more stringent capital requirements.[17] Inline with FSB recommendations, OSFI declared Canada's largest six banks as Domestic Systemically Important Banks (D-SIBs) in 2013. D-SIBs were subject to a CET 1 surcharge of 1% of RWAs effective January 2016. The aim of the surcharge is to increase the resilience of systemically-important banks by providing additional loss coverage.

Financial institutions are also subject to liquidity and leverage requirements under Basel III. To meet liquidity requirements, banks must have, as a minimum, a Liquidity Coverage Ratio (LCR), as well as a Net Stable Funding Ratio (NSFR), of 100%.[18] The LCR aims to ensure that institutions are able to meet liquidity requirements under a 30-day stress period. This provides management of an institution under stress adequate time to undertake corrective action or prepare for an orderly resolution. The NSFR is a longer-term requirement ensuring that institutions maintain a stable funding profile in relation to the assets they hold. The LCR requirement was in effect on January 2015, and the NSFR will be required by January 2019. As for the leverage requirements, starting on

[16]OSFI's Capital Adequacy Requirements Guideline (2016).

[17] The largest six banks in Canada are The National Bank of Canada, Royal Bank, The Bank of Montreal, Canadian Imperial Bank of Commerce, The Bank of Nova Scotia and TD Canada Trust.

[18] The LCR is defined as the ratio of high quality liquid assets (HQLAs) to net cash outflows over a 30-day horizon. HQLAs are cash or assets that can be converted into cash at little or no loss of value in private markets. The NSFR is defined as the ratio of available stable funding to required stable funding over a 1-year period. See OSFI's Liquidity Adequacy Requirement (2017) for more information.

January 2015, banks were required to maintain a Leverage Ratio (LR) of at least 3%.[19] By restricting leverage, the LR aims to avoid a deleveraging scenario comparable to the one exacerbating the crisis of 2007/08. It is intended to be a simple, non-risk-based measure, that reinforces the risk-based capital requirements above.

3.2 Bank Recapitalization Regime

The FSB has recommended that member jurisdictions create resolution plans that ensure the orderly resolution of D-SIBs. Accordingly, the DOF established the Taxpayer Protection and Bank Recapitalization regime with the aim of ending "too-big-to-fail."[20] Under the regime, certain liabilities of D-SIBs could be quickly converted into regulatory capital should a bank fail. This enables the bank to resume critical operations, while ensuring that shareholders and creditors bear the losses, and not the taxpayer.

To make this work, D-SIBs must have additional loss absorbing capacity to withstand severe losses and emerge from a conversion adequately capitalized. Thus, OSFI established the Higher Loss Absorbency (HLA) requirement, under which D-SIBs will be required to hold sufficient convertible capital, in the form of Non-Viable Contingent Capital (NVCC) and long-term senior debt, which will be the first line of defense in absorbing losses. Public consultations recently completed by OSFI proposed an HLA requirement in the range of 17 – 23% of RWAs.[21] The scope of liabilities to be included in

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[19] The LR is the ratio of Tier 1 Capital to an exposure measure. The exposure measure used by OSFI consists of on balance sheet exposures; derivative exposures; securities financing transaction (SFT) exposures; and off-balance sheet (OBS) items. For the specific treatment of exposures see OSFI's Leverage Requirements Guideline (2014).

[20] Legislation introducing the regime received Royal Assent on June 22, 2016.

[21] For example, a HLA requirement of 23% would enable banks to absorb losses of 11.5% of RWA (made up of convertible liabilities) and emerge from the conversion with total regulatory capital of 11.5% of RWA (consisting of Basel III Total Capital Ratio of 10.5% plus the capital surcharge of 1%).

conversions is also under consultation.[22] Once the consultations are completed, OSFI is expected to release final HLA guidelines in September 2017, and full implementation is expected to follow in January 2019. This is inline with the FSB's planned timeline.

The proposed resolution regime will work in concert with Canada's existing resolution framework. During the conversion, CDIC, as the federal resolution authority, may take temporary control or ownership of the institution. By doing so, CDIC may be able to maximize the preservation of the bank's assets value, as well as minimize contagion to other financial institutions.[23] To further minimize risks, the government is reviewing the legislation governing CDIC's current tools and powers to augment the conversion process.

3.3 Over-The-Counter Derivatives Reforms

In 2009, at the Pittsburgh Summit, G20 leaders agreed on improving OTC derivatives regulation. Prior to the crisis, OTC derivatives were largely unregulated in all the G20 jurisdictions. At the Summit, policy makers committed to: requiring all standardized contracts to be traded on platforms or exchanges, where appropriate; clearing standardized contracts through central counterparties; and requiring the reporting of OTC contracts to trade repositories. In 2012, the Basel Committee on Banking Supervision (BCBS) further required that non-centrally cleared contracts be subject to more stringent capital and margin requirements. As of September 2016, trade reporting and margin requirements were in force in Canada and work is underway to fulfil the other two requirements.[24]

[22] Canadians' deposits are not subject to losses under the regime (OSFI's Draft Guidelines on Total Loss Absorbing Capacity, 2017).

[23] DOF's Consultation Paper on Taxpayer Protection and Bank Recapitalization Regime (2014).

[24] FSB's Implementation and Effects of the G20 Financial Regulatory Reforms (2016).

3.4 Shadow Banking Regulation

The FSB, in collaboration with national regulators, has been working on enhancing the oversight and monitoring of shadow banks. A key loophole in the years preceding the crisis was a poor alignment of incentives in securitizations. Many financial institutions failed to account for risks in securitised products, whether deliberately or not, as they were usually offloaded to other investors. Consequently, reforms have focused on improving the alignment of incentives in the shadow banking sector to prevent the future build up of risks. Efforts have also been made to minimize the susceptibility of money market funds to runs, as well as to improve data collection for better oversight. To this end, the FSB conducts an intensive monitoring exercise annually to identify areas or activities in which rapid growth may pose additional risks.[25] In Canada, draft regulations for an enhanced securitization framework that addresses some of the weaknesses mentioned are set to be released by OSFI before the end of 2017.

3.5 Macroprudential Framework

The crisis has highlighted the need for macroprudential regulation. In the run up to the crisis, regulators failed to detect many of the vulnerabilities emanating from the similar exposures banks had on their balance sheets. While, separately, banks seemed well capitalized, the financial sector, as a whole, was increasingly vulnerable to shocks in housing markets. In response, many jurisdictions established legislative frameworks for macroprudential regulation to better identify and constrain risks to the financial sector. For example, the United States has established the Financial Stability Oversight Council (FSOC) under the Dodd-Frank Act. Likewise, the Financial Policy Committee (FPC) and

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[25] See the FSB's Global Shadow Banking Monitoring Report (2016).

the European Systemic Risk Board (ESRB) were respectively established in the United Kingdom and the European Union.

Unlike those countries, Canadian authorities have expressed no intention to create such a framework in Canada.[26] They argue that the current informal structure, with SAC acting as macroprudential regulator, has served them well. This is because of the current framework's flexibility and nimbleness in reacting to emerging issues. In section 5, I make the counterargument for Canada's urgent need for a statutory macroprudential regulator, with a clearly defined responsibility for financial stability.

A timeline of the implementation of the regulations covered in this section can be found in Appendix B. Note that the reforms discussed here are not exhaustive. Only those that are directly relevant to the subject of this paper have been included.[27]

The next section provides a summary of some of the literature views on the FSB's reforms and concludes the prelude to the recommendations covered in section 5.

4. Literature Review on FSB Regulations[28]

The majority of scholars agree that a trade-off exists between stability and efficiency in the financial sector. Where they disagree, however, is on the degree of significance that each should be given. While a more stable financial sector would certainly minimize the severity of output losses from crises, there are still costs to consider. These costs arise from the more expensive equity financing and liquid assets banks are now required to hold.

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[26] See IMF's Staff Report for the 2016 Article IV Consultation (2016).

[27] For more information about some of the regulatory changes not covered by this paper see http://www.fsb.org/what-we-do/about-the-compendium-of-standards/key_standards/

[28] Any use of the word "regulations" in this section refers to the reforms made port-crisis and not regulations in the general sense.

Additionally, more negative repercussions are created as these costs are passed onto consumers and other borrowers.

Naturally, the FSB and BCBS claim that the benefits from the newly introduced regulations outweigh the costs (Bank for International Settlements , 2010). During their joint impact assessments in 2010, they concluded that, due to the reforms, financial crises would occur less often, and if they did, their consequences would be less severe. Moreover, they found that the proposed regulations could smooth out macroeconomic cycles in a way that mitigates the effects of booms and busts.

Aaron, Demers, & Durr (2015) also think favourably of the suggested reforms. This is despite evidence that they may reduce incentives for market making by financial institutions. The authors found that the LCR and LR could encourage a shift from highly-rated sovereign bonds and repos toward HQLAs and higher risk-weighted loans.[29] The departure from fixed-income markets would cause liquidity to fall in those markets and increase costs for market participants. Nonetheless, they argue that liquidity was underpriced in many markets before the crisis. Hence, the increased costs from regulations are needed to improve risk-pricing and prevent excessive risktaking.

Other studies in the literature have attempted to empirically assess the benefits from Basel III's capital requirements. Aiyar, Calomiris, and Wieladek (2015) provide an excellect survey of some of the empirical studies undertaken. One analysis, by Berger and Bouwman (as cited in Aiyar et al., 2015), found that capital was always stabilizing for small US banks, but only stabilizing for larger banks in stressful times. They also show evidence that higher capital requirements may induce banks to become more efficient and decrease their holdings of risky assets. Similarly, another analysis by Aiyar et al. (2015)

[29] Since the LR is not a risk-weighted ratio.

using probit models demonstrated that higher minimum capital requirements were associated with a lower risk of financial distress in UK banks. The authors also find evidence supporting the LR's effectiveness in minimizing the chances of financial distress.

The countercyclical capital buffer was also a subject of interest in several empirical papers. Aiyar et al. (2015) demonstrate that increasing the countercyclical capital buffer by 1% led to a decrease of 6% in loans to domestic borrowers, and 5% in loans to international borrowers. Another paper by Brun, Fraisse, and Thesmar showed similar results for French banks (as cited in Aiyar et al., 2015).

For the most part, policy makers in Canada also welcomed the reforms suggested by the FSB and the BCBS. Many officials at the BOC support the creation of a macroprudential regulator, in particular(Crow, 2012; Jenkins & Longworth, 2015; Jenkins & Thiessen, 2012; Poloz, 2014). They all seem to agree that without a macroprudential framework in place, monetary policy has become more heavily involved in addressing financial risks than it should. As Poloz (2014) points out, during the period after the crisis of 2007/08, the BOC has had only one instrument, the policy interest rate, to control two outcomes: financial stability and price stability. By having to account for financial stability in its decisions, the BOC has faced significant constraints on the degree of flexibility it has in achieving its primary objective of price stability. Therefore, incorporating a macroprudential framework, with the clear responsibility of addressing financial stability risks, means that the BOC no longer needs to joggle two objectives with one tool. Instead, the Bank can focus on achieving price stability through the conduct of monetary policy. Thus, having two separate frameworks - each with delineated tools - one for monetary policy and another for macroprudential policy, can better address

vulnerabilities to financial stability, without compromising the BOC's ability in achieving price stability.

Similarly, the International Monetary Fund (IMF) has also supported the creation of a macroprudential framework in Canada. In its Financial Sector Assessment Program (FSAP), the IMF argued that assigning a body with a mandate for financial stability would help preserve the safety of the financial sector. Additionally, the improvements to accountability would lead to a greater willingness to act in the face of risks.[30]

Yet other scholars have supported their claims for the need for a macroprudential framework by referring to specific examples in history. For example, Aiyar et al. (2015) argue that the raising of interest rates by the Colombian central bank was unsuccessful at curbing the excessive growth in credit in Columbia during 2006/07. It was only through the use of macroprudential tools, in the form of provisioning requirements and capital controls, that credit growth began to slow. Likewise, Krznar & Morsink (2014) claim that the slowdown in mortgage credit growth in Canada since 2009 could, in part, be attributed to the macroprudential policies undertaken by the federal government to contain some of the risks in the housing market.

That said, all is not gloomy for the FSB reforms. In the opponents' camp, former BOC Governor, David Dodge, has expressed clear disapproval of the regulations. According to Dodge (2015), the particular choice of regulatory instruments chosen has impaired efficiency more than necessary. He argues that the consensus around the world has been stability at any price, with little consideration given to the associated costs. Further, he makes the claim that the principles-based framework to regulation in Canada, which is based on close cooperation between the DOF, OSFI, BOC, and CDIC, and close-touch

[30] The FSAP is a joint exercise performed by the International Monetary Fund and the World Bank every 5 years that provides a thorough assessment of financial sectors in G20 countries.

supervision of large banks, has helped the country weather the crisis relatively well. The same cannot be said for other jurisdictions that relied heavily on Basel III-type rules. Despite this, he says, Canadian regulators were dragged into this global movement, relying on black letter rules in regulation more than necessary.

But, Dodge is not skeptical of all the reforms being made. Specifically, he sees benefits from resolution planning and the needed protection of taxpayers from failing systemic banks. He is also a proponent of market conduct reforms, such as those targeting OTC derivatives and shadow banks. Using the Canadian ABCP and US mortgage-backed securities (MBS) markets as examples, he makes the point that improper regulation of capital markets was a major source of instability in 2007/08.

Other critics have categorized the attention given to macroprudential regulation as excessive. They point out that excessive risk taking during the crisis was primarily attributable to a combination of loose monetary policy, and ill-devised government policies in mortgage funding (Aiyar et al., 2015; Laeven & Valencia, 2013). If those weaknesses are addressed, the need for macroprudential tools to contain excessive credit growth, by using the countercyclical capital buffer, for example, would significantly diminished.

5. Propositions to Strengthen Canada's Regulatory Framework

Having provided the reader with information on the regulatory system in Canada and the reforms made, we are now ready to delve into the proposals to strengthen the regulatory framework in Canada. This section discusses three important recommendations that contribute to the resilience of the financial sector: first, Canada would be best served

by a regulatory framework that is primarily based on principles, with backing from Basel III rules; Second, a single body must by provided with a clear mandate for macroprudential oversight. I propose the governance structure, and the statutory powers required as a prerequisite to optimally monitor and address systemic risks; Lastly, federal regulators should be granted more independence from the political system in order to eliminate any impediments to their willingness to act.

5.1 Why a "Hybrid" Approach to Regulation Suits Canada

Advocates and opponents of Basel III tend to overemphasize one side of the stability vs efficiency debate. Canadian authorities have been too aggressive in their implementation of the reforms, which risks compromising efficiency. By the same token, opponents of Basel III have overemphasized principles in regulation, without considering the potential benefits from having certain rules in place. The hybrid approach I propose is a middle ground, where regulators continue to apply principles as their primary method of regulation, while simultaneously implementing Basel III rules in a way that is less aggressive, so as to preserve the operational efficiency of Canadian banks.

In developing my argument, I first emphasize the importance of continuing to rely on principles in Canadian regulation. Subsequently, I explain why the minimum requirements of Basel III are needed in Canada to further bolster the regulatory framework.

Canadian regulators have built a tradition of good communication based on close-touch supervision with banks. All institutions subject to OSFI's supervision are assigned a chief regulator who maintains close contact with the institution throughout the

supervisory process.[31] This has built a regulatory relationship at a very close level, where OSFI is perceived as accessible rather than as a law-enforcement agency. Consequently, financial institutions "bought into" the regulatory process, and meeting requirements was no longer perceived as a large burden that had to be dealt with.[32] Therefore, on those grounds, imposing a rules-only approach would seem counterproductive to the openness and effectiveness of this relationship.

Furthermore, for any form of regulation to be effective in achieving stability, banks must first buy into the regulations being imposed. Since the financial crisis, institutions and regulators alike, have held a sense of pride in the current system, which has helped them come out from the crisis in much better shape than their international counterparts. Hence, it is difficult to conceive how banks would rationally feel that more stringent rules are warranted. It follows then, that going forward, we are constrained to capitalizing on the system we currently have in place, and we should avoid bringing about large changes that may dwindle the strong base already in place.

Financial innovation is another area where using principles and cooperation, rather than rules, has many advantages. Recently, a niche of "fintech" companies has emerged with the purpose of providing technological solutions to large banks. In Canada, the growth of fintech companies has been rapid, with companies attracting nearly $1 billion in capital since 2010.[33] Although this encourages innovation in the financial sector, and can provide customers with a more enriched experience when banking, problems can start developing if regulators are not flexible enough to catch up with new technologies.

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[31] See OSFI's Supervisory Framework (2010).

[32] It is this relationship that many consider as the reason behind Canada's unique experience with the crisis (FSB Peer Review, 2012; Dodge, 2015).

[33] See the DOF's Federal Consultation Document for the Review of the Federal Financial Sector Framework (2016).

Following a rules-based approach does not provide such flexibility. To add to the problem, the next mandated legislative review in Canada is scheduled to occur in 2024. Major advances in technology can occur between now and then before rules can be amended. Therefore, providing regulators with more discretion through applying principles, rather than rules, is important in ensuring that regulators remain flexible to changes as they occur. This, coupled with the cooperative environment already in place in Canada, will provide OSFI with enough nimbleness and knowledge to keep up with innovation in the financial sector.[34]

That said, I do see a place for Basel III rules in Canada. Unlike Dodge (2015) and others that disapprove of the rules fundamentally, my gripe with Basel III is on the way the rules were implemented in Canada, and the potential weight assigned to them in the conduct of regulation in the future. Specifically, I argue that Basel III rules should be implemented as a one-time change that meets the minimum required levels, not more, and which is to be phased-in with the timeline provided by the BCBS. Once in place, Canadian regulators should rely solely on principles as an active tool for regulation.

The reasons behind the importance of Basel III in the Canadian framework are threefold: First, in addition to the findings of empirical studies (reviewed in section 4), the crisis provides evidence for the important role of capital in strengthening the resilience of financial institutions. Some of Canada's relative success in navigating the financial crisis can be attributed to OSFI's higher capital standards than those required internationally. For example, in 2007, Canadian institutions were required to maintain an

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[34] Canadian authorities may also want to consider the "sandbox" model already in use in Singapore and the UK. This model creates a lab-like environment where regulators and institutions can come together while new ideas and products are being developed. In the "sandbox," fintech companies have all regulatory restrictions waived to enhance their capacity to innovate. Likewise, regulators can discover all the intricate details of the new product or service early in the process. This way, cooperation is enhanced, innovation is encouraged in the financial sector, and the regulators are well informed of the risks.

assets-to-capital multiple of 20 to 1. In comparison, that same multiple at the world's 50 largest banks was, on average, 30. Moreover, in 1999, OSFI required Canadian financial institutions to increase their Basel II Tier 1 Capital and Total Capital ratios from 4% and 8%, to 7% and 10%, respectively. Those additional requirements were not enforced in other jurisdictions such as the US, the UK, and the European Union.[35]

Second, it is important to notice that a principles approach to regulation relies heavily on accurate judgement by OSFI. Since regulators are, in the end, human beings, they will make a few right decisions, as well as a few wrong ones. The Great Depression and the financial crisis of 2007/08 are good examples when regulators were wrong. In both crises, regulators did not fully understand the risks involved and were largely taken by surprise. Therefore, having slightly higher capital rules would be prudent to increase the resilience of financial institutions against such surprises when they occur. And they will.

Third, given Canada's relative success with the last crisis, there is a heightened risk of becoming complacent. This risk applies to both regulators, as well as financial institutions. Imposing more stringent rules can serve as a reminder that, while we did better than others, weaknesses still exist and more work needs to be done to maintain the safety of the financial sector.

Importantly here, however, is that OSFI and other regulators stick to meeting the minimum Basel III requirements and not go beyond them. Unfortunately, as Table 2 shows, this was not the case when the rules were implemented in Canada. Capital rules, the LR, and margin requirements for OTC derivatives have all been implemented well in advance of other jurisdictions. While such behaviour would be understandable by other countries after the crisis, it is uncalled for in Canada's case. I suspect that the reason

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[35] Longworth (2014).

behind this is the FSB's race-to-the-top and peer pressure culture, which might have led to the rush witnessed in implementing the reforms in Canada.[36]

Table 2 - *Basel III Implementation Dates: Areas where Canada was more aggressive than other jurisdictions are highlighted*

	Canada	US	UK	EU	Basel Timeline – Phase-in (Completed) Date
Capital Requirements (CET 1, Tier 1, & Total Capital Ratios)	(2013)	(2014)	(2014)	(2014)	2013 (2015)
Conservation Buffer	(2013)	2016 (2019)	(2014)	2016 (2019)	2016 (2019)
Countercyclical Buffer	2016 (2019)	2016 (2019)	(2014)	2016 (2019)	2016 (2019)
D-SIB Surcharge	(2016)	2016 (2019)	2016 (2019)	(2016)	2016 (2019)
D-SIB High Loss Absorbing Capacity	(2017)	TBD	TBD[b]	TBD[b]	2016 (2019)
Margin Requirements for OTC Derivatives	(2016)	2016 (2020)	(2017)	(2017)	2016 (2019)
Liquidity Coverage Ratio	(2015)	(2015)	(2015)	(2015)	2015 (2019)

[36] The FSB promotes a race-to-the-top environment by performing 3 exercises:1. Members commit to undergoing an assessment under the FSAP every 5 years; 2. Members must disclose their degree of adherence to International Financial Standards (IFS) on a continuous basis; 3. Members commit to undergoing periodic peer reviews where other members assess the progress made.

Net Stable Funding Ratio	(2019)	TBD[a]	TBD[b]	TBD[b]	(2018)
Leverage Ratio	(2015)	2015 (2018)	(2016)	(2018)	2015 (2018)

Note. [a]Draft regulation published and proposal for final rule issued in May 2016.
[b]Proposal was adopted by EU Commission in November 2016 and is currently being considered by legislator.
Source: Author's compilation; BIS.

The main argument for not going beyond minimums is, obviously, the efficiency trade-off involved. However, other signals exist that provide more good reasons for why this should be the case. One such issue is that the Canadian financial sector has become more concentrated in recent years. The largest six banks have grown larger and now own, a concerning, 93% of all assets in the banking sector. This is not a favourable outcome from a financial stability perspective. Unfortunately, the aggressive implementation of Basel III has aggravated the problem as smaller banks are faced with a proportionately larger regulatory burden, which makes it even harder for them to compete.[37] It would thus be prudent to stick with the minimum capital requirements to lessen the burden on smaller banks.

Furthermore, key findings from recent assessments show that banks are not calculating RWAs consistently.[38] The variability stems from the banks' use of different modeling choices. While variation is needed to account for differences between banks' operations, too much variation may undermine confidence in the framework and bring the possibility of manipulation in to question. This has put the BCBS in a considerable dilemma recently as to the extent of discretion banks should be given when calculating

[37] See the DOF's Federal Consultation Document for the Review of the Financial Sector Framework (2016).

[38] See Chouinard and Paulin (2014).

RWAs.[39] Therefore, the point to be made is that we should be aware of the flaws in Basel III requirements and so we need to be careful when applying them in Canada.

The arguments laid out so far in this section explain why Canada can benefit from a hybrid approach to regulation, *provided* that regulators do not go beyond minimum Basel III requirements. Notice that the minimum requirements of Basel III represent a 1.5% and 0.5% increase in Tier 1 Capital and Total Capital Ratios, respectively, from the requirements in 1999. It is hard to imagine that such a modest increase would be detrimental to Canadian banks' efficiency or their ability to compete, as argued by opponents to the reforms. Conversely, the benefits cannot be overstated. Having better capitalized banks when crises hit, as well as ensuring that regulators and financial institutions do not become complacent, more than make up for the limited expected losses in efficiency. Again, what is key here is that regulators stick to required minimums going forward, and continue to emphasize the tried-and-true principles in financial sector regulation.

5.2 Macroprudential Framework for Canada's Financial Sector

The last FSAP conducted by the IMF revealed that Canadian authorities do not see the need for a dedicated macroprudential regulator.[40] I argue to the contrary of this view, and explain how Canada would greatly benefit from a more formal framework. Specifically, I make the claim that the current SAC, FISC, and HOA committees should

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[39] See Aiyar et al. (2015) and the FSB's Implementation and Effects of the G20 Financial Regulatory Reforms (2016). Also see Appendix A for a description of the many complicated approaches used by OSFI to calculate RWAs.

[40] See the FSB's Financial Sector Assessment Program (2014).

be consolidated into a single macroprudential regulator that is to be given a financial stability mandate, with clearly defined powers, tools, and accountability.

Questions around who should be responsible and what tools should be used have already been explored extensively in the literature and will not be addressed here.[41] Instead, the emphasis here is on the governance structure and statutory powers needed for effective macroprudential oversight.

My objective is to prove that the current framework is weak in monitoring risks, especially at the provincial level. Furthermore, the SAC's structure does not allow for sufficient cooperation between regulators, both domestically and internationally. A formal framework can address these weaknesses, as well as maintain, and in some cases, improve on, the flexibility and nimbleness of the current system.

5.2.1 Need for a Formal Framework

The IMF and several BOC officials made a few valid arguments as to why Canada needs a formal macroprudential regulator.[42] BOC officials stressed that a more formal framework would greatly enhance the BOC's flexibility in its conduct of monetary policy. Likewise, in its 2014 FSAP, the IMF pointed out that providing a single entity with a mandate for financial stability would strengthen accountability, and thus the willingness to respond to emerging issues. Yet, I would like to highlight other issues specific to the Canadian economy that further support the need for change.

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[41] See Appendix D for a summary of some of the arguments made by Longworth (2014) and Crow (2012) on possible macroprudential tools. Jenkins and Thiessen (2012) also provide four different alternatives as to who should be given responsibility. The current consensus is that an independent committee of federal regulators be set up and be given responsibility for financial stability.

[42] Refer to Section 4 for more information.

The first of these issues is that the current structure is poor at identifying risks. The easing of mortgage requirements in the years leading up to the crisis of 2007/08 is an good example. Loan-to-value (LTV) ratios and amortization periods were being increased systematically between 1999 and 2006. Such easing has made the economy, and especially households, more vulnerable to economic shocks. One would imagine that if systemic risks were well understood at the time, regulators would have tightened mortgage rules, or at least, left them unchanged.

Today, with the current SAC structure, not much has changed, since the crisis, in the way systemic risks are being monitored. Apart from BOC's semi-annual FSR, system-wide monitoring is not performed on a regular basis. This deficiency is most apparent at the provincial level, as provincial regulators are not represented in the SAC. Thus, risks in securities markets and their linkages to other parts of the financial system are not being captured at the national level. Likewise, activities of pension funds and other large deposit-taking institutions subject to provincial regulation are also not being monitored. Given the size of these institutions, should any of them fail, the stability of the financial sector would certainly be undermined. Add to that even more vulnerabilities from the rise in shadow banking activities since 2007. Since shadow banks are not subject to federal oversight, they do not fall under the SAC's oversight.

Speaking of shadow banking risks, another, and perhaps the most compelling argument in favour of a formal framework, is the need to contain housing market risks.[43] The DOF and OSFI introduced several measures over the past few years to try and cool down the expansion in housing credit (See Appendix C). While those informal measures were broadly effective in improving the risk profiles of new mortgages, the public was left

[43] In its April 2017 Monetary Policy Report, the BOC identified household debt and housing prices as the primary source of risks to financial stability in Canada.

wondering whether these adjustments were part of a longer-term plan to bring down house prices, or if they were temporary policies that would be loosened again sometime in the future. Having a formal macroprudential body that communicates regularly with the public, would provide for better guidance as to what market participants should anticipate in the future. Consequently, the public would be better aware of the risks involved, as well as what is being done to address them. This should minimize speculation in such a vulnerable sector which would, ultimately, minimize risks to the broader economy.

Important to note here, as well, is the government's plan to gradually privatise mortgage insurance and increase lenders' exposure to mortgage default risks.[44] Given the sheer size of outstanding mortgages insured by the federal government, the phasing-out of the government's insurance programs must be done with great care and precision. Any error in the process can have significant adverse effects and spillovers to other sectors in the economy. A formal macroprudential regulator can keep a closer eye on the process as it unfolds and react promptly to emerging risks should they happen. The current framework, with SAC members meeting quarterly, is simply inadequate.

Lastly, the internationalization of banks and pension funds in recent years reaffirms the need to improve prudential oversight. In recent years, Canadian banks and pension funds expanded significantly in international markets. Foreign assets of banks and pension funds now make up 50% and 35%, respectively, of their total assets (see Figure 2). This branching out of large financial institutions in Canada dictates the need for enhanced cooperation among international regulators in order to prevent regulatory arbitrage across jurisdictions. Typically, this would require regular data collection and information sharing, which is not featured in the current framework.

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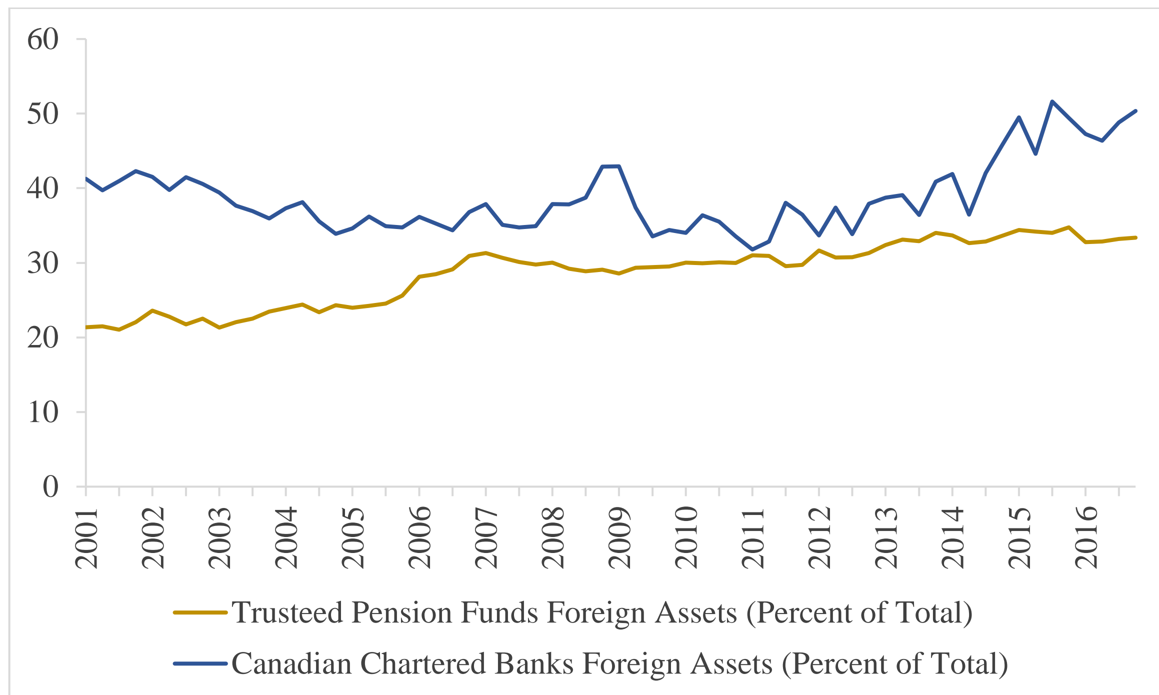
[44] See the DOF's Consultation Document on Lender Risk Sharing on Government-Backed Insured Mortgages (2017).

Figure 2 - *Expansion of Canadian Banks and Pension Funds into Foreign Markets*



Note. Last observation Q4 2016
Data: Banks – BOC Banking and Financial Statistics; Pension Funds – Statistics Canada.

5.2.2 Governance

To be effective in addressing the vulnerabilities above, the governance structure of the new body must be well laid out. Specifically, it should: grant the body independence from the political process; allow for an all-encompassing oversight over the financial sector; and incorporate the existing wealth of expertise of Canadian regulators into the decisions made. These three important factors prescribe the governance structure that follows.

Table 3 provides information on the governance structure in the US, the UK, and the EU. Work done in these jurisdictions provides valuable cues as to how the entity should be set up in Canada. Notice the stark differences between jurisdictions on who chairs the body, who makes up the voting members, and the sort of activities performed. This

variation is warranted given that each jurisdiction is different. Importantly, in designing Canada's governance structure, we need to take account of the regulatory environment already available to ensure a seamless integration of the new body.

Table 3 - *Governance Structures of Macroprudential Regulators in the US, UK, and European Union*

	Financial Stability Oversight Council (US)	Financial Policy Committee (UK)	European Systemic Risk Board (EU)
Form	Committee of chairs of federal regulators and the Fed; Housed in Treasury.	Committee housed in the Bank of England.	Fully functional body with a decision-making board made up of European central bank officials.
Chair	Secretary of the Treasury	Governor of the Bank of England	President of the European Central Bank
Voting Members	Secretary of the Treasury; Fed Chair; Heads of 7 federal regulators: SEC, CFTC, OCC, CFPB, FDIC, FHFA, NCUA; 1 external	Governor of the Bank of England; Bank of England officials; 2 Regulators; external members	38: Majority are Governors of European central banks; President of the ECB; Governor of the Bank of England; 2 Economics professors; European regulators
Purpose	Directs the Office of Financial Research to monitor risks to financial stability; Information-sharing and coordination between member regulators and the Fed	Employs macroprudential tools and makes recommendations to strengthen financial sector stability. Issue directions to the FCA (financial regulator in the UK)	Makes recommendations and issue warnings to European regulators

Accountable to	US Parliament	UK Parliament	European Parliament

Source: Compiled from FPC website; ESRB website; Jenkins and Longworth (2015).

Following the consensus in the literature, responsibility for macroprudential regulation should be given to an independent entity with a statutory mandate for financial stability.[45] Staffing of the new macroprudential regulator should be comprised of several federal and provincial agencies to take advantage of the available expertise, as well as to encompass broad aspects of systemic risks,. Participation should be just enough for effective oversight – too few and certain systemic risks will be left out, while too many could create redundancy and communication problems. Regular staff operations will involve gathering data, conducting stress tests, and monitoring securities markets, credit and liquidity cycles, as well as the asset exposures of financial institutions.

5.2.2.1 Voting Members

A decision-making board should be established within the new entity. Voting members of the board should include: The Superintendent of OSFI, the Governor of the BOC, the Deputy Minister of Finance, the CDIC Chair, Chair of the national securities regulator, and the Heads of the provincial regulators of Ontario, British Columbia, Alberta, and Quebec. The roles of each, and the reasons for their inclusion, is as follows.

The inclusion of the Superintendent of OSFI is straightforward. OSFI is the sole regulator of financial institutions in Canada. Incorporating OSFI would thus be invaluable when addressing "resiliency" risks – risks arising from the interconnectedness

[45] Jenkins and Thiessen (2012), among others, generally agree that prudential oversight should be the responsibility of an independent body. However. no further details were provided on the governance of such a body, nor on the exact make-up of the members involved. This paper attempts to fill this void.

and similar exposures of financial institutions.[46] The new body would also be able to leverage on OSFI's strong credibility when enforcing policies and promoting public support to the decisions made by the body.

The Governor of the BOC's involvement is also crucial to the effectiveness of macroprudential policy. Monetary policy is the primary tool used to lean against economic cycles. Accordingly, given the strong correlation between economic and financial cycles, as is evident, for example, in the parallel growth of credit and output during booms, it is apparent that both policies need to work in tandem. Moreover, each policy will have spillover effects on the targets of the other policy. For example, monetary policy influences financial variables such as credit and, likewise, macroprudential policy can influence economic variables like consumer spending and output.[47] Importantly then, it is necessary to include the BOC in the new body to achieve better coordination and ensure that neither policy adversely affects the other.

Two more reasons dictate the BOC's inclusion. First, given its experience with addressing risks in economic cycles and its regular monitoring exercise in the FSR, the BOC has a comparative advantage in dealing with "procyclical" risks.[48] Those are risks arising from fluctuations in credit and liquidity over time. The other reason is to add to the entity's credibility. As Jenkins and Thiessen (2012) point out, benefits from macroprudential policy can be difficult to quantify. Thus, only a credible body would be

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[46] The literature distinguishes between two types of systemic risks: "resiliency," or "cross-sectional," risks are those that build up at a specific point in time due to banks holding similar assets. On the other hand, "procyclical" risks are those that cumulate over time in tandem with the economic cycle which can exacerbate booms and busts. Rapid fluctuations in credit and liquidity are examples of procyclical risks. For more information, see Jenkins and Thiessen (2012) and Jenkins and Longworth (2015).

[47] For example, a tightening in mortgage rules can lower house prices which, by way of the income effect, can adversely affect consumer spending.

[48] Jenkins and Longworth (2015).

able to convince the public that the immediate costs from macroprudential regulation are justified.

The role of the Deputy Minister of Finance in the proposed body is directly linked to CMHC's activities in the mortgage market. As a Crown corporation, the CMHC is accountable to the DOF, and hence, indirectly to the Deputy Minister. Securitization of government-insured mortgages has grown rapidly since 2007 and access to securitization programs has supported the growth of non-traditional lenders and shadow banks. Thus, given the substantial systemic risks associated with the CMHC's activities, including the Deputy Minister would bring such activities under the body's direct supervision. Moreover, with appropriate amendments to the BA, the body should be given power to change the characteristics of CMHC's mortgages as required to maintain the stability of such an important sector.[49]

Perhaps the most-welcomed change to the current framework would be the inclusion of the heads of provincial regulators in the new entity. Currently, the SAC's oversight does not encompass all deposit-taking institutions of significance. Most pension funds and credit unions, as well as shadow banks, are regulated at the provincial level. These institutions are large enough to be considered as "systemically important." Yet, their activities are not monitored at the federal level, and no one has a mandate to contain systemic risks emanating from such activities. The new body will thus include the largest four provincial regulators as members to rectify this weakness.[50]

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[49] The MOF was not chosen to represent the DOF as this would have put the minister in an unconventional role. This is confounded by the fact that I will suggest, below, that the Superintendent of OSFI chairs the board of voting members. This would certainly result in tensions, and hence my decision to choose the Deputy Minister to represent the DOF in the board.

[50] The reason behind including the four provincial regulators of Ontario, British Columbia, Alberta and Quebec and not the others is because 95% of capital markets are encompassed in these four provinces. By

The presence of a national securities regulator on the board is necessary to bring capital markets under the new body's supervision. Adding the proposed Capital Markets Regulatory Authority (CMRA) will serve to prevent situations analogous to that of the ABCP crisis in 2007 from occurring again.[51] The crisis has provided valuable lessons on how complex structured products could undermine financial stability. Regrettably, the current structure of the SAC does not provide for containing vulnerabilities in securities markets. The proposed formal regulator, with the CMRA as a member, would be more capable of identify risks and thus, swiftly intervening, should any market disruptions like those in ABCP markets in 2007 happen again.

The final voting member in the proposed macroprudential body is the Chair of CDIC. As the federal resolution authority, the CDIC's involvement would lead to better coordination of policies in the event a bank becomes insolvent. As contagion risks are typically higher during the restructuring process, especially if the troubled institution is large, the new body would need to make sure that actions taken by CDIC are coherent with its own policies. Hence, adding the CDIC to the board minimizes the chances of risks spreading from a troubled bank to the rest of the financial sector during a resolution.

5.2.2.2 Chair

When contemplating who should take charge of the committee, priority was given to immunizing the body's decisions from political influence. The two main contenders in the literature are the MOF (or the Deputy Minister) and the Governor of the BOC. I argue

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only including these four, I attempt to strike the right balance between adequate oversight and the threat of hindering coordination from including too many voting members.

[51] The Capital Markets Authority Implementation Organization (CMAIO) was incorporated in July 2015 as an interim body until the CMRA is established. The Head of the CMAIO will act as the voting member representing the national securities regulator in the new body until the CMRA is incorporated.

that neither are appropriate, and suggest instead that the Superintendent of OSFI chairs the board.

Proponents of the MOF taking charge argue that, since the Minister is mandated with the overarching responsibility for the stability of the financial sector, it is natural that he chairs the board.[52] I add my voice to Jenkins and Thiessen (2012), who make the counterclaim that such an arrangement could adversely affect the entity's willingness to act. This is in consequence to the short-term and visible costs of macroprudential policy, which politicians would typically want to avoid.

That said, I also join Crow (2012) in opposing that the Governor of the BOC be made chair of the board. Advocates of this view support their claim on the basis that the Governor's responsibilities already provide for correcting system-wide issues of monetary policy and monitoring financial stability.[53] Moreover, they claim that this would ensure proper coordination of monetary and macroprudential policies to control for spillover effects. Crow (2012) responds by pointing out that the BOC should be wary of taking responsibility of an area that is still relatively new. Macroprudential policy, and its associated tools, are as yet, extremely ill-defined, which could pose significant risks to the Bank's credibility in the public's eye. Moreover, except for supervising payment, clearing and settlement systems, the Bank was never regulator of any financial institution in Canada.

Contrary to these views, I contend that the Superintendent of OSFI should chair the board. I base this argument on the fact that OSFI has always been the regulator of financial institutions in Canada. As such, the Superintendent is in a better position to

[52] Crow (2012).

[53] Jenkins and Thiessen (2012), Jenkins and Longworth (2015), and Lombardi and Schembri (2016) all argue in favour of the Governor of the BOC taking charge of macroprudential regulation.

understand the risks inherent in certain asset exposures, as well as the extent of vulnerabilities stemming from the interconnections between financial institutions. Furthermore, it would be prudent to take advantage of OSFI's credibility and strong relationship with Canadian banks, which was built over many years. This would facilitate compliance and entice faster responses by banks when enforcing certain macroprudential tools, such as the countercyclical buffer. Having the Governor of the BOC chair the board would, therefore, be counterproductive as no such relationship exists with financial institutions. That said, an expected counterargument would emphasize that such an arrangement could expose OSFI's credibility to too much risk in an area of regulation where outcomes are uncertain. While valid, someone must claim responsibility, and I would rather subject OSFI to that risk, than the BOC. This stems from the importance of protecting the BOC's credibility as a central bank, which is paramount in its use of monetary policy tools. Any harm to OSFI's credibility, on the other hand, could arguably be reversed in time as it becomes more acquainted with macroprudential regulation. Such a reversal would be more costly and much more difficult to do with the BOC.

5.2.3 Statutory Powers

The proposed governance framework above corrects issues with independence and oversight in the current framework. But, in order to safeguard against the loss of flexibility and swift responses of the current informal framework, it needs to be complimented with granting the new body certain powers.

Powers to be vested in the proposed macroprudential regulator need to be spelled out in legislation. I highlight here two points that should be considered in order to ensure effective macroprudential oversight and, importantly, maintain the current framework's nimbleness in responding to threats.

The first concerns the new entity's ability to access the data it requires for financial stability purposes. Legislation should provide the regulator with the power to access relevant information from all financial institutions and capital market infrastructures. This power must encompass both federal and provincially regulated financial institutions. Likewise, to maintain the confidentiality of banks, legislation should also require that the macroprudential regulator be permitted to only share information with other regulators, including those of other jurisdictions, on the basis of promoting financial stability.

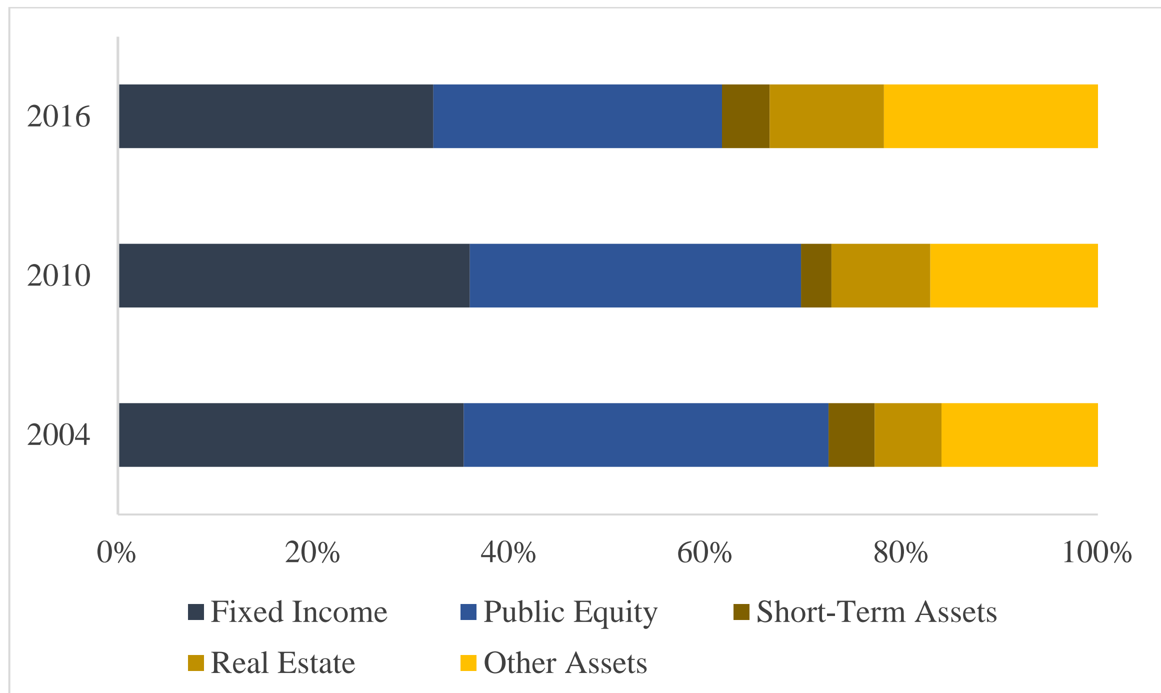
The second point concerns maintaining the flexibility and nimbleness of the SAC. Being a statutory body, policies and actions of the new regulator will be governed by legislation, which may impede its ability to respond to risks swiftly. To address this issue, the new body should be provided with a large degree of discretion in its implementation macroprudential policy. This would be especially important when responding to surprises and unfamiliar risks. A good model to follow is OSFI's flexibility to act with a degree of judgement under the BA. However, given its broader and more critical mandate, the macroprudential regulator would need to have even more discretion, both in the tools it can use, as well as the institutions and sectors it can apply them to.

The recent developments with Canadian pension funds are a good example as to why this is important. Pension funds are largely unregulated in Canada.[54] Yet, as of late, they pose considerable risks to the financial sector. These risks arise from their increased holdings of riskier, alternative assets (See Figure 3), their close interconnectedness with banks in repo markets, and the substantial value of assets they hold. The "big 8" funds in

[54] Legislation only requires managers to act in a fiduciary role. Apart from that, the boards of pension funds decide on the appropriate risk appetite and the risk management framework to follow.

Canada hold more that $1 trillion in assets, as of the beginning of 2016.[55] Thus, even though pension funds are traditionally unregulated entities, legislation needs to provide the new body with the power to respond to such unfamiliar risks as they arise. This power can take the form of exposure restrictions, capital controls, profit caps, or any other tool the regulator deems appropriate to mitigate systemic risks.

Figure 3 - *Composition of Pension Fund Assets*



Note. The low interest rate environment has triggered a shift away from traditional fixed income and public equity investments towards real estate and less-liquid alternative assets.

Short-Term Assets include cash, deposits, Guaranteed Investment Certificates (GICs) and short-term securities; Other Assets include private equity, investments in foreign and miscellaneous pooled vehicles, as well as accruals and receivables.
Data: Statistics Canada

[55] Bédard-Pagé, Demers, Tuer, and Tremblay (2016).

Nevertheless, such broad powers could be abused if not disciplined. Therefore, legislation should require that, whenever extraordinary actions are undertaken, the regulator provide full public disclosure of the tools employed, the motives behind the actions taken, and how such tools are meant to mitigate risks to financial stability. Additionally, I suggest setting up a cooperative council of financial institutions and federal regulators, that meets at least quarterly, where regulators and banks could voice concerns and cooperate on how to best address risks when they occur.

Overall, the proposed governance structure in Section 5.2.2, and the statutory powers recommended here, provide many benefits over the current macroprudential framework. Uniting federal and provincial regulators as members of a board chaired by the Superintendent of OSFI enhances independence, as well as oversight over provincially regulated institutions; two things that are lacking under the SAC. Concurrently, granting the body legislative discretion over its actions would also preserve the required flexibility when dealing with surprises.

5.3 Enhancing Independence

All five federal regulators in Canada are de facto independent and report to Parliament via the MOF. This independence is clearly evident from the powers and discretion available to regulators under the BA. However, the BA provides the MOF with a ministerial override, which can be used to override decisions made by any federal regulator, in the event of disagreement with such decisions. This means that, ultimately, and in an indirect way, the MOF is centrally involved in all matters pertaining to the federal regulatory framework and has the final say in all regulatory decisions.

Even though this power was never used, yet, by the MOF, many scholars have voiced their disapproval of the extent of political involvement in financial regulation in Canada.[56] The concern is that such involvement can interfere with the willingness to react to threats, which arises due to the immediate costs associated with macroprudential policies. Politicians are persuaded to avoid such costs.

Another area where independence is undermined is OSFI's limited enforcement power over the CMHC. As a Crown corporation, the CMHC was not subject to OSFI's supervision during the financial crisis. Amendments to legislation in 2012 provided OSFI with the power to examine the CMHC's books and records. However, to this day, OSFI's broader powers of enforcement do not apply to the CMHC. This is despite the fact that the CMHC is regarded as systemically-important by all accounts.

To correct these issues, I propose a few reforms to enhance independence in federal regulation. First, the relevant legislation should be amended to grant OSFI enforcement powers over the CMHC. This would put the CMHC in similar regulatory footing with other systemically-important financial institutions. Second, OSFI and the BOC should be rid of the ministerial override and be accountable directly to Parliament. Although the override was never used in the past, it is important to shield such vital regulators from the uncertainty surrounding future elected governments. On those grounds, it follows naturally that the MOF should no longer have authority over the governing legislation of OSFI and the BOC. Instead, I suggest handing over this authority to an expert panel of legislators and economists chosen by Parliament. Every five years, when the sunset clause in the BA is in effect, this panel will be responsible for consulting with regulators and market participants before performing amendments to the BA or other relevant Acts. The

[56] See IMF's FSAP (2014); Crow (2012).

cooperative council of financial institutions and regulators proposed in the previous section would also prove useful in this regard.

As for the CDIC and FCAC, they should remain under the MOF's authority. The reasons for this is that situations where taxpayer funds may be involved, during a bank's resolution by CDIC, for example, should remain under political accountability by the public. The same goes for consumer protection by the FCAC.

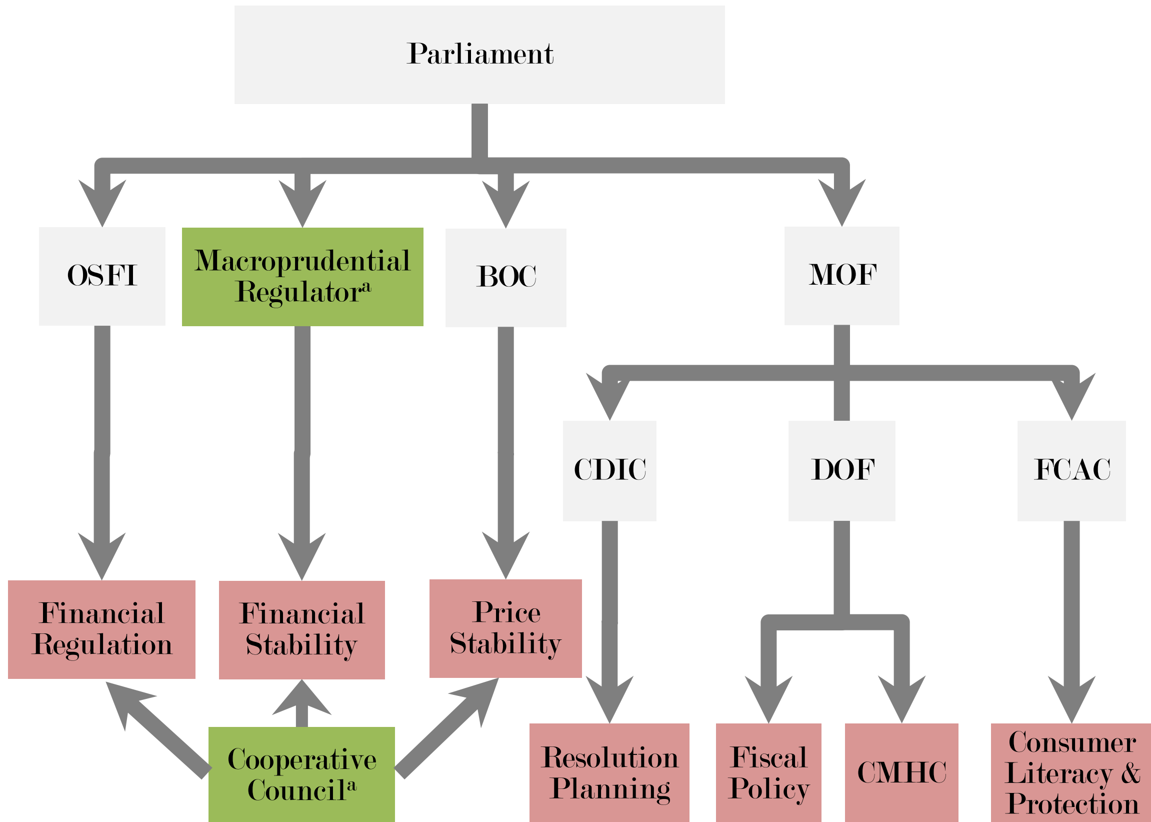
5.4 Putting It All Together

Figure 3 provides a flow chart of how the regulatory framework would look like in Canada, if the propositions made in this paper were implemented. Notice the following changes in comparison to figure 1:

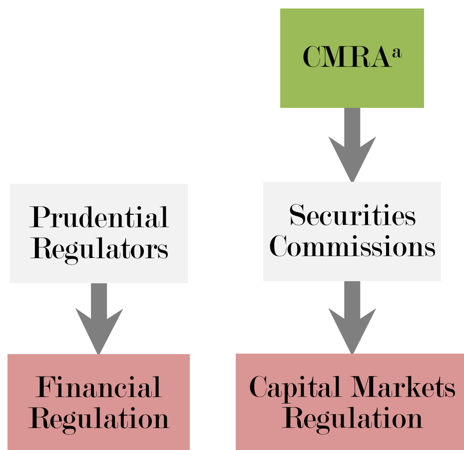
- To eliminate redundancy, all three committees, FISC, SAC and HOA no longer exist as their information sharing and cooperation mandates are now covered under the new macroprudential regulator.
- The non-statutory CSA would become the CMRA, once it is established by the federal government.
- A cooperative council of financial institutions and regulators is created to enhance cooperation between federal regulators and financial institutions, and to voice concerns regarding various issues. As discussed, the council would be especially useful in keeping the macroprudential regulator's powers in check.
- The BOC and OSFI are no longer accountable to the MOF and report directly to Parliament.
- Lastly, the DOF continues to set policies for the CMHC. However, it is now subject to the full supervision of both OSFI and the macroprudential regulator.

Figure 4 - *Canadian Regulatory Framework After Proposed Changes*

Federal Framework



Provincial Regulators



Note. The Cooperative council of financial institutions and regulators will provide important feedback in the conduct of financial regulation, macroprudential policy, and monetary policy.

[a] Newly established entities are coloured in green. Notice that committees no longer exist.
Source: Author

6. Conclusion

The financial crisis of 2007/08 initiated a regulatory frenzy. Regulators and policy makers demanded changes to strengthen the financial sector and address the weaknesses exposed by the crisis. Although Canada fared relatively well, Canadian authorities heavily endorsed the regulations put forward by the FSB, and in many cases, required that they be met well before the agreed-on timeline. This response ignited a controversy among scholars in the literature. Skeptics stressed that no consideration was given to efficiency losses and that policy makers demanded stability at any cost. Advocates, on the contrary, emphasized the importance for stability regardless of the price.

In light of the current review of the federal regulatory framework by the government, this paper presented three recommendations to strengthen the financial sector. First, Canadian regulators should focus primarily on principles in supervision. Over many years, OSFI has built a strong relationship with financial institutions through its close-touch supervision. In this context, following a rules-only approach, now, such as that employed by most other jurisdictions and endorsed by Basel, would seem counterproductive. That said, no one can deny the stability benefits of capital rules. In Canada, they would be especially relevant in preventing complacency, as well as in those instances when regulators are misled in their judgement of risks. Therefore, a hybrid approach, where principles are used as the primary active tool for regulation, and minimum Basel III requirements are enforced as a one step "set it and leave it" tool to address surprises, suits Canada very well.

Second, an entity should be given a mandate for financial stability in Canada. The present reliance on the SAC is inadequate for monitoring systemic risks, especially at the provincial level. The inclusion of provincial regulators and the national securities regulator in the decision-making board of the new body addresses this weakness. Moreover, a formal framework would better deal with the risks arising from the housing market and would enhance coordination and information sharing with international regulators. This is of utmost importance given the recent expansion by banks and pension funds in foreign markets. Alongside these benefits, the current flexibility and agility of the SAC is preserved by granting the new regulator statutory powers, akin to those of OSFI, that enable it to exercise bounded discretion in the conduct of macroprudential policy. Hence, since a lot can be gained without losing anything, Canadian authorities would be wise in giving up their current stance and establishing a formal framework for financial stability.

The final recommendation is for the BOC and OSFI to report directly to Parliament. Importantly, this severs their connection to Ottawa, which might have previously undermined their willingness to act. Following, an expert panel chosen by Parliament will be responsible for the governing legislation of these agencies, as well as administering the sunset provisions of the BA every 5 years.

Note that the conclusions reached by this research are governed by the set of information currently available, including the important lessons learnt from previous crises. Looking ahead, new information will become available, entailing a re-evaluation of our ideas, including the ones made in this paper. In the immediate future, I see macroprudential policy as the area where most change is likely to occur given our scarce understanding of it. But, regardless of what the future holds, the evidence is clear that

applying these three recommendations would significantly strengthen the regulatory framework in place today.

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Appendix

A. OSFI's Calculation of Minimum Capital Requirements and Risk Weights

This section of the appendix provides a brief overview of the complex approaches used by OSFI in determining risk weights in its captial ratio requirements. For more information, the reader is adviced to see OSFI's Capital Adequacy Requirements Guideline (2016).

1. Risk Weights:

As discussed, institutions are expected to meet minimum risk-based capital requirements. Risk-weights are determined according to the types of risks assets are exposed to:

i. Credit Risk

OSFI identifies two main methods for assigning risk-weights to assets with exposure to credit risk:

a. Internal Ratings Based (IRB) approaches (Institutions use internal models to calculate weights):

Institutions that have total regulatory capital in excess of CAD $5 billion are allowed to use internally-calculated weights. Institutions that have more than 10% of assets or liabilities that are international are required to follow the Advanced Internal Ratings Based (AIRB) approach. Under this approach, risk weights are a function of 4 variables: probability of borrower's default, loss given default, maturity, and exposure at default.

Large institutions that do not have large international exposures are expected to use the Foundation Internal Ratings Based approach (FIRB). Under this approach, institutions are allowed to determine probabilities of default, while OSFI determines the other variables.

b. Standardized Approach:

This is the default approach for calculating risk weights for smaller institutions. Under this approach, assessments from rating agencies are used to determine risk weights.[57]

ii. Operational Risk

Three approaches are used to calculate risk weights to assets with exposures to operational risks:

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[57] For more details on the measurement of asset values under this approach consult OSFI's Capital Adequacy Requirements Guideline (2016).

a. The Basic Indicator Approach applies a factor of 15% to a 3-year average of positive annual gross income when calculating operational risk capital requirements.

b. The Standardized Approach divides institutions' activities into eight main business lines and assigns a factor to a 3-year average of annual gross income for each. The eight requirements are summed to arrive at the total requirement for operational risk.

c. The Advanced Measurement Approach allows the institution to internally determine its operational risk capital requirement.

iii. Market Risk

Market risk requirements apply to D-SIBs and all internationally active institutions. Similar to the other two types of risk, market risk requirements are calculated using the Standardized Approach or the Internal Models Approach depending on the size of the intitution.

Institutions must gain prior approval from OSFI to be able to use the advanced approaches mentioned above.

2. Minimum Capital Requirements

Once risk weights are calculated depending on the types of risk exposures, the total risk weights are then determined to arrive at the capital ratio requirements. OSFI determines total risk-weighted assets by summing the following:

a. Capital requirements for operational risk and market risk weights multiplied by 12.5,

b. Risk-weighted assets with exposure to credit risk calculated using the Standardized Approach, and

c. Risk-weighted assets with exposure to credit risk calculated using the Internal Ratings Based (IRB) approaches multiplied by 1.06.

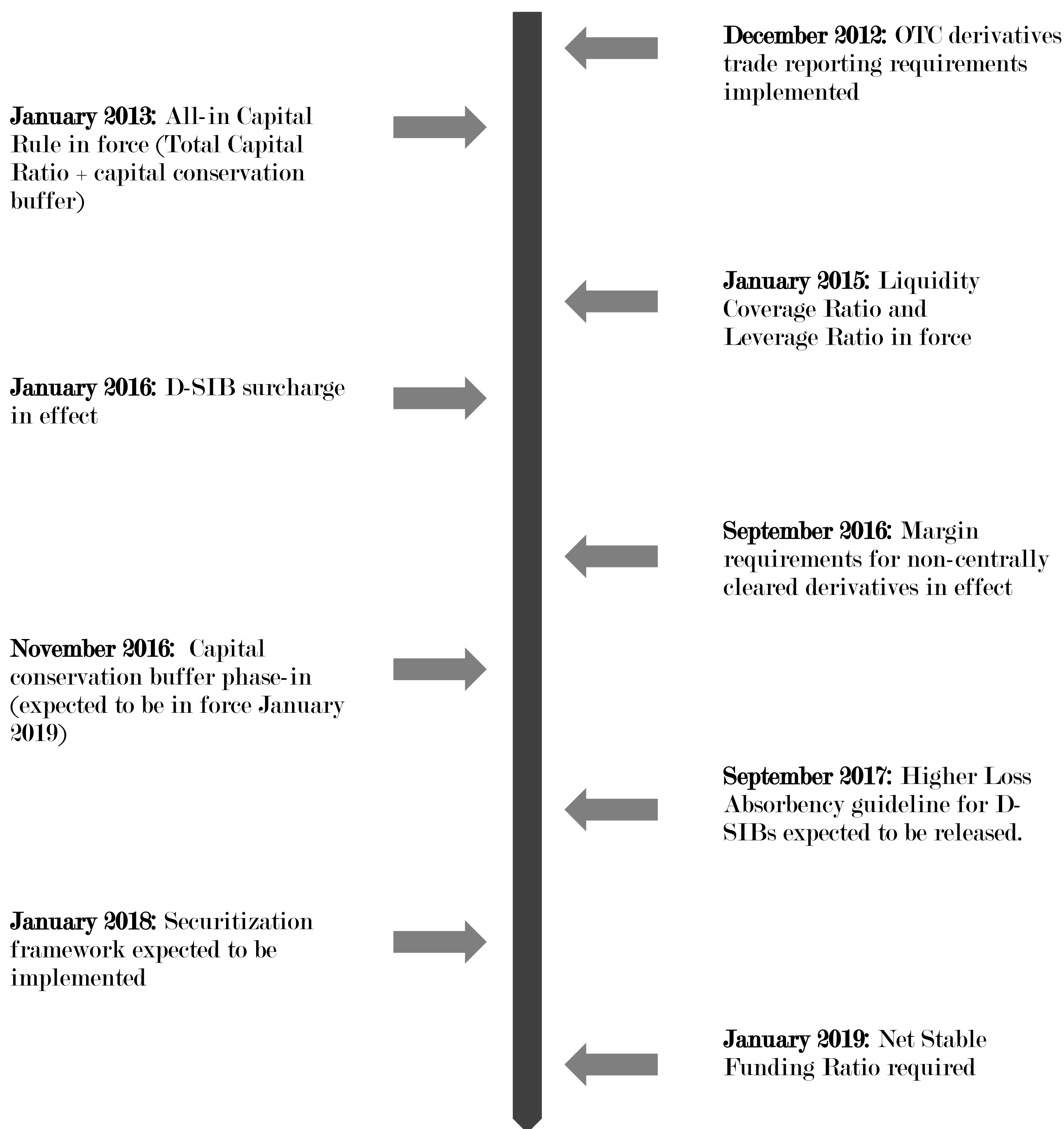
Following, capital ratios are calculated by dividing regulatory capital by total risk-weighted assets:

$$Required\ Ratio = \frac{Capital}{\begin{array}{c} Credit\ RWA(\text{Standardized}) + 1.06 \times Credit\ RWA\ (IRB) \\ +12.5 \times Operational\ Risk + 12.5 \times Market\ Risk \end{array}}$$

Where:

Capital can be CET 1, Tier 1, or Total Capital

B. Timeline of the Implementation of Reforms in Canada



C. Post-Crisis Housing Market Measures

Since the crisis of 2007/08, the government has implemented six rounds of measures to contain risks in the housing market.

Date	Measures Implemented
2008	• Amortization period reduced to 35 years • Minimum down payment of 5% • New loan documentation rules
2010	• Maximum refinancing limited to 90% of property value • Minimum down payment increased to 20% for non-owner-occupied properties
2011	• Amortization period decreased to 30 years • Maximum refinancing limited to 85% of property value • Removal of gov't guarantee on low LTV non-amortizing secured lines of credit
2012	• Amortization period shortened to 25 years • Maximum refinancing limited to 80% of property value • Maximum gross debt service ratio capped at 39% • Maximum total debt service ratio capped at 44% • OSFI authorized to examine CMHC's commercial loans and make recommendations
2015	• Mortgage insurance premiums raised by 15% on purchases with less than 10% down payment • CMHC increases guarantee fees in the NHA-MBS and CMB securitization programs
2016	• Minimum down payment of 10% required on portion of the house price above $500,000 • All insured mortgages must meet debt servicing standards based on the higher of the mortgage contract rate or the BOC 5-year fixed posted rate • Portfolio-insured loans must be funded only through CMHC securitization programs
2017	• DOF consults public on increasing lender risk-sharing in insured mortgage programs • OSFI issues draft guideline on more stringent mortgage underwriting rules

Source: Authors compilation from OSFI; IMF; DOF's consultation on lender risk-sharing (2017).

D. Macroprudential Tools

Jenkins and Thiessen (2012) and Jenkins and Longworth (2015) provide an overview of the macroprudential tools that can be used in Canada.

The authors have divided systemic risks into two types: "resiliency" and "procyclical" risks. Each type entails a separate set of tools. Resiliency risks are those that arise from the interconnectedness and similar exposures of financial institutions. To address resiliency risks, tools should be designed to assess, and correct as necessary, the ability of the financial system to deal with shocks. This would involve, among other things, monitoring capital, liquidity, and leverage requirements of financial institutions, conducting stress tests to assess the resiliency of D-SIBs, as well as overseeing payment, clearing, and settlement systems in capital markets.

Procyclical risks, on the other hand, are risks that grow over time which could exacerbate the economic cycle. An example of such risks is the expansion of credit during economic booms. Tools here should focus on smoothing out the economic cycles by lessening the extent of peaks and troughs. The introduction of the countercyclical capital buffer by Basel III is one tool that is intended to address procyclical risks. Others include restrictions to mortgage credit access, time-sensitive increases to core funding ratios, and temporary adjustments to haircut and margin requirements.

Some of the most common tools suggested in the literature are summarized in the table below:

	Resiliency Tools by Threat:	
Aggregate Credit Growth	Sectoral Credit Growth	Liquidity
Capital ratio surcharges[a]	Time-varying risk weights on financial counterparties	
Leverage ratio surcharges[a]		
	Procyclical Tools by Threat	
Aggregate Credit Growth	Sectoral Credit Growth	Liquidity
Countercyclical capital buffer	Loan-to-value, debt-to-income, and debt service-to-income ratios	Countercyclical liquidity requirements
Countercyclical leverage ratio	Time-varying loss given default in the calculation of risk weights	Time-varying reserve requirements at the central bank

Time-varying taxes on credit	Temporary taxes on short-term deposits
	Countercyclical repo haircuts[b]

Note. [a] These tools increase resilience against risks associated with rapid credit growth. They work by raising the cost of bank funding which would increase interest rates and thus, cool credit expansion.
[b] Raising minimum haircuts applied to the value of assets used as collateral provides extra protection to cover credit and market risks in repo markets.

Source: Adapted from Table 1 (Jenkins & Longworth, 2015, p. 5).