



**BMO Financial Corp. and  
BMO Harris Bank N.A.**

**2016 Comprehensive Capital Analysis and  
Review**

**Dodd-Frank Act Company-Run Stress Test  
Supervisory Severely Adverse Scenario Results Disclosure**

**June 23, 2016**

# Overview

BMO Financial Corp. (BFC), a U.S. bank and financial holding company, is a wholly-owned subsidiary of Bank of Montreal (BMO) and is regulated by the Board of Governors of the Federal Reserve System (FRB or "the Fed"). BFC's wholly-owned principal banking subsidiary, BMO Harris Bank N.A. (BHB), is regulated by the Office of the Comptroller of the Currency (OCC). BFC and BHB are collectively referred to as "the Companies."

As a bank holding company (BHC) with total consolidated assets of \$50 billion or more, BFC is subject to the **Supervisory and Company-Run Stress Test Requirements for Covered Companies**<sup>1</sup> rule issued by the FRB to implement the stress test requirements established in section 165(i)(1) and (2) of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act). In addition, BHB is subject to the **Annual Stress Test**<sup>2</sup> rule issued by the OCC. The rules and guidance provided by the OCC for the BHB stress test are consistent with those provided by the FRB for BFC's Dodd-Frank Act stress test.

The annual Dodd-Frank Act company-run stress test results presented in this report estimate the impact of a hypothetical severely adverse macro-economic scenario (Supervisory Severely Adverse scenario) provided by the FRB and the OCC on the capital position of the Companies over a nine-quarter planning horizon. The Supervisory Severely Adverse scenario is described in additional detail below.

The Companies performed their internal stress tests using their own models, practices, methodologies and assumptions to project pre-provision net revenue, provisions, losses and capital ratios under the Supervisory Severely Adverse scenario except in those cases where practices, methodologies and assumptions were specifically prescribed by rules, instructions or guidance published by the FRB<sup>3</sup> and/or the OCC<sup>4</sup>. Consequently, BFC results might differ, potentially materially, from the projections that the FRB makes using its own models, methodologies and assumptions.

In addition, BHCs are required to assume a uniform set of conditions regarding capital actions over the forecast horizon to enable comparison of results across institutions and neutralize the effect of company-specific assumptions regarding capital actions. Under this requirement, BFC must calculate its pro forma capital ratios using the following factors and assumptions regarding its capital actions over the planning horizon for the Supervisory Severely Adverse scenario:

1. For the initial quarter of the forecast horizon (Q1 2016), take into account actual capital actions taken throughout the quarter;
2. For each of the subsequent quarters (Q2 2016 through Q1 2018), include in the projection of capital:
  - i. Common stock dividends equal to the quarterly average dollar amount of common stock dividends that the company paid in the previous year (i.e., the initial quarter of the forecast horizon and the preceding three calendar quarters);

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<sup>1</sup> 'Supervisory and Company-Run Stress Test Requirements for Covered Companies' Final Rule, 12 C.F.R Part 252

<sup>2</sup> 'Annual Stress Test' Final Rule, 12 C.F.R Part 46

<sup>3</sup> 'Comprehensive Capital Analysis and Review 2016 Summary Instructions' published by FRB on January 28, 2016

<sup>4</sup> 'Dodd-Frank Act Stress Testing (DFAST) Reporting Instructions' released by OCC in March 2016

- ii. Payments on any other instrument that is eligible for inclusion in the numerator of a regulatory capital ratio equal to the stated dividend, interest or principal due on such instrument during the quarter;
- iii. An assumption of no redemption or repurchase of any capital instrument that is eligible for inclusion in the numerator of a regulatory capital ratio; and
- iv. An assumption of no issuances of common stock or preferred stock, except for issuances related to expensed employee stock compensation or in connection with a planned merger or acquisition.

In actual practice, if a severely adverse scenario were to occur, the Companies would take capital and other management actions mandated by their internal policies and which are necessary or appropriate to respond to such stress.

BFC and BHB are well-capitalized with strong, pre-stress actual Basel III Common Equity Tier 1 (CET1) ratios of 11.9% and 13.8%, respectively, as of December 31, 2015. As depicted by the results of the Supervisory Severely Adverse scenario presented as follows, BFC and BHB maintain strong capital levels, with minimum stressed CET1 ratios of 7.9% and 10.2%, respectively, over the forecast horizon, which are considerably higher than the applicable Basel III regulatory minimum value of 4.5%. The Companies maintain pro-forma regulatory capital ratios that are higher than the regulatory minimums throughout the forecast horizon, despite reduced pre-provision net revenue and elevated losses.

## Supervisory Severely Adverse Scenario

### Scenario Overview

The Supervisory Severely Adverse scenario released by the FRB<sup>5</sup> and OCC is characterized by a severe global recession, accompanied by a period of heightened corporate financial stress and negative yields for short-term U.S. Treasury securities. In this scenario, the level of U.S. real gross domestic product (GDP) begins to decline in the first quarter of 2016 and reaches a trough in the first quarter of 2017 that is 6.25% below the pre-recession peak. The unemployment rate increases by five percentage points to 10% by the middle of 2017. Inflation remains positive through the scenario, rising from 0.25% at an annual rate in the first quarter of 2016 to 1.9% at an annual rate during the second half of 2017. Asset prices drop sharply in the scenario, with equity prices falling approximately 50% through the end of 2016, accompanied by a surge in equity market volatility, which approaches the levels attained in 2008. House prices and commercial real estate prices also experience considerable declines in the scenario. As a result of the severe decline in real activity and subdued inflation, short-term Treasury rates fall to negative 0.5% by mid-2016 and remain at that level through the end of the scenario.

### Scenario Estimates

The Companies maintain strong regulatory capital ratios throughout the forecast horizon from Q1 2016 through Q1 2018. The minimum and ending values are depicted below. Also shown below are risk-weighted asset projections as well as loan loss and income statement forecasts throughout the scenario.

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<sup>5</sup> The supervisory scenario descriptions can be obtained from the CCAR Instructions: <http://www.federalreserve.gov/newsevents/press/bcreg/20160128a.htm>

BFC/BHB Projected Stressed Capital Ratios through Q1 2018						
Ratio	BFC			BHB		
	Actual Q4 2015	Stressed Capital Ratios <sup>1</sup>		Actual Q4 2015	Stressed Capital Ratios <sup>1</sup>	
		Ending	Minimum		Ending	Minimum
Common Equity Tier 1 capital ratio	11.9%	7.9%	7.9%	13.8%	10.2%	10.2%
Tier 1 risk-based capital ratio	11.9%	8.4%	8.4%	13.8%	10.2%	10.2%
Total risk-based capital ratio	14.9%	10.8%	10.8%	14.7%	11.9%	11.9%
Tier 1 Leverage ratio	9.3%	6.8%	6.8%	11.8%	9.0%	9.0%

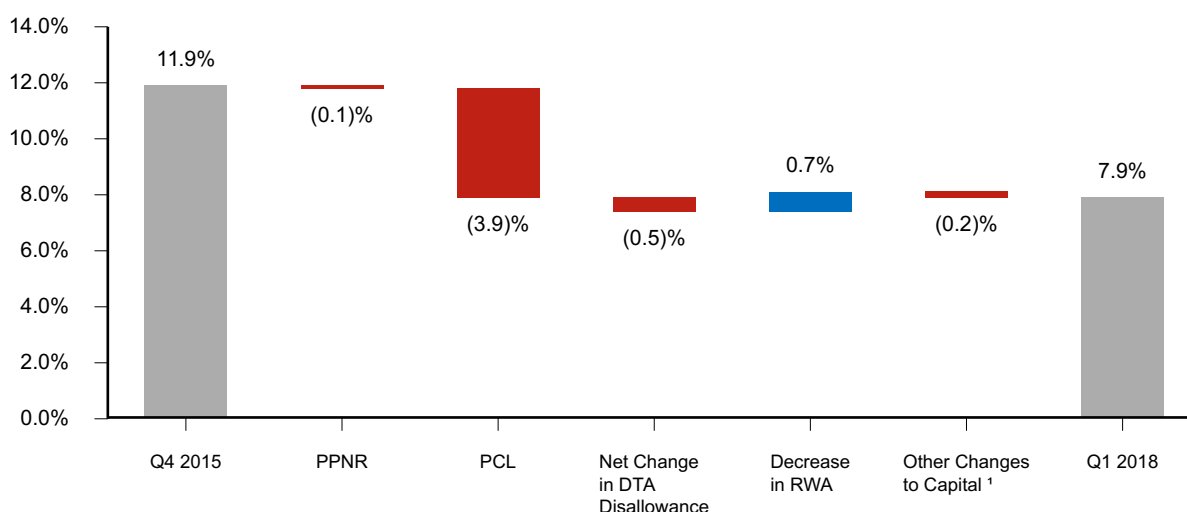
<sup>1</sup> The pro forma stressed capital ratios are calculated using DFAST capital actions and assumptions as described above. These projections represent hypothetical estimates under severely adverse economic conditions specified in the Supervisory Severely Adverse scenario. The minimum capital ratios presented are for the period Q1 2016 through Q1 2018.

Actual Q4 2015 and Projected Q1 2018 Risk-Weighted Assets <sup>1</sup>		
Millions of dollars	Actual Q4 2015	Projected Q1 2018 (Standardized Approach)
BFC Risk-Weighted Assets	91,476	83,176
BHB Risk-Weighted Assets	83,311	76,026

<sup>1</sup> For each quarter of the forecast horizon, risk-weighted assets are calculated under the Basel III standardized risk-based capital approach.

As depicted in the chart below, the decline in capital ratios from actual Q4 2015 levels to the minimums projected in the hypothetical company-run Supervisory Severely Adverse scenario primarily reflects the impacts of higher credit losses (PCL), higher disallowed deferred tax assets (DTA) generated due to net operating losses, and reduced pre-provision net revenue (PPNR). These impacts are partly offset by lower risk-weighted asset (RWA) levels.

**Key Drivers of BFC's 2016 Pro Forma Common Equity Tier 1 Capital Ratio**



<sup>1</sup> Other changes to capital include changes in disallowed intangibles net of related deferred tax liabilities as well as other miscellaneous adjustments.

BFC projected loan losses, by type of loan, from Q1 2016 through Q1 2018		
Loan Type	Millions of dollars	Portfolio loss rates (%) <sup>1</sup>
<b>Total Loan Losses</b>	3,055	5.0%
First-lien mortgages	245	3.6%
Junior liens and HELOCs	259	7.1%
Commercial and industrial <sup>2</sup>	1,316	5.6%
Commercial real estate <sup>3</sup>	656	7.3%
Credit cards	58	13.3%
Other consumer <sup>4</sup>	148	2.3%
Other loans <sup>5</sup>	373	3.2%

<sup>1</sup> Average loan balances used to calculate portfolio loss rates exclude loans held for sale and are calculated over nine quarters.

<sup>2</sup> Commercial and industrial loans include small and medium enterprise loans and corporate cards.

<sup>3</sup> Commercial real estate loans include loans secured by farmland.

<sup>4</sup> Other consumer loans include indirect auto, student loans, personal loans and overdraft lines of credit.

<sup>5</sup> Other loans includes all other commercial loans and leases.

BFC projected losses, revenue, and net income before taxes from Q1 2016 through Q1 2018		
Item	Millions of Dollars	Percentage of Average Assets
Pre-provision net revenue <sup>1</sup>	(29)	(0.0)%
Other revenue	—	—%
<i>Less</i>		
Provisions	3,571	3.2%
Realized losses/(gains) on securities (AFS/HTM)	1	0.0%
Trading and counterparty losses/(gains)	24	0.0%
Other losses/(gains)	—	—%
<i>Equals</i>		
Net income/(loss) before taxes	(3,625)	(3.2)%

<sup>1</sup> Pre-provision net revenue is comprised of revenues less expenses, including mortgage repurchase expenses and other real estate owned (OREO) costs, as well as losses from operational risk events.

## Material Risks Captured in the Stress Test

The Companies' Capital Adequacy Process (CAP) is grounded in the processes used to identify, understand and ultimately manage the risks arising from their business model and strategies. As part of the Companies' CAP, a broad spectrum of risks are evaluated and stressed, including credit and counterparty risk, market risk, operational risk and other applicable risks; these risks are described below.

- **Credit and Counterparty Risk:** Credit and counterparty risk is the potential for loss due to the failure of a borrower, endorser, guarantor or counterparty to repay a loan or honor another predetermined financial obligation. Credit and counterparty risk underlies every lending activity that the Companies enter into, and also arises in the transacting of trading and other capital markets products and the holding of investment securities.
- **Market Risk:** Market risk is the potential for adverse changes in the value of assets and liabilities resulting from changes in market variables such as interest rates, foreign exchange rates, equity and commodity prices and their implied volatilities, and credit spreads, and includes the risk of credit migration and default in our trading book. The Companies incur market risk in their trading and underwriting activities and structural banking activities.

- **Operational Risk:** Operational risk is the potential for loss resulting from inadequate or failed internal processes or systems, human interactions or external events.
- **Other Risks:** Other material risk types evaluated under the CAP and captured in the stress test include liquidity and funding risk, model risk, business risk, reputation risk and strategic risk.

Many of the Companies' material risks, including credit, market and operational risk, are driven by or correlated with changing macroeconomic conditions, and thus are stressed under the Supervisory Severely Adverse scenario using the methodologies described below.

## Stress Testing Methodologies

The Companies' stress testing methodologies are focused on defining the relationship between macroeconomic variables and business volumes, revenues and losses in order to develop pro-forma financial statements and estimate impact on capital availability. The macroeconomic variables provided by the FRB and OCC are expanded as required, additional macroeconomic variables are used as determined to be appropriate, and these assumptions and interest rate curves are used to make projections. Key outputs from these processes are pro-forma balance sheets and income statements, which are used to develop risk-weighted assets, average assets for leverage purposes and capital projections in order to estimate stressed regulatory capital ratios. The Companies use models, quantitative and qualitative methodologies, and management judgment, where applicable, to produce a comprehensive projection of business performance under a hypothetical severe stress scenario. All projected results are reviewed and challenged by teams of BFC subject matter experts, and senior cross-functional and multi-disciplinary management committees, as well as by the Capital Committee of the BFC Board of Directors.

The specific methodologies employed are described below.

### Credit and Other Losses

The Companies' loss estimation processes are supported by well-established risk measurement frameworks and complemented by robust governance, including independent model validation and effective challenge by business and risk management professionals. Results are benchmarked against key internal and external metrics of performance.

Specific to credit risk, loss estimation for each scenario is forecasted by Probability of Default (PD) and Loss Given Default (LGD) stress models that are driven by scenario-specific inputs, exposure and borrower attributes, and balance information. Commercial and Consumer net charge-offs are primarily estimated using quantitative models that forecast stress PD, stress LGD and exposure at default, as well as credit quality changes within the performing portfolios. Commercial and Consumer models are calibrated to BFC's and BHB's historical loss experience and use risk characteristics of loan segments and exposures to derive results under the Supervisory Severely Adverse scenario.

Operational losses are primarily estimated using a combination of a macroeconomic regression model and a loss distribution approach model. The models forecast losses using the history of operational losses, which includes legal settlements, ongoing fees and reserves. This modeled stress result uses macroeconomic stress and a specific percentile level to account for increased potential operational losses in periods of stress. Certain operational losses are estimated using a qualitative approach.

Trading losses are estimated using market risk stress testing models. Other than temporary impairment on securities and equity investments is estimated at an individual investment level, as applicable.

## **Pre-Provision Net Revenue**

The Companies use quantitative and qualitative methodologies based on applicable macroeconomic variables to estimate net interest income, non-interest revenue and non-interest expense. Net interest income components are estimated using the projected balance sheet (structural and non-structural), non-performing loan migration, net charge-offs, purchase accounting and non-contractual net interest income. Non-interest revenue and non-interest expense are estimated utilizing historical experience, expert judgment and quantitative approaches. While a majority of the categories are quantitatively modeled, certain categories are judgmentally derived.

## **Provision for Loan and Lease Losses**

The Companies utilize the loss estimates and credit quality changes forecasted by their methodologies along with a well established qualitative general reserve framework to quantify the allowance for loan and lease losses. The provisions for loan and lease losses are appropriately estimated to absorb quarterly losses through the forecast horizon and beyond.

## **Capital Position**

The impact of estimated pre-provision net revenue and losses, changes in asset levels, permitted capital and other management actions and changes in risk-weighted assets are used to estimate the Companies' capital position. Risk-weighted assets, average assets for leverage purposes and regulatory capital are calculated based on the Basel III methodology for non-advanced approaches institutions throughout the forecast horizon.

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The annual Dodd-Frank Act company-run stress test results presented in this report (Stress Test Results) have been prepared in accordance with U.S. GAAP. The Stress Test Results present certain projected financial measures for BFC and BHB under the hypothetical economic and market scenario and assumptions provided by the FRB and OCC described herein. The Stress Test Results are not forecasts of actual financial results for either BFC or BHB. Investors in securities issued by Bank of Montreal and its affiliates should not rely on the Stress Test Results as being indicative of expected future results.

The stress testing of financial institutions conducted by the FRB is based on models and methodologies developed or employed by the FRB. The FRB does not disclose details of its models and methodologies. Therefore, BFC may not be able to explain certain variances between the FRB's projections and BFC Stress Test Results included herein.