

Financial Resource Management

Motivation

In October 2016, Scotiabank has launched a cross functional effort to develop Financial Resource Management (FRM) framework with an objective to generate more **profit** by incorporating multiple **regulatory constraints** and **cross sell impact**.

Profit = Revenue- Expenses

Scotiabank receives its revenue from the following 65 business lines:

Canadian Banking	International Banking	Global Banking
<ul style="list-style-type: none">• Retail<ul style="list-style-type: none">- RESL: Residential mortgages, HELOC- Unsecured Lending: Unsecured LOC, credit cards- Auto- Chequing- Savings & Term deposits: High interest savings, Term & other deposits, ADS- Insurance- Other lending• Commercial<ul style="list-style-type: none">- Deposits (ex-Roynat)- Assets (ex-Roynat)- Roynat• Small Business<ul style="list-style-type: none">- Deposits- Assets• Wealth<ul style="list-style-type: none">- Private Banking- Asset Management- Distribution- iTrade• Tangerine<ul style="list-style-type: none">- Assets- Deposits	<ul style="list-style-type: none">• Mexico• Peru• Chile• Colombia• Spanish Caribbean Units<ul style="list-style-type: none">- Puerto Rico- Dominican Republic• English Caribbean Units<ul style="list-style-type: none">- Trinidad- Bahamas (ex. SCTL)- Cayman- Jamaica• Central American Units<ul style="list-style-type: none">- Costa Rica- El Salvador- Panama Branch- Panama Sub• South American Units<ul style="list-style-type: none">- Brazil- Uruguay• Other<ul style="list-style-type: none">- Offshore Activities (OBUS)- SCTL- IB Affiliates- IB Other- Wealth and Insurance	<ul style="list-style-type: none">• Global Fixed Income<ul style="list-style-type: none">- Rates- Credit- Other• Foreign Exchange• Commodities<ul style="list-style-type: none">- Mocatta- EAC Trading• Equity Sales & Trading (including equity advisory)• Equity Derivatives• Prime Brokerage• Corporate Banking<ul style="list-style-type: none">- Canada- US- Europe- Asia• Investment banking• Securitization conduits• GTB

Revenue

Financial Metric	All-Bank	Business Unit (CB/IB/GBM)	Sub-Units
Net Interest Income	✓	✓	✓
Liability Related NII	✓	✓	✓
Asset Related NII	✓	✓	✓
Non-Interest Revenue	✓	✓	✓
	✓	✓	✓

Net Interest Income calculations for Maturity and Non-Maturity Products

Maturity Products (e.g. Mortgages)

- 1 Existing assets will decrease by the run-off rate¹, so the NII from existing assets is adjusted accordingly

$\text{NII from existing assets} \times (1 + \text{Run-off rate})$

- 2 Economic FTP is used to calculate NII from new assets

$\text{Base Asset Average} \times (\text{Asset Growth Rate} - \text{Run-off rate}) \times \text{Economic FTP}$

Non-Maturity Products (e.g. Credit Cards)

- 1 NII from existing assets is calculated using Non-Economic FTP

$\text{Baseline Asset Average} \times \text{Non-Economic FTP}$

- 2 Applying Economic FTP to calculate NII from new assets

$(\text{Projected} - \text{Base Asset Average}) \times \text{Economic FTP}$

¹Run – off rate: Percentage by which the business would shrink if new products are not sold

Expenses

Financial Metric	All-Bank	Business Unit (CB/IB/GBM)	Sub-Units
PCL	✓	✓	✓
Direct Operating Expenses	✓	✓	✓
Project Spend	✓	✓	✓
Support Expenses	✓	✓	✓
IT	✓	✓	✓

Calculating PCL and Operating Expense

PCL Expense Calculation

PCL expense for assets is calculated based on the PCL per \$1 of asset and the total asset average

PCL per \$1 of asset x Projected
Asset Average

Operating Expense Calculation

Operating expense can be broken down into two parts

- 1** Current operating expense is assumed to grow by Non Interest Fixed Cost increase (inflation) regardless of asset growth

Base Operating Expense x (1 +
Non Interest Fixed Cost increase)

- 2** Growth in assets/liabilities will increase operating expense by Non Interest Variable Cost

(Projected – Base Asset/Liability
Average) x Incremental Non-
Interest Variable Cost

Regulatory Constraints

Equation

Profitability

$$\text{ROA} = \frac{\text{net income}}{\text{total assets}}$$

Economic Profit = (*net income attributable to common shareholders*) – (*10% of attributed capital*)

Balance Sheet & Liquidity Funding

$$\text{WSF \%} = \frac{\text{WSF}_{LT} + \text{WSF}_{ST}}{\text{total assets}}$$

Capital Measures


$$\text{CET1 Ratio} = \frac{\text{CET1 capital}}{\text{CET1 risk weighted assets}}$$

Cross Sell Impact

Global Banking & Markets		Rates	Credit	FX	Mocatta	EAC Trading	Equity Sales	Equity Der.	Prime Brokerage	Corp - Canada	Corp - US	Corp - Europe	Corp - Asia	Investment Banking	Sec. Conduits	GTB Trade	GTB-Deposits	
FICC	Rates	High	Limited	Limited	Limited	Independent	Independent	Independent	Limited	Limited	Limited	Limited	Limited	Limited	Limited	Independent	Independent	
	Credit	Limited	High	Limited	Independent	Independent	Independent	Independent	Limited	Limited	Limited	Limited	Limited	Independent	Independent	Independent	Independent	
	FX	Limited	Limited	High	Limited	Limited	Independent	Independent	Limited	Limited	Limited	Limited	Limited	Independent	Independent	Independent	Independent	
	Mocatta	Limited	Limited	Limited	High	Independent	Independent	Independent	Limited	Limited	Independent	Independent	Independent	Independent	Independent	Independent	Independent	Independent
	EAC Trading	Limited	Limited	High	Independent	High	Independent	Independent	Limited	Limited	Independent	Independent	Independent	Independent	Independent	Independent	Independent	Independent
Capital Markets	Equity Sales	Independent	Independent	Independent	Independent	High	Independent	Independent	Independent	Independent	Independent	Independent	Independent	High	Independent	Independent	Independent	
	Equity Der.	Independent	Independent	Independent	Independent	Independent	High	Independent	Independent	Independent	Independent	Independent	Independent	High	Independent	Independent	Independent	
	Prime Brokerage	Independent	Independent	Independent	Independent	Independent	Independent	High	Independent	Independent	Independent	Independent	Independent	High	Independent	Independent	Independent	
Corporate Banking	Corp - Canada	High	High	High	Limited	High	Independent	Limited	High	High	Limited	Limited	Limited	High	High	Limited	High	
	Corp - US	High	High	High	Limited	High	Independent	Limited	Limited	High	High	Limited	Limited	High	High	Independent	High	
	Corp - Europe	High	High	High	Independent	High	Independent	Independent	Independent	Independent	High	High	Independent	Limited	Limited	Independent	High	
	Corp - Asia	Limited	Limited	Limited	Limited	Independent	Independent	Independent	Independent	Independent	Independent	High	High	Independent	Independent	Independent	Independent	High
IB	I-Banking	Independent	Independent	Independent	Independent	Limited	Limited	Limited	Limited	Limited	Limited	Limited	Limited	High	Independent	Independent	Independent	
	Sec. Conduits	Independent	Independent	Independent	Independent	Independent	Independent	Independent	High	High	Limited	Limited	Independent	Independent	High	Independent	Independent	
GTB	GTB-Trade	Independent	Independent	Independent	Independent	Independent	Independent	Independent	Limited	Limited	Independent	Independent	Independent	Independent	Independent	High	High	
	GTB-Deposits	Independent	Independent	Independent	Independent	Independent	Independent	Independent	Limited	Limited	Limited	Limited	Independent	Independent	Independent	High	High	

■ High degree of dependency
 Limited dependency
 Independent

Design features of the FRM tool



	Features		
Functionality	Organic Growth <i>Version 1.0</i>	Equity Issue / Buyback <i>Version 2.0+</i>	Mergers & Acquisitions <i>Version 2.0+</i>
Optimization Function	One Metric Only (e.g. NIAT)	Multiple Metrics (e.g. ROE, or NIAT, or etc.)	
Timeline	Single year	Multi year	
Optimization Objective	Maximizing “optimization function” over the period	Maximizing “optimization function” at the end of the period	
Inter-dependencies	None	Business Line Growth Interdependencies <i>Version 1.0</i>	Cross-Sell Interdependencies <i>Version 2.0+</i>
Funds Transfer Pricing	Treat FTP as is in Current State	Normalized FTP	Exclude FTP

FRM model captures the impact of growth on all bank performance

1 FRM Methodology: FRM tool uses the bank's baseline balance sheet and income statement data along with incremental growth assumptions, boundary conditions and regulatory constraints to calculate the optimal forward looking business growth.

2 Baseline Data

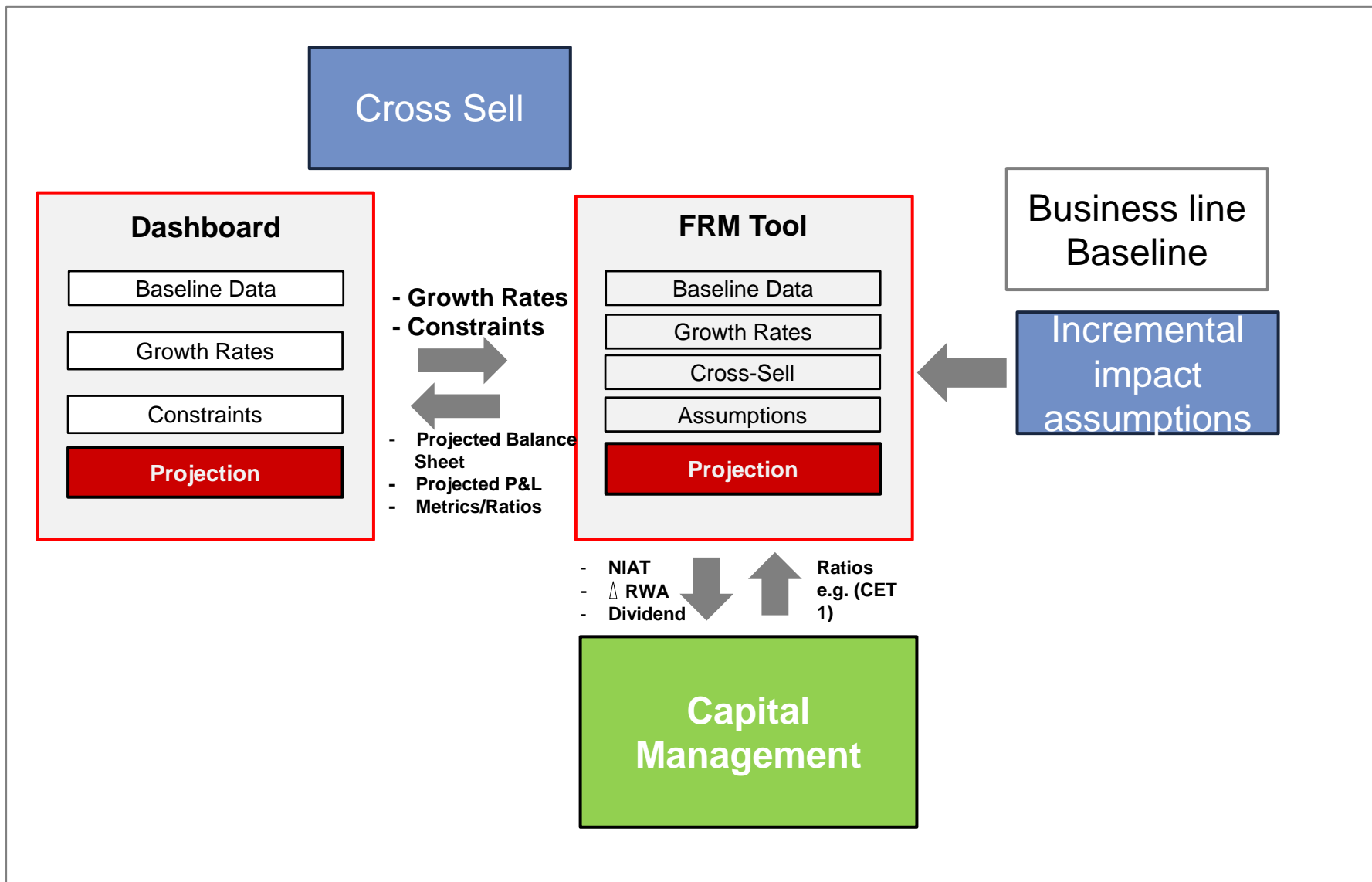
3 FRM tool's features and functionality

- Regulation impact
- Economic FTP approach
- Customer View
- Share buyback

4 Boundary conditions & inputs

FRM Tool Overview

ILLUSTRATIVE



FRM and Capital Management

FRM Tool

$$\text{Projected RWA} = \text{Base RWA} * \text{Asset Growth}$$

$$\Delta\text{RWA} = \text{Projected RWA} - \text{Base RWA}$$

$$\text{NIACS} = \text{NIAT} - \text{NCI} - \text{Preferred Dividends}$$

$$\text{Dividend Payout} =$$

$$\text{Div. Per Share}$$

$$\times \text{Projected \# of Shares Outstanding}$$



Optimize ratios by changing projections

CET1 Ratio	Tier 1 Cap. Ratio	LE Ratio
...

Capital Management Model

$$\text{Projected Retained Earnings} = \text{Base Retained Earnings} + (\text{NIACS} - \text{Dividend Payout})$$

$$\text{Projected RWA} = \text{Base RWA} + \Delta\text{RWA}$$



Calculate ratios

$$\text{CET1 Ratio} = \text{CET1 Capital} / \text{Projected RWA}$$