STRUCTURED
SOLUTIONSGROUP

2017 Performance summary report

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This document is designed to provide an overview of the overall performance of structured products issued for Canadian investors by National Bank of Canada (the "Bank") that have matured or were called in 2017.

The performance of a structured product generally consists of two elements: distributions paid over the product term, and the final return at maturity or call date. The final return is determined according to a predefined formula and depends on the reference portfolio's return at valuation date(s).

Table 1: 2017 Performance Results[1]

Aggregate	Data	Non principal protected note securities (NPPNs)	Principal protected notes (PPNs)	Market-linked GICs
391	Number of products	351	21	19
377	**Number that generated positive returns**	**345**	**15**	**17**
10	Number that protected capital (at maturity)	2	6	2
4	Number that lost capital (at maturity)	4	n/a	n/a
2.3	Average realized term (in years)	1.9	6.5	4.3
n/a	Average downside protection level[2]	-27.0%	Full protection at maturity	Full protection at maturity
8.7%	**Average annualized return**	**9.1%**	**5.9%**	**3.6%**
12.5%	Average top quartile annualized return[3]	13.0%	9.8%	5.4%
5.0%	Average bottom quartile annualized return[4]	5.3%	0.6%	1.5%

1. For ease of calculation, we assume that investors hold the products until maturity and hence this analysis does not consider the profit or loss made through buying and selling them in the secondary market. Returns are normalized for the commission in order to compare F-class type issues with commission-based type issues. Returns include the sum of the distributions paid during the term and the payment at maturity or call date, as applicable.
2. The downside protection level represents the level from which the investor is exposed to capital loss. NPPN can be structured with different protection type (maturity barrier, buffer, etc.). The most commonly used protection type is the maturity barrier which represents 95% of NPPN that have matured or were called in 2017.
3. Average of returns above the third quartile (75th percentile) in the respective samples.
4. Average of returns below the first quartile (25th percentile) in the respective samples.

The table shows the aggregate results for 2017 and breakdown by broad product category: non principal protected note securities (NPPNs), principal protected notes (PPNs) and market linked GICs. Many NPPNs offer investors the possibility to optimize the upside return based on their own views while managing the downside risk by filling the gap between full protection and direct market exposure (i.e. without protection).

- More than 95% of all products that have matured or were called in 2017 generated positive returns for investors, the vast majority of these products being non principal protected.
- NPPN returned on average 9.1% p.a., compared to a combined average of 4.8% p.a. for PPN and GIC.
- The bottom performing NPPNs include those that have breached the barrier or have protected capital at maturity. Most have however outperformed the reference portfolio on average because of the protection or distributions paid over the term.

ABSOLUTE RETURN INTERPRETATION

The use of standard performance statistics, whether absolute or relative, to analyze the performance of structured products such as NPPN requires some further explanation to have a full understanding of the results. This is because these statistics do not take into consideration certain important features of NPPN: for example the downside protection. The higher the level of protection offered in the product (compared to a direct investment in the reference portfolio), the lower the expected upside return. The choice of a more conservative or aggressive product depends on the investor's risk tolerance and market expectations. The final return at maturity or call date is therefore a consequence of these two factors and they should be taken into account when evaluating performance results.

AGGREGATE RETURN INTERPRETATION

Structured Product issuance at the Bank has historically been demand-driven. Consequently, different structures can be issued on the same underlying at the same time. For example, it is not uncommon to find an accelerator note and income note being issued at the same time on popular underlying such as the S&P/TSX 60 Index (XIU) and the portfolio of Canadian big 5 banks. Each structure has its own outperformance range: The choice of one or the other of these products depends on the investor's preferences (risk tolerance and market expectations). Both products' performance at maturity depends on how the underlying actually performs and one could outperform the reference portfolio's return while the other one underperforms.

In a nutshell, not all clients have the same risk tolerance and market views and more importantly, not all of them can be right at the same time. This clearly impact the aggregate performance of structured notes.

Table 2: Examples of matured or called products of 2017

Product Name	Realized Term	Reference Portfolio Return (at maturity)	Note Securities Return (at maturity)[5]
Auto Callable linked to the EURO STOXX 50® Index	2.5	1.0%	20.0%
Marathon linked to the iShares® S&P/TSX 60® ETF	3.5	17.6%	35.2%
Fixed ROC linked to Canadian gold mining companies	3.0	-7.2%	15.5%
Bonus linked to the iShares® S&P/TSX 60® ETF	5.0	25.1%	40.0%
Global Blue Chip Deposit Notes S15	8.0	113.0%	113.0%
Auto Callable Contingent Income linked to the iShares® S&P 500® ETF (CAD-Hedged)	1.0	22.8%	5.0%
Auto Callable linked to Canadian energy companies	3.0	-17.8%	0.0%
Fixed ROC linked to Bombardier Inc.	3.0	-32.2%	-16.7%

5. Not adjusted for commission.

2017 Product Issuance – Trends

In 2017, NPPNs, especially callable income paying notes, were the most popular product type. Broad market exposure remained the most popular choice of underlying, with growing interest in the EURO STOXX 50® Index. Within industry sectors, there was greater interest in financials, followed by the energy and gold mining sectors. In terms of the protection level for NPPNs, we saw a new trend for a more diverse range of barriers from -20% to -40%. With uncertainty in equity markets in 2017, many investors used NPPNs with barriers as a more conservative approach for their equity investments. Similarly, we have also noticed renewed growth in principal protected products. Issuances of PPNs and market linked GICs grew by 45% in 2017, compared to 21% in 2016. Part of this growth can be explained by higher expectations of rising interest rates, and investors looking to mitigate the potential negative impact on their traditional fixed income assets. As a final point, the industry-wide trend of "moving to fee-based in full-service brokerage"[6] continues, and we continue to offer a wide variety of issues in F-class series as well as A-class. We expect these trends to continue in 2018.

6. Strategic Insight Research, Retail Brokerage and Distribution Report - Canada, 2017.

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