BNP Phoenix Snowball on S&P 500 - Standard Analysis Manual

Document Analyzed: BNP-PhoenixSnowball-SP500-XS1083630027-TS.pdf
Product Type: Single-underlying index-linked, European knock-in, Snowball coupon structure

LLM Parameter Extraction Guide (Tailored for BNP Structure)

Product Structure Prerequisite (Must Determine First)

- Search Keywords:
  - Underlying Index, S&P 500, SPX
  - Knock-in Determination Day: The Redemption Valuation Date
- If the term sheet clearly states:
  - Knock-in event is determined only on the final valuation date → Classify as European knock-in structure
  - Coupon payments have snowball accumulation feature ((1+T) term)
  - Product includes automatic early redemption (knock-out) feature → Classify as Single-underlying European Knock-in Phoenix Snowball, use this template

1. Underlying Asset

- Search Keywords: Underlying Index
- Extract:
  - Asset name: S&P 500
  - Asset code: SPX Index
  - Initial level: Index Initial = 1,985.54

2. Initial Price

- Search Keywords: Strike Level, Index Initial
- Extract:
  - Absolute value: 1,985.54
  - Determination date: Strike Date = Trade Date = 12-Sep-2014

3. Key Dates (BNP-Specific)

- Search Keywords: Trade Date, Issue Date, Valuation Date, Redemption Date
- Extract:
    - Trade/Strike Date: 12-Sep-2014
    - Issue Date: 26-Sep-2014
    - Knock-in Determination Date: Only one = Redemption Valuation Date = 12-Sep-2022 (Key Feature)
    - Final Valuation Date: 12-Sep-2022
    - Final Payment Date: 26-Sep-2022
    - Observation Dates List: 15 Coupon Valuation Dates from Page 2 table (must list completely)

	Category	Date Type	Description
10	Dates	Trade Date	12-Sep-14
11	Dates	Issue Date	26-Sep-14
12	Dates	Coupon Valuation Dates	Semi-annual (15 dates)
13	Dates	Coupon Payment Dates	Same as valuation dates
14	Dates	Autocall Valuation Dates	Same as coupon valuation dates
15	Dates	Autocall Payment Dates	Same as coupon payment dates
16	Dates	Knock-in Determination Date	Redemption Valuation Date
17	Dates	Redemption Valuation Date	12-Sep-22
18	Dates	Redemption Date	26-Sep-22

4. Barrier Levels

- Search Keywords: Automatic Early Redemption Level, Knock-in Level, Coupon
- Extract:
    - Automatic Redemption Barrier: 110% * Index Initial = 2,184.094
    - Knock-in Barrier: 70% * Index Initial = 1,389.878
    - Coupon Payment Barrier: 70% * Index Initial = 1,389.878 (same as knock-in level)

5. Coupon Features (Snowball Structure)

- Search Keywords: Conditional Coupon, (1 + T)
- Extract:
    - Coupon Rate: 2.60% per observation period → annual_coupon_rate = 0.026
    - Payment Condition: Index >= 70% of Index Initial
    - Snowball Factor (T): T = Number of coupon payment dates since the last coupon payment date on which a coupon was paid

- Calculation Formula: Coupon Amount = N * 2.60% * (1 + T)

6. Payoff at Maturity

- Search Keywords: Final Redemption, Cash Settlement Amount
- Extract:
  - Case A (No Knock-in): N * 100%
  - Case B (Knock-in occurred): N * (Index Final / Index Initial)

7. Notional Amount

- Search Keywords: Notional Amount per Certificate (N)
- Extract: N = USD 1,000

8. Performance Calculation

Definition: The formula that converts the underlying asset's price change into the product's payoff.

Core Formula: Performance(t) = Index Level(t) / Index Initial

Index Initial = 1,985.54

Index Level(t) is the index closing level on date t.

Application in Product Mechanics:

Mechanism	Calculation & Purpose
Coupon Payment	Check if Performance(t) >= 0.70 on each coupon valuation date.
Automatic Redemption	Check if Performance(t) >= 1.10 on each observation date.
Final Redemption	1. Determine Knock-in: Check if Performance(Maturity) < 0.70. 2. If knocked-in, calculate loss: Final Payoff = Notional * Performance(Maturity).

Key Examples:

Observation Price	Performance	Product Event Triggered
2200.00	about 1.108	Automatic Redemption (>= 1.10)
1500.00	about 0.756	Coupon Paid (>= 0.70)
1200.00	about 0.604	No Coupon (<0.70). If this is the maturity price, a Knock-in occurs.

Validation Checklist for AI Extraction:

- Initial Level (Index Initial) is correctly identified as 1,985.54.
- Performance is calculated as Observation / Initial, not as a percentage change.
- The same performance value is used for Coupon, Auto-call, and Knock-in comparisons.
- The barriers are correctly applied to the performance ratio (0.70 and 1.10).