

Pricing Structured Products



Arfima Financial Solutions

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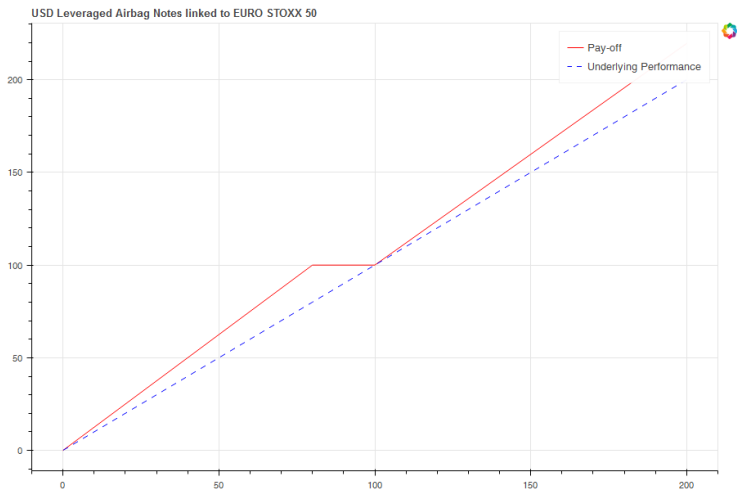
1 Structured Products

- Airbag option
- Bonus Certificate
- Uncapped Bull Capital Protection

USD Leveraged Airbag Notes linked to EURO STOXX 50



This product on one hand offers the protection of an airbag certificate and on the other provides a participation rate above 100% on the upside.



Product Information

Name	USD Leveraged Airbag Notes linked to EURO STOXX 50 Price EUR due 25 October 2019
Issuer	Royal Bank of Canada
ISIN	XS1887234547
Initial Date	16th October 2018
Expiry Date	18th October 2019
Maturity Date	25th October 2019
Underlying	EURO STOXX 50
Strike Level (Initial Value)	3,257.34
Barrier Level (0.8 · Initial Value)	2,605.872
Face Value	USD 10,000

Pay-off

- If the Final Level \geq Strike Level:

$$100\% + 119.57\% \times \max\left(0, \frac{\text{Final Level}}{\text{Initial Level}} - 1\right).$$

- Otherwise:

$$\frac{\text{Final Level}}{\text{Barrier Level}}.$$

If the Final Value of the underlying is between the Initial Value and the Barrier, the capital is fully protected.

If the Final Value is below the Barrier, the investor will receive the 125% final performance. For instance, if the Final Value is 50% the Initial Value, the product will pay off 62.5%. Note that this protection level of the Airbag does not knock-out.

If the Final Value of the underlying is above the Initial Value, the product will pay off the notional plus the positive performance of the underlying times the participation rate.



Pricing

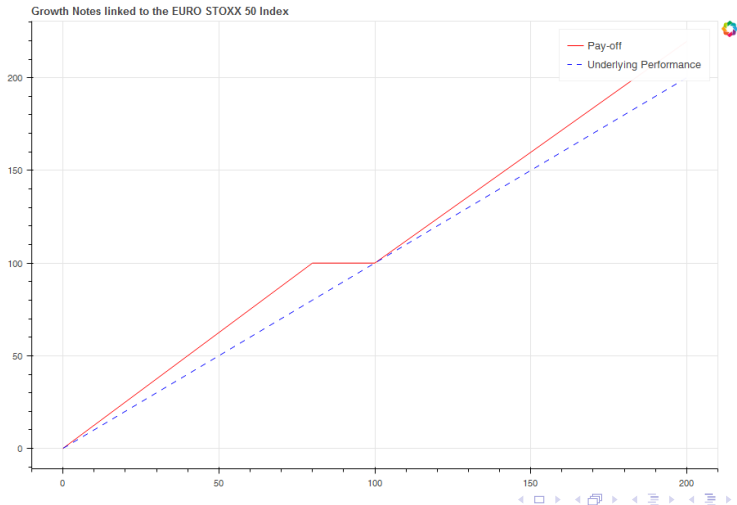
This Leveraged Airbag note can be broken down into a zero coupon bond a long position in an European call option with strike at the Initial Level and a short position in an European put option with strike at the Barrier Level.

We will use the Black Scholes framework to price the options. Since the change in price is measured in the underlying's currency but then paid out in the note's issue currency, we will use the quanto options closed formula.

Growth Notes linked to the EURO STOXX 50 Index



This product provides an exposition to both the upside and downside performance of the underlying. However if the underlying is below the strike but above the barrier, the investor will receive back the notional invested. On the other hand, the exposition to the upside is limited up to the 132%.



Product Information	
Name	Growth Notes linked to the EURO STOXX 50 Index
Issuer	Deutsche Bank AG
ISIN	XS0890102337
Initial Date	28th August 2015
Expiry Date	28th August 2019
Maturity Date	4th September 2019
Underlying	EURO STOXX 50
Reference Value	3019.34
Barrier Level	$(0.68 \cdot \text{Reference Value})$
Face Value	EUR 1,000

Pay-off

- If the Final Level $\geq 0.68 \cdot$ Reference Value:

$$100\% + \min \left[\max \left(0, \frac{\text{Final Level}}{\text{Reference Value}} - 1 \right), 32\% \right].$$

- Otherwise:

$$\frac{\text{Final Level}}{\text{Reference Value}}.$$

If the Final Value of the underlying is between the Reference Value and the Barrier, the capital is fully protected.

If the Final Value is below the Barrier, the investor will receive the final performance.

If the Final Value of the underlying is above the Reference Value, the product will pay off the notional plus the positive performance of the underlying up to 132%.



Pricing

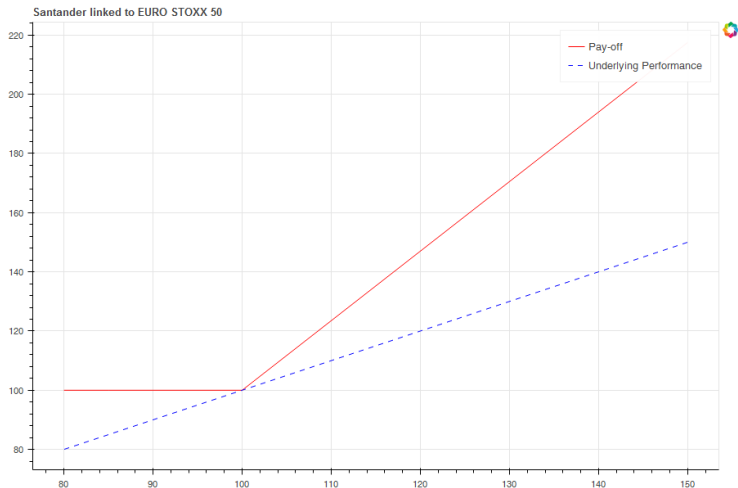
This Growth note can be broken down into a zero coupon bond a long position in an European call option with strike at the Reference Level, a short position in an European call option with strike at the 132% the Reference Level, a short position in a put option with strike at the Barrier Level and a short position in a digital put at the Reference Level.

We will use the Black Scholes framework to price the options.

Santander Notes Linked to EURO STOXX 50



This Uncapped Bull Capital Protection Note offers a full capital protection of the notional invested at maturity and allows the investor to take profit from the unlimited underlying's upside performance.



Product Information	
Name	Santander Notes Linked to EURO STOXX 50
Issuer	Santander International Products PLC
ISIN	XS0280055806
Issue Date	19th January 2007
Expiry Date	22nd December 2021
Maturity Date	19th January 2022
Underlying	EURO STOXX 50
Strike Level (Initial Value)	4,073.5
Face Value	EUR 50,000

Pay-off

$$100\% + \max\left(0\%, 235\% \times \frac{\text{Final Level} - \text{Initial Level}}{\text{Initial Level}}\right).$$

If the Final Value of the underlying is below the Initial Value, the investor will receive the notional since the capital is fully protected.

If the Final Value of the underlying is above the Initial Value, the product will pay-off the notional plus the positive performance of the underlying times the participation rate.



Pricing

This note can be broken down into a zero coupon bond a long position in an European call option with strike at the Initial Level.

We will use the Black Scholes framework to price the option.