

Calculating the return

Calculating the return on Natural Resource Guaranteed Investments (5-year term)

On February 8, 2012, John Doe purchases a Natural Resource Guaranteed Investment for \$20,000 for a term of 5 years. The return is based on the increase in value of the following natural resources as follows:

- Energy: 20% oil and 10% natural gas.
- Industrial metals: 7.5% aluminum, 15% copper, 7.5% zinc and 12.5% nickel.
- Precious metals: 15% gold.
- Agriculture: 12.5% (corn, soybeans, wheat, sugar, red wheat, cotton, coffee, cocoa)

Below are the details of his investment as indicated on the investment agreement.

Acquisition date:	February 8, 2012
Pre-issue interest rate (sales period):	1.00%
Issue date:	April 18, 2012
Maturity date:	April 18, 2017
Maximum growth:	35% for each commodity
Rate of participation in raw material price:	100%
Return on investment (from issue date to maturity date):	The return on maturity depends on the starting price and the average of the 3 final prices.

How the investment works

– From the acquisition date to the issue date, interest is earned at the pre-issue rate.

Amount invested	\$20,000.00
Interest calculated daily between February 8, 2012 to April 18, 2012 at a rate of 1.00%	<u>\$38.74</u>
Total	\$20,038.74

For the period between the date of issue and the date of maturity, the interest shall be determined at maturity according to the variation in the price of certain natural resources described below ("natural resources"), in the following manner:

$$\text{Interest} = \text{Principal} \times [\text{Cumulative Appreciation (A)}] \times 100\%$$

Where

$$A = \left[\frac{(CP^2 - CP^1)}{CP^1} \times 20\% \text{ for } R_1 + \frac{(CP^2 - CP^1)}{CP^1} \times 10\% \text{ for } R_2 + \frac{(CP^2 - CP^1)}{CP^1} \times 15\% \text{ for } R_3 + \frac{(CP^2 - CP^1)}{CP^1} \times 7.5\% \text{ for } R_4 + \frac{(CP^2 - CP^1)}{CP^1} \times 12.5\% \text{ for } R_5 + \frac{(CP^2 - CP^1)}{CP^1} \times 7.5\% \text{ for } R_6 + \frac{(CP^2 - CP^1)}{CP^1} \times 15\% \text{ for } R_7 + \frac{(CP^2 - CP^1)}{CP^1} \times 12.5\% \text{ for } R_8 \right] \times 100.000\%$$

For each of reference indexes R_1 to R_8 , the result $\frac{(CL^2 - CL^1)}{CL^1}$ is subject to a **35.000%** maximum.

- Principal = The amount of the Initial Deposit plus the cumulative pre-issue interest accrued between the date of Initial Deposit and the Date of Issue.
- A = Cumulative Appreciation of the basket.
- CP² = The average closing level of each of the reference indexes on **FEBRUARY 13, 2017, MARCH 13, 2017 AND APRIL 11, 2017** (or the following business day).
- CP¹ = The closing level of each of the reference indexes on **APRIL 11, 2012**.
- 100.000 %** = The rate of participation in the growth of the Natural Resources prices.

List of natural resources and weighting							
R ₁ : Oil	20%	R ₂ : Natural gas	10%	R ₃ : Copper	15%	R ₄ : Aluminum	7.5%
R ₅ : Nickel	12.5%	R ₆ : Zinc	7.5%	R ₇ : Gold	15%	R ₈ : Agricultural Index	12.5%

EXAMPLE OF YIELD CALCULATION AT MATURITY (5-year term) – Bull market

Natural resource	Start-of-period reference price* (CP ¹)	End-of-period reference price* (CP ²)	Appreciation of the price of the natural resource	Maximum appreciation considered	Retained appreciation	Weighting	Weighted appreciation of the price of the natural resource	Cumulative Appreciation of the basket (A) with the participation factor (100%)	Equivalent compounded annual yield**
R ₁ : Oil	\$US 100.87	\$US 120.31	19.27%	35.0%	19.27%	20%	3.85%		
R ₂ : Natural gas	\$US 2.77	\$US 5.50	98.56%	35.0%	35.00%	10%	3.50%		
R ₃ : Copper	\$US 7 689.50	\$US 10 605.00	37.92%	35.0%	35.00%	15%	5.25%		
R ₄ : Aluminum	\$US 2 134.50	\$US 2 520.13	18.07%	35.0%	18.07%	7.5%	1.35%		
R ₅ : Nickel	\$US 19 360.00	\$US 23 035.18	18.98%	35.0%	18.98%	12.5%	2.37%		
R ₆ : Zinc	\$US 1 910.00	\$US 2 506.32	31.22%	35.0%	31.22%	7.5%	2.34%		
R ₇ : Gold	\$US 1 661.00	\$US 1 951.23	17.47%	35.0%	17.47%	15%	2.62%		
R ₈ : Agricultural index	67.94	81.69	20.24%	35.0%	20.24%	12.5%	2.53%		
	* The agricultural index refers to a reference index level.						23.81%	23.81% x 100 % = 23.81%	4.36%

** The yield is presented for informational purposes only and is not indicative of future performance.

Calculation of interest on the principal

$$\text{\$20,038.74} \times 1.2381 = \text{\$ 24,809.96}$$

In this example of a bull market, the cumulative stock market index growth of **23.81%** corresponds to an annual rate of return of **4.36 %**.

Since the index growth rate is lower than **35%**, the interest paid to the investor's account on April 18, 2017 will be equal to the total index growth.

EXAMPLE OF YIELD CALCULATION AT MATURITY (5-year term) – Bear market

Natural resource	Start-of-period reference price* (CP ¹)	End-of-period reference price* (CP ²)	Appreciation of the price of the natural resource	Maximum appreciation considered	Retained appreciation	Weighting	Weighted appreciation of the price of the natural resource	Cumulative Appreciation of the basket (A) with the participation factor (100%)	Equivalent compounded annual yield**
R ₁ : Oil	\$US 100.87	\$US 90.59	-10.19%	35.0%	-10.19%	20%	-2.04%		
R ₂ : Natural gas	\$US 2.77	\$US 3.32	19.86%	35.0%	19.86%	10%	1.99%		
R ₃ : Copper	\$US 7 689.50	\$US 8 235.42	7.10%	35.0%	7.10%	15%	1.06%		
R ₄ : Aluminum	\$US 2 134.50	\$US 2 054.46	-3.75%	35.0%	-3.75%	7.5%	-0.28%		
R ₅ : Nickel	\$US 19 360.00	\$US 19 038.00	-1.66%	35.0%	-1.66%	12.5%	-0.21%		
R ₆ : Zinc	\$US 1 910.00	\$US 1 882.17	-1.46%	35.0%	-1.46%	7.5%	-0.11%		
R ₇ : Gold	\$US 1 661.00	\$US 1 219.20	-26.60%	35.0%	-26.60%	15%	-3.99%		
R ₈ : Agricultural index	67.94	58.69	-13.61%	35.0%	-13.61%	12.5%	-1.70%		
	* The agricultural index refers to a reference index level.						-5.28%	0.00% x 100 % = 0.00%	0.00%

** The yield is presented for informational purposes only and is not indicative of future performance.

Calculation of interest on the principal

$$\text{\$20,038.74} \times 1.0 = \text{\$ 20,038.74}$$

In this example of a bear market, the growth of the index is zero, therefore no interest will be paid to the account holder on April 18, 2017. Only the capital guarantee will apply.