SECURITIES LITIGATION & CONSULTING GROUP

# Structured Products Research Report

**Report Prepared On: 11/01/12**

## Structured Product Details

| | |
|---|---|
| **Name** | PLUS linked to the Market Vectors Gold Miners ETF |
| **Issue Size** | $5.37 million |
| **Issue Price** | $10 |
| **Term** | 12 Months |
| **Annualized Coupon** | 0.00% |
| **Pricing Date** | June 10, 2011 |
| **Issue Date** | June 15, 2011 |
| **Valuation Date** | June 15, 2012 |
| **Maturity Date** | June 20, 2012 |
| **Issuer** | Citigroup |
| **CDS Rate** | 46.23 bps |
| **Swap Rate** | 0.72% |
| **Reference Asset** | Market Vectors Gold Miners ETF's stock |
| **Initial Level** | $53.43 |
| **Dividend Rate** | 0.75% |
| **Implied Volatility** | 33.17% |
| **Delta**[1] | 0.74 |
| **Fair Price at Issue** | $9.52 |
| **Realized Return** | -12.00% |
| **CUSIP** | 17317U816 |
| **SEC Link** | www.sec.gov/Archives/edgar/data/831001/000095010311002329/dp23094_424b2-mtndg0053.htm |

### Related Research

**Research Papers:**

www.slcg.com/research.php

- *"Are Structured Products Suitable for Retail Investors?"* December 2006.
- *"Structured Products in the Aftermath of Lehman Brothers,"* November 2009.
- *"What TiVo and JP Morgan Teach Us about Reverse Convertibles,"* June 2010.


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# PLUS linked to the Market Vectors Gold Miners ETF

## Description

Citigroup issued $5.37 million of PLUS linked to the Market Vectors Gold Miners ETF on June 15, 2011 at $10 per note.

These notes are Citigroup-branded PLUS securities that do not pay periodic coupons, but instead pay a single amount at maturity depending on Market Vectors Gold Miners ETF's stock price at maturity.

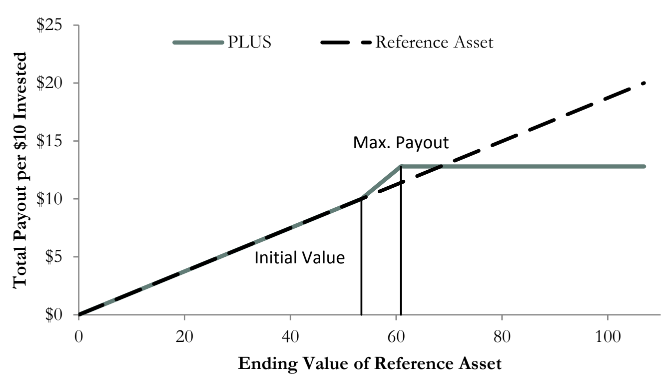
If Market Vectors Gold Miners ETF's stock price on June 15, 2012 is higher than $53.43, but lower than $60.91, the notes pay a return equal to the percentage increase in Market Vectors Gold Miners ETF's stock multiplied by 2.0. If on June 15, 2012 Market Vectors Gold Miners ETF's stock price is above the $60.91, the notes pay the maximum payout of $12.80. If on June 15, 2012 Market Vectors Gold Miners ETF's stock price is below $53.43, investors receive the face value per note reduced by the percentage decline in the reference asset. The notes will pay nothing at maturity if the reference asset declines to zero.

## Valuation

This note can be valued as a combination of a note from Citigroup, a short at-the-money put option, two long at-the-money call options, and two short out-of-the-money call options. The short at-the-money put option exposes investors to any decline in Market Vectors Gold Miners ETF's stock. The two short out-of-the-money call options has the strike price of $60.91, and limits the maximum return of the notes beyond the cap level. For reasonable valuation inputs this note was worth $9.52 when it was issued on June 15, 2011 because the value of the options investors gave Citigroup plus the interest investors would have received on Citigroup's straight debt was worth $0.48 more than the call options investors received from Citigroup.

There is no active secondary market for most structured products. Structured products, including this note, therefore are much less liquid than simple stocks, bonds, notes and mutual funds. Investors are likely to receive less than the structured product's estimated market value if they try to sell the structured product prior to maturity. Our valuations do not incorporate this relative lack of liquidity and therefore should be considered an upper bound on the value of the structured product.

**Payoff Curve at Maturity**

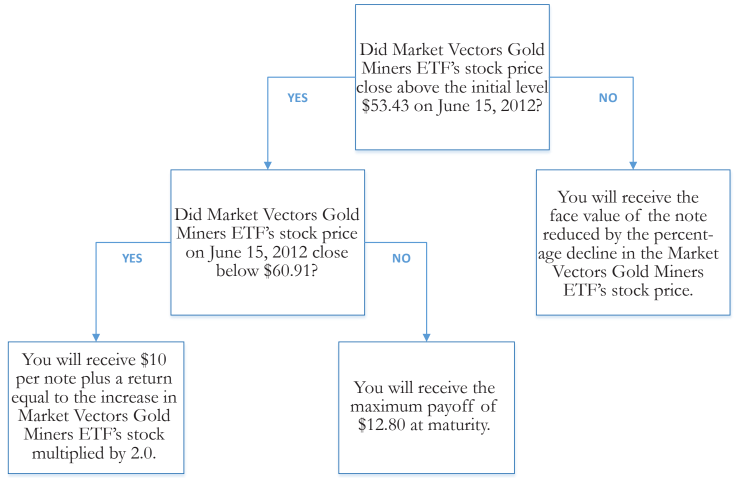



*The payoff diagram shows the final payoff of this note given Market Vectors Gold Miners ETF's stock price (horizontal axis). For comparison, the dashed line shows the payoff if you invested in Market Vectors Gold Miners ETF's stock directly.*

## Principal Payback Table

| Market Vectors Gold Miners ETF's Stock | Note Payoff |
|---|---|
| $0.00 | $0.00 |
| $5.34 | $1.00 |
| $10.69 | $2.00 |
| $16.03 | $3.00 |
| $21.37 | $4.00 |
| $26.72 | $5.00 |
| $32.06 | $6.00 |
| $37.40 | $7.00 |
| $42.74 | $8.00 |
| $48.09 | $9.00 |
| **$53.43** | **$10.00** |
| $58.77 | $12.00 |
| $64.12 | $12.80 |
| $69.46 | $12.80 |
| $74.80 | $12.80 |
| $80.15 | $12.80 |

## Maturity Payoff Diagram

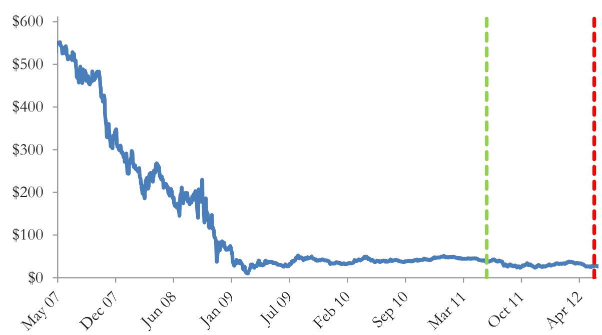



*The contingent payoffs of this PLUS.*

# Analysis

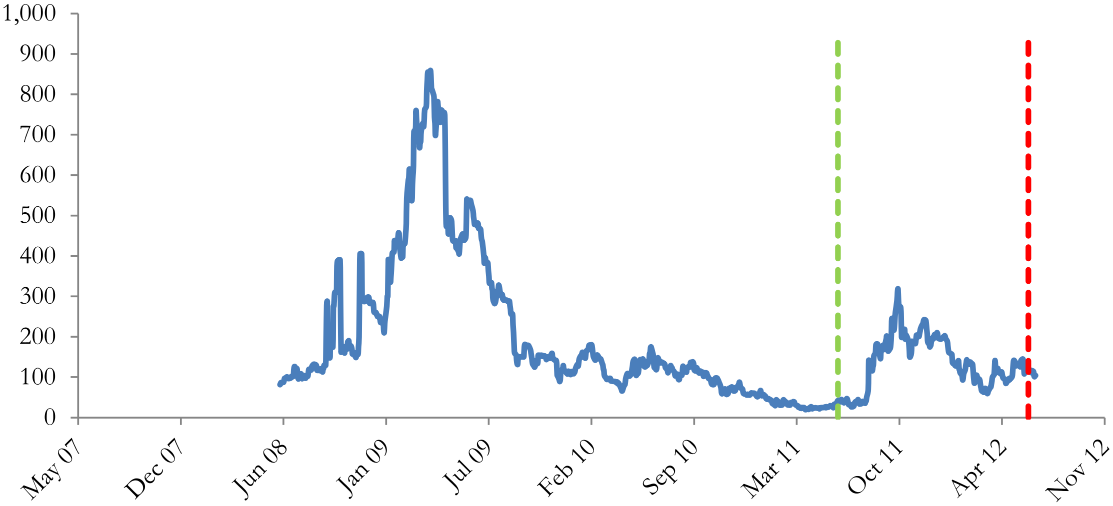
This PLUS pays investors the increase in Market Vectors Gold Miners ETF's stock multiplied by 2.0 capped at 28.00%, but if Market Vectors Gold Miners ETF's stock declines over the term of the note, investors will suffer losses equal to the percentage decline in Market Vectors Gold Miners ETF's stock. In addition, investors bear the credit risk of Citigroup. Investors purchasing this PLUS effectively sell at-the-money put and out-of-the-money call options to Citigroup, buy at-the-money call options, and a zero-coupon note from Citigroup. This PLUS is fairly priced if and only if the market value of the options investors received from Citigroup equals the market value of the options investors gave Citigroup plus the interest investors would have received on Citigroup's straight debt.

## Citigroup's Stock Price



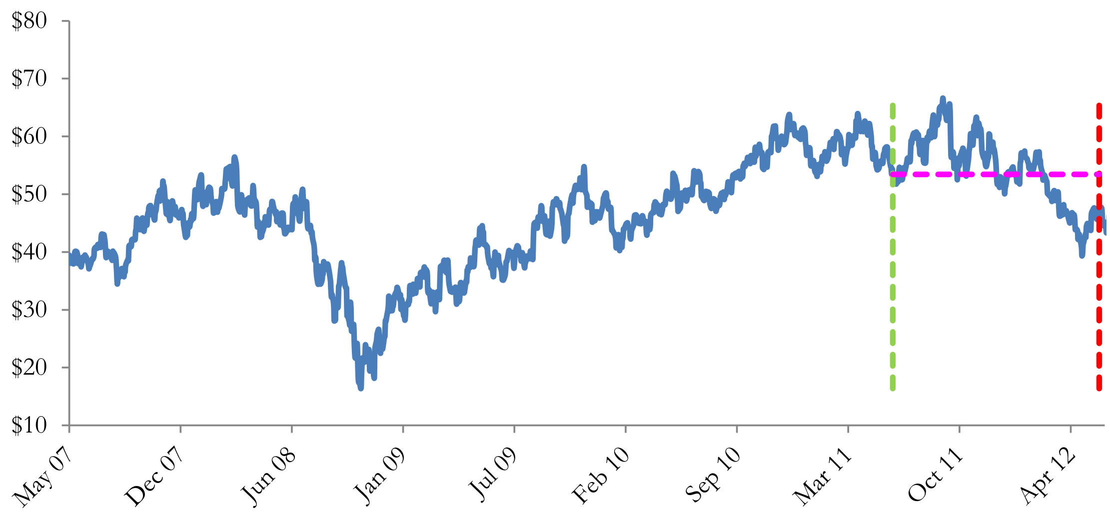

*The graph above shows the adjusted closing price of the issuer Citigroup for the past several years. The stock price of the issuer is an indication of the financial strength of Citigroup. The adjusted price shown above incorporates any stock split, reverse stock split, etc.*

**Citigroup's CDS Rate**




*Credit default swap (CDS) rates are the market price that investors require to bear credit risk of an issuer such as Citigroup. CDS rates are usually given in basis points (bps). One basis point equals 0.01%. Higher CDS rates reflect higher perceived credit risk, higher required yields, and therefore lower market value of Citigroup's debt, including outstanding PLUS. Fluctuations in Citigroup's CDS rate impact the market value of the notes in the secondary market.*

**Market Vectors Gold Miners ETF's Stock Price**

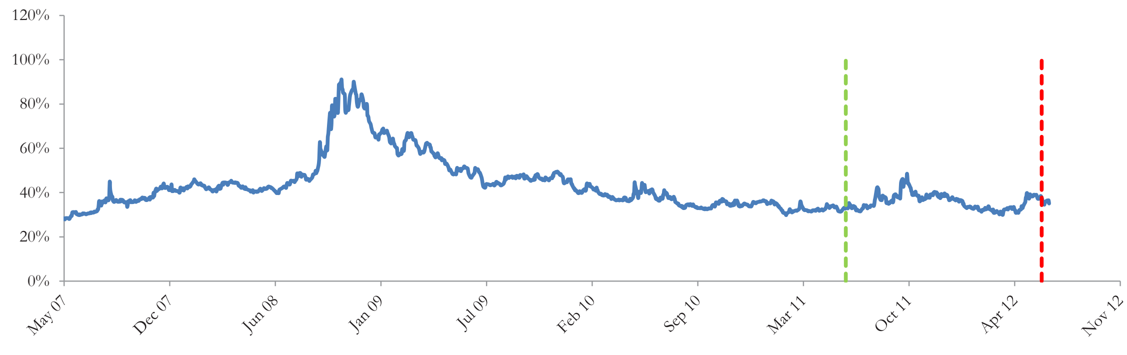



*The graph above shows the historical levels of Market Vectors Gold Miners ETF's stock for the past several years. The final payoff of this note is determined by Market Vectors Gold Miners ETF's stock price at maturity. Higher fluctuations in Market Vectors Gold Miners ETF's stock price correspond to a greater uncertainty in the final payout of this PLUS.*

**Realized Payoff**

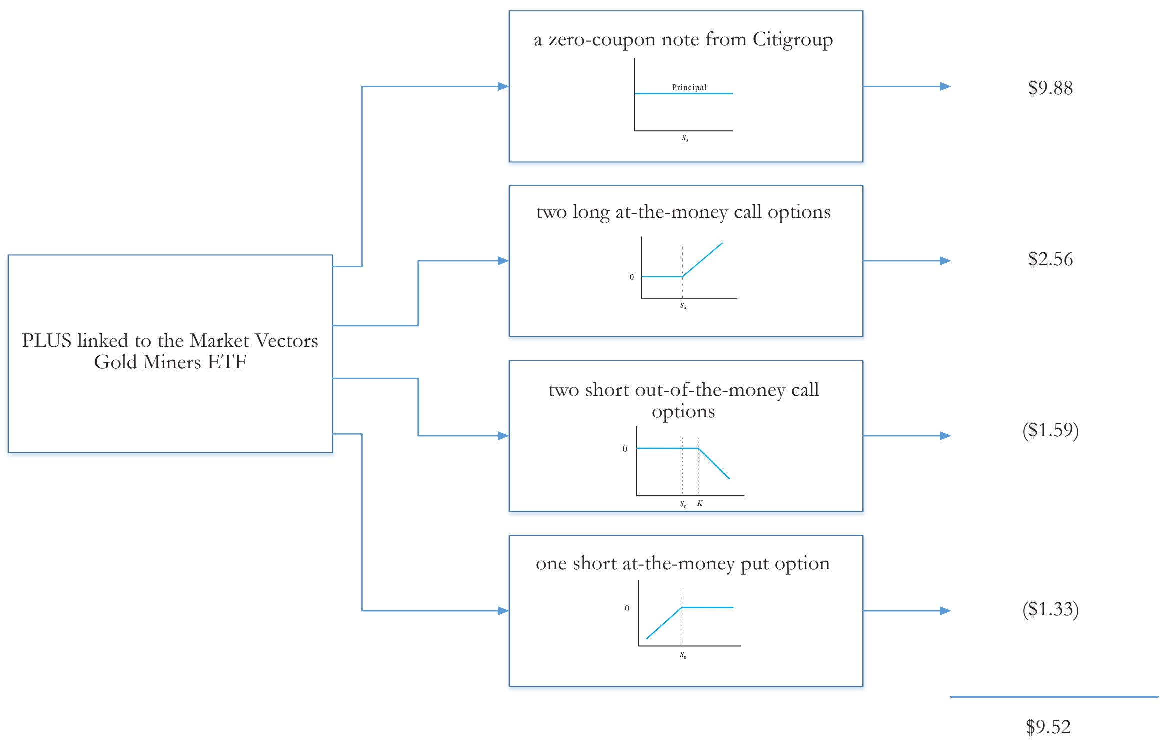
This note matured on June 20, 2012 and investors received $8.78 per note.

## Reference Asset Market Vectors Gold Miners ETF's Stock's Implied Volatility




*The annualized implied volatility of Market Vectors Gold Miners ETF's stock on June 10, 2011 was 33.17%, meaning that options contracts on Market Vectors Gold Miners ETF's stock were trading at prices that reflect an expected annual volatility of 33.17%. The higher the implied volatility, the larger the expected fluctuations of Market Vectors Gold Miners ETF's stock price and of the Note's market value during the life of the Notes.*

## Decomposition of this PLUS




*This note can be decomposed into different components, and each component can be valued separately. The chart above shows the value of each component of this PLUS.*

1. Delta measures the sensitivity of the price of the note to the Market Vectors Gold Miners ETF's stock price on June 10, 2011.
2. CDS rates can be considered a measure of the probability that an issuer will default over a certain period of time and the likely loss given a default. The lower the CDS rate, the lower the default probability. CDS rate is given in basis points (1 basis point equals 0.01%), and is considered as a market premium, on top of the risk-free rate, that investors require to insure against a potential default.
3. Fair price evaluation is based on the Black-Scholes model of the Market Vectors Gold Miners ETF's stock on June 10, 2011.
4. Calculated payout at maturity is only an approximation, and may differ from actual payouts at maturity.
5. Our evaluation does not include any transaction fees, broker commissions, or liquidity discounts on the notes.