

Report Prepared On: 01/29/13

## Structured Product Details

**Name** Reverse Convertible Note linked to Las Vegas Sands Corp.

**Issue Size** \$6.43 million  
**Issue Price** \$10  
**Term** 7 Months  
**Annualized Coupon** 16.38%

**Pricing Date** November 9, 2010  
**Issue Date** November 15, 2010  
**Valuation Date** June 9, 2011  
**Maturity Date** June 14, 2011

**Issuer** Citigroup  
**CDS Rate** 67.41 bps  
**Swap Rate** 0.49%

**Reference Asset** Las Vegas Sands Corp.'s stock  
**Initial Level** \$52.11  
**Trigger Price** \$33.87  
**Conversion Price** \$52.11  
**Dividend Rate** 0.00%  
**Implied Volatility** 56.93%  
**Delta** 0.43

**Fair Price at Issue** \$9.47  
**Realized Return** 17.02%

**CUSIP** 17316G636  
**SEC Link** [www.sec.gov/Archives/edgar/data/831001/000119312510258267/d424b2.htm](http://www.sec.gov/Archives/edgar/data/831001/000119312510258267/d424b2.htm)

## Related Research

### Research Papers:

[www.slcg.com/research.php](http://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.

## Geng Deng, Ph.D., FRM

Director, SLCG  
(+1) 703.890.0741  
[GengDeng@slcg.com](mailto:GengDeng@slcg.com)

## Reverse Convertible Note linked to Las Vegas Sands Corp.

### Description

Citigroup issued \$6.43 million of Reverse Convertible Note linked to Las Vegas Sands Corp. on November 15, 2010 at \$10 per note.

These notes are Citigroup-branded reverse convertibles. Reverse convertibles pay periodic interest coupons and at maturity convert into shares of the reference security if the price of the reference stock at the notes' maturity is below its price when the notes were issued and had closed below a specified "trigger" during the term of the notes.

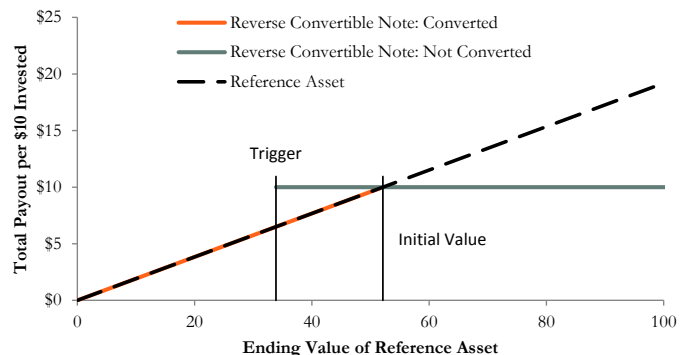
These 7-month notes pay monthly coupons at an annualized rate of 16.38%. In addition to the semi-annual coupons, at maturity on June 14, 2011 investors will receive the market value of 0.19 share of Las Vegas Sands Corp.'s stock if on June 9, 2011 Las Vegas Sands Corp.'s stock price closes below \$52.11 (Las Vegas Sands Corp.'s stock price on November 9, 2010) and had ever closed at or below \$33.87 during the term of the notes. Otherwise, investors will receive the \$10 face value per note.

### Valuation

This Citigroup reverse convertible linked to Las Vegas Sands Corp.'s stock can be valued as a combination of a note from Citigroup and a short down-and-in, at-the-money put option on Las Vegas Sands Corp.'s stock. For reasonable valuation inputs this note was worth \$9.47 per \$10 when it was issued on November 15, 2010 because investors were effectively being paid only \$0.88 for giving Citigroup an option which was worth \$1.40.

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

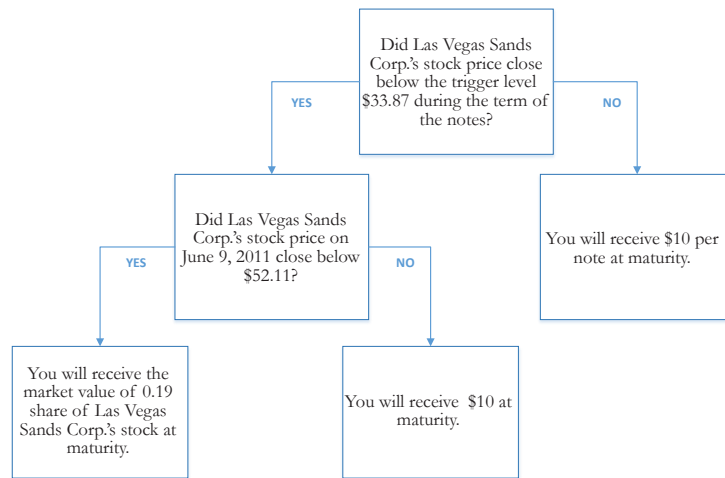


The payoff diagram shows the final payoff of this note given Las Vegas Sands Corp.'s stock price (horizontal axis). For comparison, the dashed line shows the payoff if you invested in Las Vegas Sands Corp.'s stock directly.

### Principal Payback Table

Las Vegas Sands Corp.'s Stock	Converted Note Payoff	Non-Converted Note Payoff
\$0.00	\$0.00	
\$5.21	\$1.00	
\$10.42	\$2.00	
\$15.63	\$3.00	
\$20.84	\$4.00	
\$26.06	\$5.00	
\$31.27	\$6.00	
\$36.48	\$7.00	\$10.00
\$41.69	\$8.00	\$10.00
\$46.90	\$9.00	\$10.00
<b>\$52.11</b>	<b>\$10.00</b>	<b>\$10.00</b>
\$57.32	\$10.00	\$10.00
\$62.53	\$10.00	\$10.00
\$67.74	\$10.00	\$10.00
\$72.95	\$10.00	\$10.00
\$78.17	\$10.00	\$10.00

### Maturity Payoff Diagram



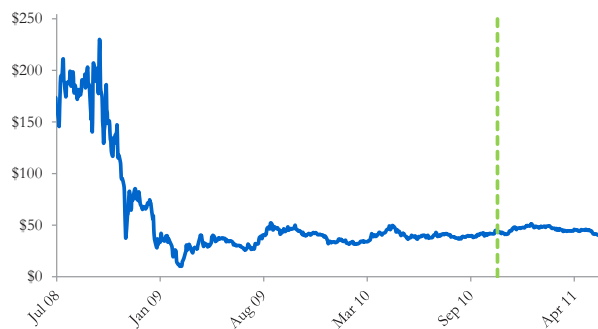
The contingent payoffs of this Reverse Convertible Note.

### Analysis

This reverse convertible's 16.38% coupon rate is higher than the yield Citigroup paid on its straight debt but, in addition to Citigroup's credit risk, investors bear the risk that they will receive shares of Las Vegas Sands Corp.'s stock when they are worth substantially less than the face value of the note at maturity.

Investors purchasing reverse convertibles effectively sell put options to Citigroup and post the note's issue price as collateral to secure satisfaction of the investors' obligations under the option contracts. Citigroup pays investors a "coupon" that is part payment for the put options and part interest on the investors' posted collateral. This reverse convertible is fairly priced if and only if the excess of the reverse convertible's "coupon rate" above the interest Citigroup pays on its straight debt equals the value of the put option investors are giving to Citigroup. Whether the reverse convertible is suitable or not is equivalent to whether selling put options on the reference stock at the option premium being paid by Citigroup was suitable for the investor.

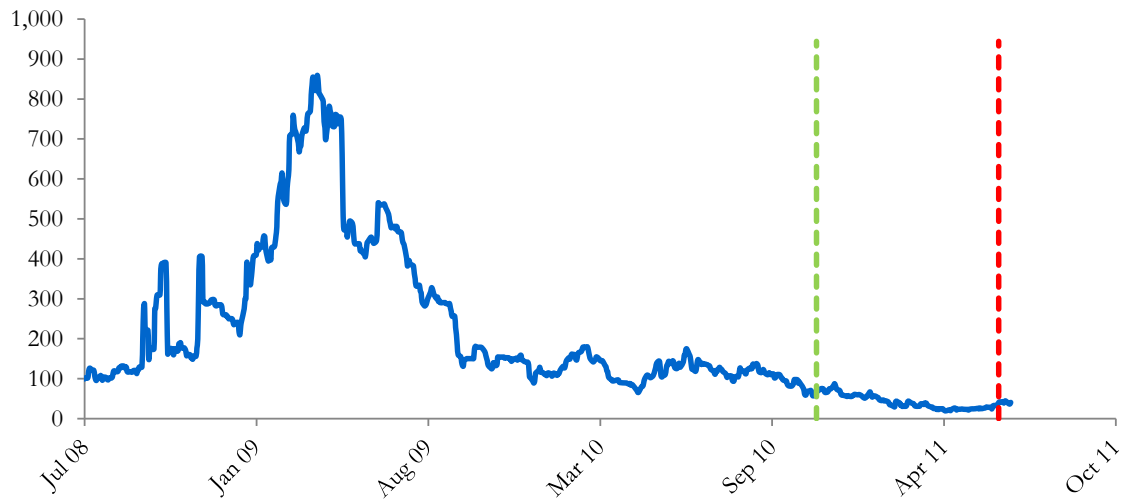
### Citigroup's Stock Price



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

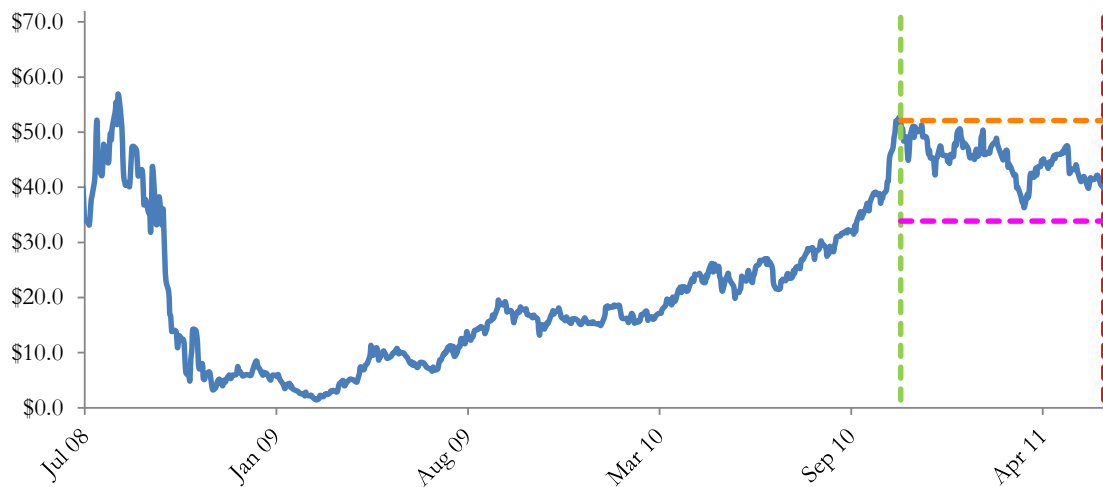
---



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 Reverse Convertible Note. Fluctuations in Citigroup's CDS rate impact the market value of the notes in the secondary market.

### Las Vegas Sands Corp.'s Stock Price

---



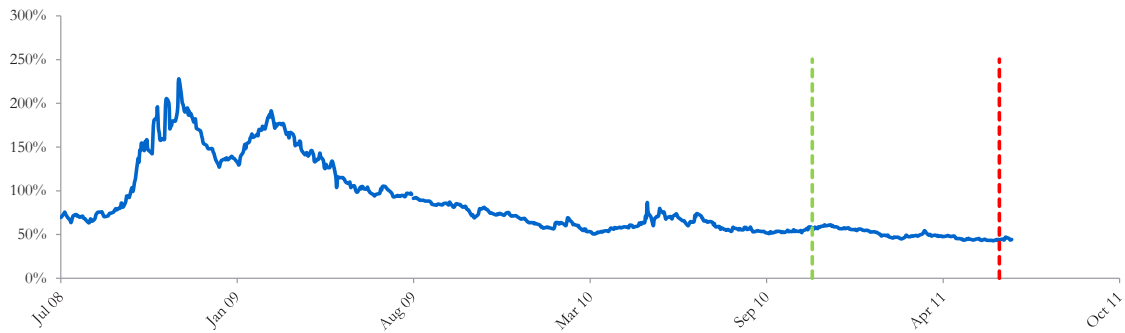
The graph above shows the historical levels of Las Vegas Sands Corp.'s stock for the past several years. The final payoff of this note is determined by Las Vegas Sands Corp.'s stock price at maturity. Higher fluctuations in Las Vegas Sands Corp.'s stock price correspond to a greater uncertainty in the final payout of this Reverse Convertible Note.

### Realized Payoff

---

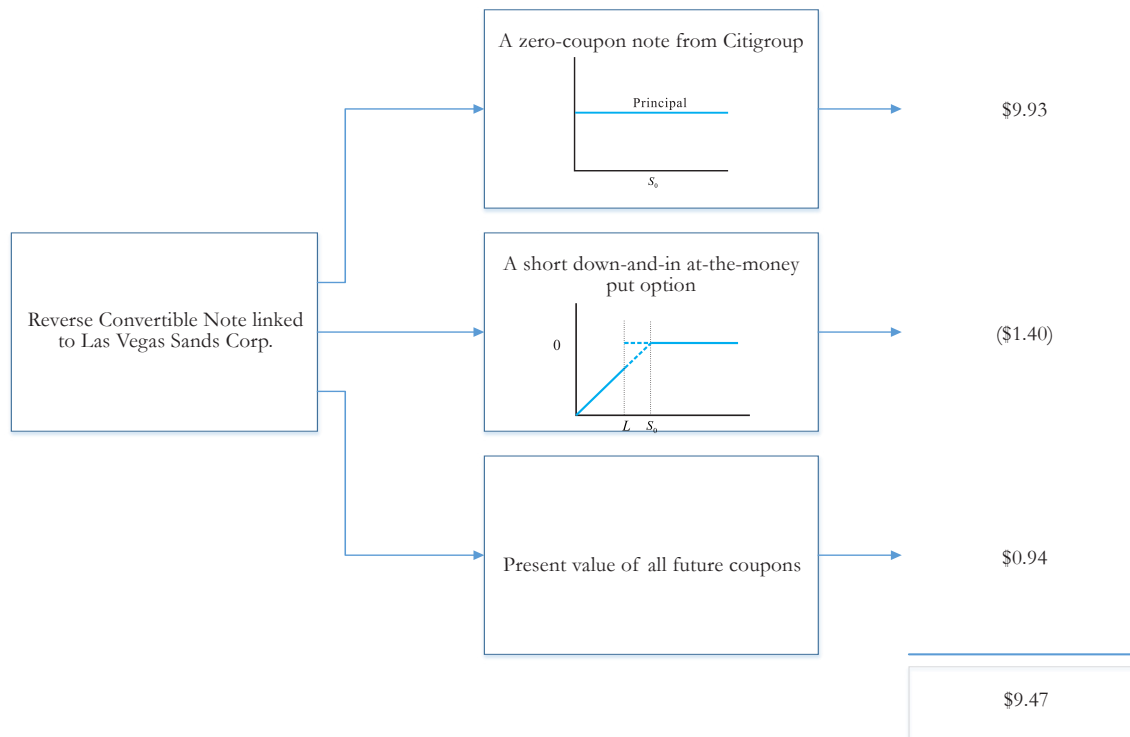
This note matured on June 14, 2011 and investors received \$10.00 per note.

## Reference Asset Las Vegas Sands Corp.'s Stock's Implied Volatility



The annualized implied volatility of Las Vegas Sands Corp.'s stock on November 9, 2010 was 56.93%, meaning that options contracts on Las Vegas Sands Corp.'s stock were trading at prices that reflect an expected annual volatility of 56.93%. The higher the implied volatility, the larger the expected fluctuations of Las Vegas Sands Corp.'s stock price and of the Note's market value during the life of the Notes.

## Decomposition of this Reverse Convertible Note



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 Reverse Convertible Note.

1. Delta measures the sensitivity of the price of the note to the Las Vegas Sands Corp.'s stock price on November 9, 2010.
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 Las Vegas Sands Corp.'s stock on November 9, 2010.
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.