

### Structured Product Details

| Name I  | Buffered S&P 500 Index-Linked<br>Notes linked to S&P 500 Index                                   |  |
|---|--|--|
| Issue Size<br>Issue Price<br>Term<br>Annualized Cou                   | \$1.55 million<br>\$1,000<br>48 Months<br>pon 0.00%  |  |
| Pricing Date<br>Issue Date<br>Valuation Date<br>Maturity Date         | May 13, 2013<br>May 20, 2013<br>May 15, 2017<br>May 18, 2017                                     |  |
| Issuer<br>CDS Rate<br>Swap Rate                                       | Goldman Sachs<br>82.72 bps<br>0.73%  |  |
| Reference Asset   | the S&P 500 Index  |  |
| Initial Level<br>Dividend Rate<br>Implied Volat<br>Delta <sup>1</sup> |  |  |
| Fair Price at Issu  | ae \$968.76  |  |
| CUSIP<br>SEC Link   | 38147M253<br>www.sec.gov/Archives/edgar/<br>data/886982/000119312513222656/<br>d539357d424b2.htm |  |

Report Prepared On: 07/30/13

# Buffered S&P 500 Index-Linked Notes linked to S&P 500 Index

## Description

Goldman Sachs issued \$1.55 million of Buffered S&P 500 Index-Linked Notes linked to S&P 500 Index on May 20, 2013 at \$1,000 per note.

These notes are Goldman Sachs-branded Buffered PLUS securities that do not pay periodic coupons, but instead pay a single amount at maturity depending on the final level of the S&P 500 Index.

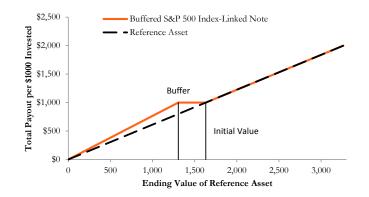
If on May 15, 2017 the S&P 500 Index level is higher than 1,632.15, the notes pay a return equal to the percentage increase in the S&P 500 Index. If on May 15, 2017 the refe is below 1,632.15 but not below 1305.72, investors receive \$1,000 face value per note. If the S&P 500 Index level on May 15, 2017 is lower than 1305.72, investors receive face value per note reduced by 1.25 times the amount the reference asset is below 1305.72 as a percent of the initial level, 1,632.15.

# Valuation

This product can be valued as a combination of a note from Goldman Sachs, 1.25 short out-of-the-money put options, and one long at-the-money call option. For reasonable valuation inputs this note was worth \$968.76 when it was issued on May 20, 2013 because the value of the options investors gave Goldman Sachs plus the interest investors would have received on Goldman Sachs's straight debt was worth \$31.24 more than the options investors received from Goldman Sachs.

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 the S&P 500 Index level (horizontal axis). For comparison, the dashed line shows the payoff if you invested in the S&P 500 Index directly.

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### **Related Research**

#### **Research Papers:**

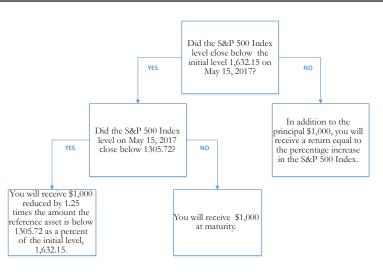
www.slcg.com/research.php

- "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.

#### Principal Payback Table

| The S&P 500 Index | Note Payoff |
|-------------------|-------------|
| 0.00              | \$0.00      |
| 163.22            | \$125.00    |
| 326.43            | \$250.00    |
| 489.65            | \$375.00    |
| 652.86            | \$500.00    |
| 816.08            | \$625.00    |
| 979.29            | \$750.00    |
| 1,142.51          | \$875.00    |
| 1,305.72          | \$1,000.00  |
| 1,468.94          | \$1,000.00  |
| 1,632.15          | \$1,000.00  |
| 1,795.37          | \$1,100.00  |
| 1,958.58          | \$1,200.00  |
| 2,121.80          | \$1,300.00  |
| 2,285.01          | \$1,400.00  |
| 2,448.23          | \$1,500.00  |

#### Maturity Payoff Diagram

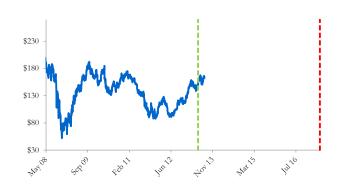


The contingent payoffs of this Buffered S&P 500 Index-Linked Note.

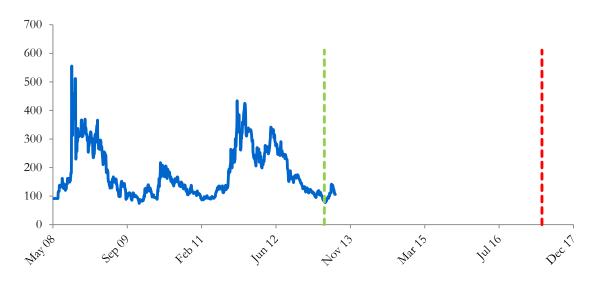
### Analysis

This Buffered S&P 500 Index-Linked Note pays investors the increase in the S&P 500 Index, but if the S&P 500 Index declines over the term of the note, investors will suffer losses equal to the percentage decline in the S&P 500 Index. In addition, investors bear the credit risk of Goldman Sachs. Investors purchasing this Buffered S&P 500 Index-Linked Note effectively sell at-the-money put options to Goldman Sachs, buy at-the-money call options, and a zero-coupon note from Goldman Sachs. This Buffered S&P 500 Index-Linked Note is fairly priced if and only if the market value of the options investors received from Goldman Sachs equals the market value of the options investors straight debt.

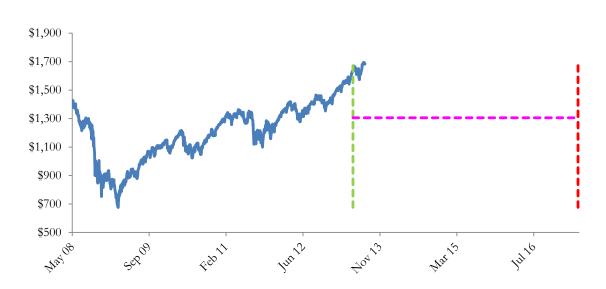
#### Goldman Sachs's Stock Price



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



Credit default swap (CDS) rates are the market price that investors require to bear credit risk of an issuer such as Goldman Sachs. 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 Goldman Sachs's debt, including outstanding Buffered S&P 500 Index-Linked Note. Fluctuations in Goldman Sachs's CDS rate impact the market value of the notes in the secondary market.



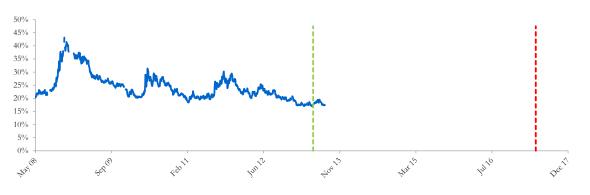
### The S&P 500 Index Level

The graph above shows the historical levels of the S&P 500 Index for the past several years. The final payoff of this note is determined by the S&P 500 Index level at maturity. Higher fluctuations in the S&P 500 Index level correspond to a greater uncertainty in the final payout of this Buffered S&P 500 Index-Linked Note.

#### **Realized Payoff**

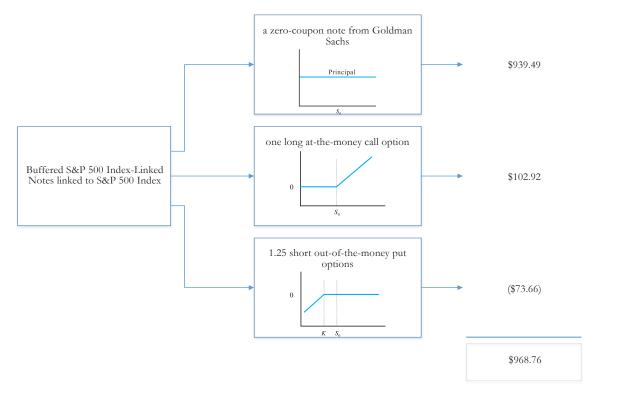
This product will mature on May 18, 2017.

#### Reference Asset The S&P 500 Index's Implied Volatility



The annualized implied volatility of the S&P 500 Index on May 13, 2013 was 17.57%, meaning that options contracts on the S&P 500 Index were trading at prices that reflect an expected annual volatility of 17.57%. The bigber the implied volatility, the larger the expected fluctuations of the S&P 500 Index level and of the Note's market value during the life of the Notes.

#### Decomposition of this Buffered S&P 500 Index-Linked 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 Buffered S&P 500 Index-Linked Note.

- Delta measures the sensitivity of the price of the note to the the S&P 500 Index level on May 13, 2013.
  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.
  Fair price evaluation is based on the Black-Scholes model of the the S&P 500 Index on May 13, 2013.
  Calculated payout at maturity is only an approximation, and may differ from actual payouts at maturity.
  Our evaluation does not include any transaction fees, broker commissions, or liquidity discounts on the notes.

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