## Structured Products <br> Research Report

## Structured Product Details

| NameBuffered Accelerated Market <br> Participation Securities linked to <br> Apple, Inc. |  |
| :--- | ---: |
| Issue Size | $\$ 710,000$ |
| Issue Price | $\$ 1,000$ |
| Term | 18 Months |
| Annualized Coupon | $0.00 \%$ |
| Pricing Date | January 22, 2013 |
| Issue Date | January 25, 2013 |
| Valuation Date | July 22, 2014 |
| Maturity Date | July 25, 2014 |
| Issuer | HSBC |
| CDS Rate | 25.74 bps |
| Swap Rate | $0.60 \%$ |
|  |  |
| Reference Asset | Apple, Inc.'s stock |
| Initial Level | $\$ 504.77$ |
| Dividend Rate | $1.04 \%$ |
| Implied Volatility | $30.76 \%$ |
| Delta ${ }^{1}$ | 0.58 |

Fair Price at Issue
$\$ 979.75$
CUSIP
SEC Link

40432X7J4
www.sec.gov/Archives/edgar/ data/83246/000114420413003875/ v332858 424b $2 . \mathrm{htm}$

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.

Tim Husson, Ph.D.,
Senior Financial Economist, SLCG
(+1) 703.890.0743
TimHusson@slcg.com

## Buffered Accelerated Market Participation Securities linked to Apple, Inc.

## Description

HSBC issued $\$ 710,000$ of Buffered Accelerated Market Participation Securities linked to Apple, Inc. on January 25, 2013 at $\$ 1,000$ per note.
These notes are HSBC-branded Buffered PLUS securities that do not pay periodic coupons, but instead pay a single amount at maturity depending on the final level of Apple, Inc.'s stock.

If on July 22, 2014 Apple, Inc.'s stock price is higher than $\$ 504.77$, but lower than $\$ 572.91$, the notes pay a return equal to the percentage increase in Apple, Inc.'s stock multiplied by 2.0 , up to a cap of $27.00 \%$. If on July 22, 2014 the refe is below $\$ 504.77$ but not below $\$ 454.29$, investors receive $\$ 1,000$ face value per note. If Apple, Inc.'s stock price on July 22, 2014 is lower than $\$ 454.29$, investors receive face value per note reduced by the amount the reference asset is below $\$ 454.29$ as a percent of the initial level, $\$ 504.77$.

## Valuation

This product can be valued as a combination of a note from HSBC, one short out-of-themoney put option, two long at-the-money call options, and two short out-of-the-money call options. For reasonable valuation inputs this note was worth $\$ 979.75$ when it was issued on January 25, 2013 because the value of the options investors gave HSBC plus the interest investors would have received on HSBC's straight debt was worth $\$ 20.25$ more than the options investors received from HSBC.

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 Apple, Inc.'s stock price (horizontal axis). For comparison, the dashed line shows the payoff if you invested in Apple, Inc.'s stock directly.

## Principal Payback Table

| Apple, Inc.'s Stock | Note Payoff |
| :---: | :---: |
| $\$ 0.00$ | $\$ 100.00$ |
| $\$ 50.48$ | $\$ 200.00$ |
| $\$ 100.95$ | $\$ 300.00$ |
| $\$ 151.43$ | $\$ 400.00$ |
| $\$ 201.91$ | $\$ 500.00$ |
| $\$ 252.39$ | $\$ 600.00$ |
| $\$ 302.86$ | $\$ 700.00$ |
| $\$ 353.34$ | $\$ 800.00$ |
| $\$ 403.82$ | $\$ 900.00$ |
| $\$ 454.29$ | $\$ 1,000.00$ |
| $\$ 504.77$ | $\$ 1,000.00$ |
| $\$ 555.25$ | $\$ 1,200.00$ |
| $\$ 605.72$ | $\$ 1,270.00$ |
| $\$ 656.20$ | $\$ 1,270.00$ |
| $\$ 706.68$ | $\$ 1,270.00$ |
| $\$ 757.16$ | $\$ 1,270.00$ |

Maturity Payoff Diagram


The contingent payoffs of this Buffered Accelerated Market Participation Security.

## Analysis

This Buffered Accelerated Market Participation Security pays investors the increase in Apple, Inc.'s stock multiplied by 2.0 capped at $27.00 \%$, but if Apple, Inc.'s stock declines over the term of the note, investors will suffer losses equal to the percentage decline in Apple, Inc.'s stock. In addition, investors bear the credit risk of HSBC. Investors purchasing this Buffered Accelerated Market Participation Security effectively sell at-the-money put and out-of-the-money call options to HSBC, buy at-the-money call options, and a zerocoupon note from HSBC. This Buffered Accelerated Market Participation Security is fairly priced if and only if the market value of the options investors received from HSBC equals the market value of the options investors gave HSBC plus the interest investors would have received on HSBC's straight debt.

## HSBC's Stock Price



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

## HSBC's CDS Rate



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

## Apple, Inc.'s Stock Price



The graph above shows the bistorical levels of Apple, Inc.'s stock for the past several years. The final payoff of this note is determined by Apple, Inc.'s stock price at maturity. Higher fluctuations in Apple, Inc.'s stock price correspond to a greater uncertainty in the final payout of this Buffered Accelerated Market Participation Security.

## Realized Payoff

This product will mature on July 25, 2014.

## Reference Asset Apple, Inc.'s Stock's Implied Volatility



The annualized implied volatility of Apple, Inc.'s stock on January 22, 2013 was $30.76 \%$, meaning that options contracts on Apple, Inc.'s stock. were trading at prices that reflect an expected annual volatility of $30.76 \%$. The bigher the implied volatility, the larger the expected fluctuations of Apple, Inc.'s stock price and of the Note's market value during the life of the Notes.

## Decomposition of this Buffered Accelerated Market Participation Security



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 Accelerated Market Participation Security.

1. Delta measures the sensitivity of the price of the note to the Apple, Inc.'s stock price on January 22, 2013.
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 Apple, Inc.'s stock on January 22, 2013.
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.
