

## Structured Product Details

Name	Yield Optimization Securities with Contingent Protection linked to China Mobile Ltd	
Issue Size Issue Price Term Annualized C	\$1.35 million \$49.73 24 Months 9.45%	
Pricing Date Issue Date Valuation Dat Maturity Date	September 15, 2009 September 18, 2009 September 15, 2011 September 21, 2011	
Issuer CDS Rate Swap Rate	UBS 92.45 bps 1.28%	
Reference Ass	et China Mobile Ltd's stock	
Initial Leve Trigger Pri Conversion Dividend R Implied Vo Delta <sup>1</sup>	e \$37.30 Price \$49.73 ate 3.90%	
Fair Price at I Realized Retu	+ · · · · ·	
CUSIP SEC Link	902661156 www.sec.gov/Archives/edgar/ data/1114446/000139340109000471/ c160565_690386-424b2.htm	

Structured Products Research Report

Report Prepared On: 01/10/13

# Yield Optimization Securities with Contingent Protection linked to China Mobile Ltd

# Description

UBS issued \$1.35 million of Yield Optimization Securities with Contingent Protection linked to China Mobile Ltd on September 18, 2009 at \$49.73 per note.

These notes are UBS-branded single observation reverse convertibles. Single observation reverse convertibles pay periodic interest coupons and at maturity convert into shares of the reference security if the price of the reference security at the notes' maturity is below the trigger price determined when the notes were issued.

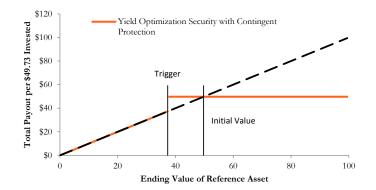
These 24-month notes pay monthly coupons at an annualized rate of 9.45%. In addition to the monthly coupons, on September 21, 2011 investors will receive the market value of one share of China Mobile Ltd's stock if on September 15, 2011 China Mobile Ltd's stock closes below \$37.30 (75% of China Mobile Ltd's stock price on September 15, 2009). Otherwise, investors will receive the \$49.73 face value per note.

# Valuation

This UBS single observation reverse convertible linked to China Mobile Ltd's stock can be valued as a combination of a note from UBS and a short European out-of-the-money cash-or-nothing put option, and a short European out-of-the-money put option on China Mobile Ltd's stock. For reasonable valuation inputs this note was worth \$46.84 per \$49.73 when it was issued on September 18, 2009 because investors were effectively being paid only \$7.06 for giving UBS options which were worth \$9.96.

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 China Mobile Ltd's stock price (horizontal axis). For comparison, the dashed line shows the payoff if you invested in China Mobile Ltd's stock 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

China Mobile Ltd's Stock	Note Payoff
\$0.00	\$0.00
\$4.97	\$4.97
\$9.95	\$9.95
\$14.92	\$14.92
\$19.89	\$19.89
\$24.87	\$24.87
\$29.84	\$29.84
\$34.81	\$34.81
\$39.78	\$49.73
\$44.76	\$49.73
\$49.73	\$49.73
\$54.70	\$49.73
\$59.68	\$49.73
\$64.65	\$49.73
\$69.62	\$49.73
\$74.60	\$49.73

#### Maturity Payoff Diagram



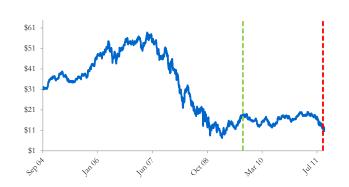
The contingent payoffs of this Yield Optimization Security with Contingent Protection.

## Analysis

This single observation reverse convertible's 9.45% coupon rate is higher than the yield UBS paid on its straight debt but, in addition to UBS's credit risk, investors bear the risk that they will receive shares of China Mobile Ltd's stock when those shares are worth substantially less than the face value of the note at maturity.

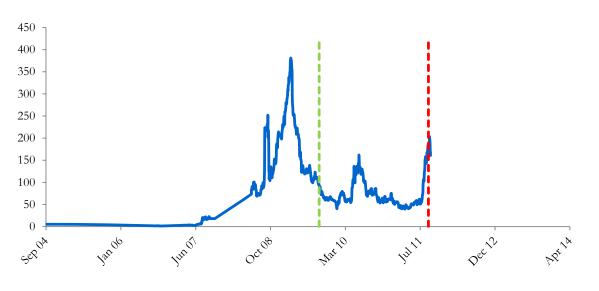
Investors purchasing these reverse convertibles effectively sell put options to UBS and post the note's issue price as collateral to secure satisfaction of the investors' obligations under the option contracts. UBS pays investors a "coupon" that is part payment for the put options and part interest on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

#### **UBS's Stock Price**



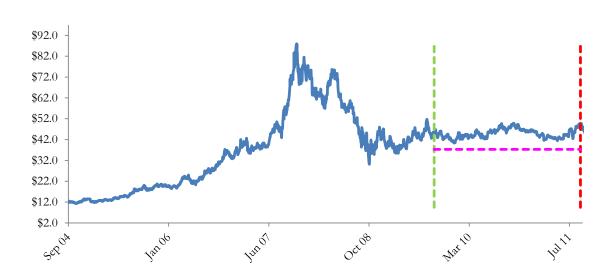
The graph above shows the adjusted closing price of the issuer UBS for the past several years. The stock price of the issuer is an indication of the financial strength of UBS. The adjusted price shown above incorporates any stock split, reverse stock split, etc.





Credit default swap (CDS) rates are the market price that investors require to bear credit risk of an issuer such as UBS. 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 UBS's debt, including outstanding Yield Optimization Security with Contingent Protection. Fluctuations in UBS's CDS rate impact the market value of the notes in the secondary market.

#### China Mobile Ltd's Stock Price

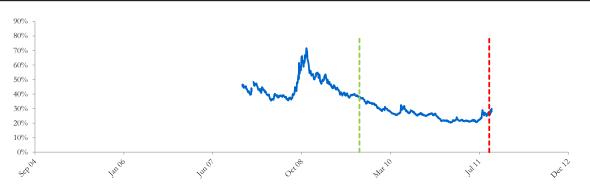


The graph above shows the historical levels of China Mobile Ltd's stock for the past several years. The final payoff of this note is determined by China Mobile Ltd's stock price at maturity. Higher fluctuations in China Mobile Ltd's stock price correspond to a greater uncertainty in the final payout of this Yield Optimization Security with Contingent Protection.

#### **Realized Payoff**

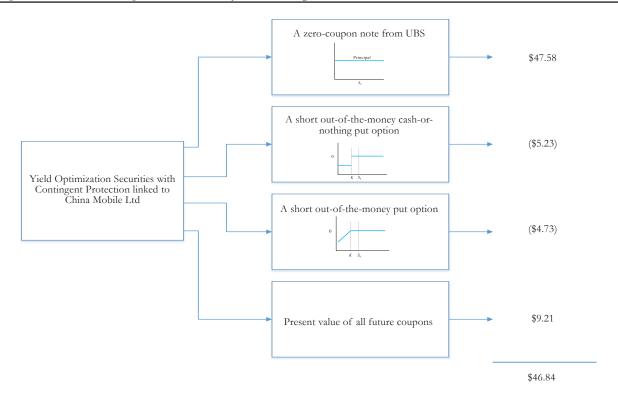
This note matured on September 21, 2011 and investors received \$49.73 per note.

### Reference Asset China Mobile Ltd's Stock's Implied Volatility



The annualized implied volatility of China Mobile Ltd's stock on September 15, 2009 was 38.23%, meaning that options contracts on China Mobile Ltd's stock were trading at prices that reflect an expected annual volatility of 38.23%. The higher the implied volatility, the larger the expected fluctuations of China Mobile Ltd's stock price and of the Note's market value during the life of the Notes.

#### Decomposition of this Yield Optimization Security with Contingent Protection



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 Yield Optimization Security with Contingent Protection.

- Delta measures the sensitivity of the price of the note to the China Mobile Ltd's stock price on September 15, 2009.
  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 China Mobile Ltd's stock on September 15, 2009.
  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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