

REFERENCE DERIVATIVES®

Case Study : Commodity Swap

Problem : An oil-consuming client needs to buy oil in the future and wishes to immunize against future oil price movement.

Solution : The client asks a bank to enter a *Commodity Swap* in which the bank pays periodically to the client a floating amount indexed on the front oil future contract's price at the coupon date. In exchange for this, the client pays periodically an amount K that is fixed at deal time. The notional amount of the deal the client enters into with the bank matches the client's anticipated oil consumption. The observed contract price is most often averaged, so as to smooth the effect of large future price variations near maturity of the oil futures contract.

Example Term Sheet And Valuation :

Value Commodity Swaps at www.referencederivatives.com

Deal : Swap fixed coupon payments in the numeraire currency for the arithmetic average of daily observations of the front Futures contract in the underlying commodity.

Daily Observations are made on each business day of the period month. Each Period is cash-settled in the numeraire currency on the business day immediately following the last business day of the period month.

Terms :

Currency Pair	WTIUSD (US Dollar per Barrel of Cushing WTI Crude)
Effective Date	Wed 1 Jun 2011
Termination Date	Fri 1 Jun 2012
Fixed Coupon	USD 102.425
Value of the Swap	USD 0.0
Value of a USD 1.00 Annuity	USD 11.97822069298487
Breakeven Coupon	USD 102.42502101428606
Valuation Date	Fri 27 May 2011

Schedule :

Fixing Date	Payment Date	Expected Average	Expected Cash Flow	Period PV
Thu 30 Jun 2011	Fri 1 Jul 2011	100.7713636364	USD -1.65	USD -1.65
Fri 29 Jul 2011	Mon 1 Aug 2011	101.3245	USD -1.1	USD -1.09
Wed 31 Aug 2011	Thu 1 Sep 2011	101.7426086957	USD -0.68	USD -0.68
Fri 30 Sep 2011	Mon 3 Oct 2011	102.1180952381	USD -0.3	USD -0.3
Mon 31 Oct 2011	Tue 1 Nov 2011	102.3975	USD -0.02	USD -0.02
Wed 30 Nov 2011	Thu 1 Dec 2011	102.611	USD 0.19	USD 0.19
Thu 29 Dec 2011	Tue 3 Jan 2012	102.769	USD 0.34	USD 0.34
Tue 31 Jan 2012	Wed 1 Feb 2012	102.895	USD 0.47	USD 0.47
Wed 29 Feb 2012	Thu 1 Mar 2012	102.99	USD 0.56	USD 0.56
Fri 30 Mar 2012	Mon 2 Apr 2012	103.0927272727	USD 0.67	USD 0.67
Mon 30 Apr 2012	Tue 1 May 2012	103.1728571429	USD 0.75	USD 0.75
Thu 31 May 2012	Fri 1 Jun 2012	103.2245454545	USD 0.8	USD 0.8