

## NASDAQ OMX STOCKHOLM OFFERS CLEARING OF SWAP FUTURES

The market for trading in interest-rate swaps has advanced in recent years. According to the Bank of International Settlement, the total outstanding volume of interest-rate swaps exceeded \$350 trillion in June 2008 compared with \$250 trillion in June 2006. As a result of the substantial flows in this market and the liquidity of these instruments, the swap curve is used widely as a benchmark when pricing and valuing other interest-rate related instruments.

To support and broaden the Swedish market for interest-rate swaps, NASDAQ OMX Stockholm is to introduce cash-settled futures contracts based on NASDAQ OMX's SEK swap fixing. The contract base is a fictitious interest-rate swap with a future start date, with two, five or ten years to maturity. The contract will be settled on maturity against NASDAQ OMX's SEK swap fixing for the particular term. The contract will enable participants in the market to obtain exposure against the Swedish swap curve through an exchange-cleared contract.

### Facts about NASDAQ OMX Interest Rate Swap future (NOIS)

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Contract type	Futures contract with daily cash settlement
Contract base	Interest rate swap with a future start date. Underlying term of two, five or ten years after the contract's expiration day.
Contract base size	Nominal value of SEK 1,000,000
Trading	Trades in NOIS futures will be reached through bilateral negotiations between buyers and sellers, and reported to NASDAQ OMX for central counterparty clearing.
Tick size	0.001
Tick value	Will vary according to maturity and the prevailing market interest rate
Price	Price expressed as fixed interest rate for the underlying period
Swap convention	Simple interest-rate swap design, whereby the buyer undertakes to pay the fixed interest rate in return for three-month STIBOR, denominated in SEK and with two, five or ten years to maturity after the contract's due date
Day count convention	The fixed interest rate is based on 30E/360 and the variable interest rate is based on Actual/360

Expiration months	March, June, September and December
Final settlement day	First bank day following expiration day
Expiration day/final day of trading	Two bank days prior to the third Wednesday of the expiration month
Daily fix	Median value of indicative buy and sell interest rates quoted by market makers
Expiration day fix	NASDAQ OMX's SEK swap fixing for respective maturity, which will be published by NASDAQ OMX and distributed by vendors to the market
Offsetting	Offsetting can take place during the entire term
Series term	Six months

## Market model and central counterparty clearing

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Interest-rate swap futures are traded in the current market structure for Swedish interest rate derivatives. Trades in NOIS futures will be reached through bilateral negotiations between buyers and sellers, and reported to NASDAQ OMX for central counterparty clearing. The stock exchange has agreements with a number of market committed banks, according to which two-way indicative prices will be quoted within the exchange's trading system in accordance with standard market practices in the Swedish interest-rate market. The market committed banks will also support trading in the contracts, which will occur outside the exchange system.

Contract settlement takes place through a bilateral negotiation between buyer and seller. Following settlement, the transaction is reported to NASDAQ OMX Stockholm for clearing. Novation, meaning when the exchange substitutes existing contracts with two new ones, in relation to the buyer and seller takes place when the settlement is matched and collateral has been placed. Subsequently, there is no counterparty relationship between the buyer and seller; instead both parties have the exchange as counterparty.

## Contract base and settlement principles

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The contract base is a fictitious interest rate swap of SEK 1,000,000, with maturity two, five or ten years after the contract's due date, meaning on the third Wednesday in the months of March, June, September and December. The term corresponds to the terms for NASDAQ OMX Stockholm's government and mortgage futures, which are settled against a synthetic bond.

There is no delivery of the underlying cash flows from the interest-rate swaps. Only a cash amount corresponding to the present value of the interest-rate difference between the agreed interest rate and the fixing rate will be paid. Accordingly, the contract can be considered a CFD, contract for difference. The buyer of the contract has a fictitious position in the swap, whereby the buyer pays a fixed interest rate in exchange for variable interest. The seller of the contract has a fictitious position in the swap, whereby the seller receives a fixed interest rate and pays at the variable interest rate. The value of the position is the difference between the present value of the traded interest rate and the present value of the fixed interest rate.

In practice, no payment takes place between the buyer and seller when the contract is cleared; instead, each party receives/pays from/to the exchange (the clearing house).

## Settlement and offsetting

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All purchased and sold contracts are entirely offsettable against each other. This means that only one net position is held against the clearing house and, if the contracts sold equal those purchased, the portfolio may be said to be closed in practice.

Daily cash settlements take place on bank days at noon and are based on the profit/loss on the net position at the end of the trading day on the bank day before the settlement day.

## Name standard

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Contracts are listed by the short name NOIS (NASDAQ OMX Interest Rate Swap) followed by the maturity of the underlying interest-rate swap and a letter designation for the end month and a figure for the year in which the end month falls.

Delivery month	Name
March	H
June	M
September	U
December	Z

## Examples of contracts with the end month of June 2009, NOIS2Y M9

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Contract name	NOIS2Y M9
First trading day	December 1, 2008
End day	June 15, 2009
Final fix	June 15, 2009
Final settlement day	June 16, 2009
Term of contract base	Two years, June 17, 2009 - June 17, 2011
Daily cash settlement	Every bank day beginning December 2, 2008
Collateral	Established daily at 11:00 a.m.
Transaction date	January 26, 2009

Position	Purchase of 100 contracts NOIS2Y M9
Transaction interest rate	1.72 %
NPV of transaction interest rate	3 353 240.50399 ~ 3 353 240.504
Daily fix rate, Jan 26, 2009	1.74 %
NPV fix interest rate	3 391 234.31571 ~ 3 391 234.316
Position's P&L	Jan 26, 2009: 3 391 234.504 - 3 353 240.316 = <b>37 993.81</b>
Settlement amount	Jan 27, 2009: <b>+ 37 993.81</b>
End fix June 15, 2009	1.848 %
NPV of end fix	3 596 014.276082... ~ 3 596 014.276
Total P&L, June 15, 2009	242 773.772090... ~ 242 773.772
Final settlement, June 16, 2009	242 773.77

Settlement occurs daily for open positions during the term of the contract. The daily settlement is performed against a daily fix that is calculated by NASDAQ OMX Stockholm.

Collateral margins are established continuously during the term of the contract. For a calculation of collateral margins, see the fact sheet "Collateral Margins for Swap Futures"

## Example of calculation of present value and position for NOIS2Y M9

The transaction interest is used for calculation of the present value of the instrument. According to the example below, NOIS2Y M9 would have a present value of 3 353 240.50399 based on a transaction interest of 1.72%.

<u>Period</u>	<u>Cash Flow</u>	<u>Net Present Value</u>
	r*number of contracts*nominal amount	cash flow/(1+r) <sup>period</sup>
1	0,0172*100*1 000 000 = 1 720 000	1 720 000/(1+0,0172) <sup>1</sup> = 1 690 916,240661
2	0,0172*100*1 000 000 = 1 720 000	1 720 000/(1+0,0172) <sup>2</sup> = 1 662 324,263331
<b>NPV<sub>r=1,72%</sub></b>		<b>Sum: 3 353 240,503992</b>

Daily fixing is used by NASDAQ OMX Stockholm for settlement and for the handling of collateral pertaining to active positions. According to the example below, NOIS2Y M9 would have a present value of 3 391 234.315712 based on the daily fixing rate of 1.74%.

<u>Period</u>	<u>Cash Flow</u>	<u>Net Present Value</u>
	r*number of contracts*nominal amount	cash flow/(1+r) <sup>period</sup>
1	0,0174*100*1 000 000 = 1 740 000	1 740 000/(1+0,0174) <sup>1</sup> = 1 710 241,792805
2	0,0174*100*1 000 000 = 1 740 000	1 740 000/(1+0,0174) <sup>2</sup> = 1 680 992,522907
<b>NPV<sub>r=1,74%</sub></b>		<b>Sum: 3 391 234,315712</b>

The value of the long position is calculated in accordance with the formula  $\sum_1^n NPV_T - \sum_1^n NPV_{T-1}$

For the example above, the value of the position would be 3 391 234.315712 – 3 353 240.50399 = 37 993.81

For a short position, the value is calculated in accordance with the formula:  $\sum_1^n NPV_{T-1} - \sum_1^n NPV_T$

## Example of daily fix calculation

The daily fix is calculated as the median value of the average of the indicative buy and sell interest rates that market makers quote for each contract in the stock exchange's trading system on bank days at 4:15 p.m.

<b>Mm</b>	<b>Bid</b>	<b>Ask</b>	<b>Mid</b>
A	1,850	1,890	1,870
B	1,860	1,900	1,880
C	1,860	1,900	1,880
D	1,870	2,010	1,940
E	1,860	2,000	1,930
<b>Median</b>			<b>1,880</b>

In this example, the daily fix is 1.880%

## NASDAQ OMX Stockholm swap fixing

On a daily basis, NASDAQ OMX Stockholm obtains indicative mid-values for Swedish interest-rate swaps with a maturity of two to ten years and distributes a fixing rate for each maturity at 11:10 a.m. When calculating a fixing rate, the highest and lowest values are disregarded, while the remaining values are used to calculate an average

rate. Final settlement of the contract is performed against the swap fixing rate published by NASDAQ OMX Stockholm on the end day.

## Example of a calculation of NASDAQ OMX Stockholm's swap fixing

Market players quote indicative mid-swap interest rates for interest-rate swaps that have a maturity of two to ten years. NASDAQ OMX Stockholm considers these values and publishes a fixing rate each day at 11:10 a.m.

Market Maker	Mid swap
A	1.845
B	1.850
C	<del>1.865</del>
D	<del>1.830</del>
E	1.850
Fixing rate	1.848

← The NASDAQ OMX SEK Swap Fixing disregards the highest and the lowest contributed value for the calculation of the fixing

When establishing the fixing rate, the highest and lowest values are disregarded.

## Example of final settlement NOIS2Y M9

Final settlement takes place two bank days before the third Wednesday of the end month. For NOIS2Y M9, final settlement takes place on Monday, June 15 and is based on the difference between the final fix calculated on Monday, June 15 and the last daily fixing calculated on Friday, June 12. In this example, we have assumed that the daily fixing rate on June 12 was 1.88% and that the fixing rate for a two-year interest-rate swap was 1.848% on June 15. The position comprises 100 purchased contracts.

NPV for June 12 is calculated as 3 656 564.787723040

NPV for June 15 is calculated as 3 596 014.276082170

The final settlement amount on the expiration day is established as 3 596 014.2760... - 3 656 564.7877... = -60 550.51164... (rounded to till -60 550.51)