FX Crossroads

30 April 2008

The puzzle of the missing NOK rally

Summary and conclusions

- The NOK's recent performance has failed to meet expectations – ours included. Despite a surge in oil prices and a recent upswing in the domestic stock market the NOK has remained under pressure. The correlation with other high-yielding currencies has been high and a substantial risk premium has been attached to NOK. Looking forward, a return in risk appetite will most likely support NOK, which is also backed by sound domestic economic fundamentals.

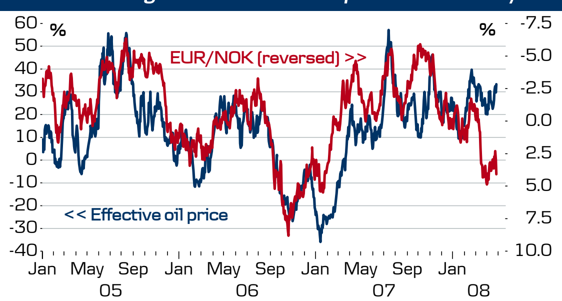
- In December 2007 we identified a slowdown in the global economy. On the back of that, we anticipated JPY, EUR and CHF to deliver positive returns and AUD, GBP and CAD to deliver negative returns. Buying this basket would to date have delivered an annualised return of 14%, with a Sharpe ratio of 1.13. We expect a continuation of the slowdown in the months to come and the signals of our business cycle analysis to be unchanged.

- Volatility has fallen and carry has performed well since the middle of March. We expect volatility to begin trending higher again in May, bringing carry outperformance to an end.

- Our EUR/USD target of 1.60 has been reached. We will publish new FX forecasts on Monday, 5 May.

- *FX Crossroads* is published every second Wednesday. Next publication date is 14 May 2008.

Link between oil and NOK less clear recently - 6-month change in effective oil price and EUR/NOK



Our business cycle analysis has proven robust out of sample

Danske Bank

NOK: The puzzle of the missing rally

John Hydeskov, Senior Analyst, +45 45 12 84 97, johy@danskebank.dk

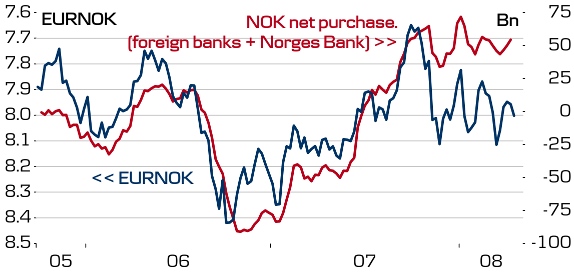
NOK: Wolf in sheep's clothing?

The NOK's recent underperformance has failed to meet expectations – ours included. In this article we examine if the oil price is still the dominant factor for NOK and if the currency's relationships to other asset classes is any stronger. We conclude that the surge in oil prices has had only a minor impact on NOK while the level of risk aversion has become a more important driver. We also examine whether NOK – with a 3-month interest rate well above 6% – has started to behave like a high-yielding currency and should therefore be treated as one. Here our conclusion is mixed: we identify both non-carry and carry characteristics in NOK.

Is oil still driving NOK?

The oil price affects NOK in a number of ways, and this remains true despite the implementation of various strategies to reduce its sensitivity to swings in the oil price. Norges Bank (NB) tries to offset these flows by selling NOK against foreign currency, but a seasonal pattern persists (see eg, *NOK: The influence of oil taxes*, 25 March 2008). In some periods this selling is, however, more than matched by NOK purchases by foreign banks, which generates NOK demand and a potential appreciation. The correlation between NOK net purchases and EUR/NOK has historically been quite strong (R^2: 0.56) but has recently been weaker; currently it implies a stronger NOK.

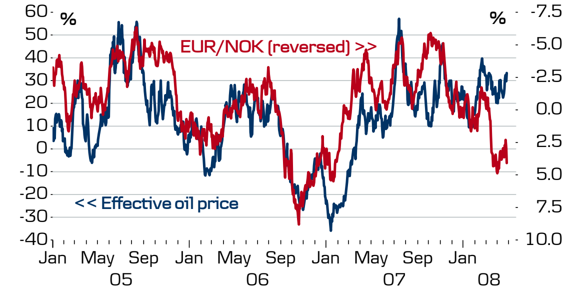
Net purchase of NOK and EUR/NOK



Source: Norges Bank, Ecowin

Another example of the strong historical link between the oil price and NOK can be seen in the 6-month change in the effective oil price vs. the corresponding change in the EUR/NOK exchange rate (R^2: 0.49). A simple rule of thumb (since 2005) implies that a 10% increase in the effective oil price yields a 1% fall in EUR/NOK.

6-month change in effective oil price and EUR/NOK



Note: Effective oil price is measured half in USD, half EUR
Source: Ecowin

However, this clear link has also suffered recently. The effective oil price is more than 30% higher than it was six months ago (which under 'normal' circumstances would imply a 3% strengthening of NOK vs the EUR) but NOK has in the same period *lost* 3%. Accordingly, NOK must recently have been driven by other factors than the oil price.

While the effective oil price has doubled since January 2007, the correlation between NOK and oil has deteriorated. In January 2007, the correlation was around 30% and has since slumped to around 20%. In the same period, NOK has moved more in line with other, previously uncorrelated, asset classes.

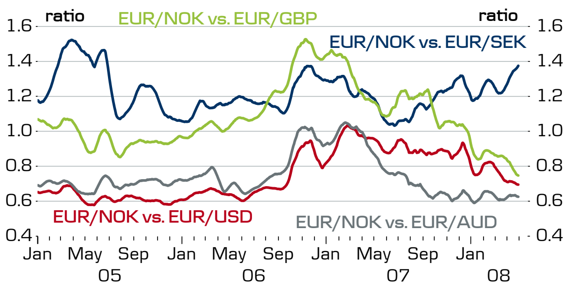
Equity prices have been a far more important factor than previously when explaining NOK movements in H2 2007 and the first months of 2008. The 100-day rolling correlation between NOK and the domestic stock market reached 50% in November 2007. In a broader context, risk aversion seemed to dominate, keeping NOK under pressure despite sound domestic economic fundamentals.

The strong correlation between currencies and equities is unlikely to persist in the longer run; a 'normalisation' of relationships in currency markets will probably occur, i.e. a weaker link to equity prices and a stronger link to relative interest rates. This indicates a shift away from risk aversion towards more risk-seeking behaviour. Such a 'normalisation' has in fact already begun, but without NOK benefitting significantly. In April, the OBX has outperformed other European equity indices without a rally in the NOK. One could therefore wonder if NOK has gained new characteristics.

NOK: mostly low- or mostly high-yielding?

Since February, NOK has been the third-highest yielding currency in the G10 currency universe and has therefore been established as a carry-target currency. The G10 carry basket (defined as the three high-yielding G10 currencies vs. the three low-yielding ones) has had a chequered career in 2008 but is broadly unchanged over the year. The Norwegian currency market is, however, quite small and carry flows can potentially impact NOK substantially.

3-month implied volatility ratios (20d MAV)

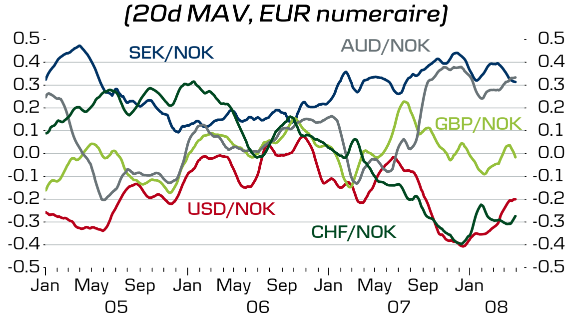


Source: Ecowin

Volatility in FX markets has broadly risen in recent months, but NOK volatility (vs. EUR) has increased less than that of other currencies, e.g., USD, GBP and AUD, and NOK uncertainty is now perceived as lower. One exception to this is the SEK; NOK is now regarded as more sensitive to investor sentiment. The message from volatility ratios is that generally NOK is not perceived as a highly volatile currency.

An opposite example can be found in actual FX correlations. From these we observe that most NOK correlations have become more pronounced which also was the situation around three years ago. That the SEK/NOK correlation is strong may not be a surprise, but the strong negative relationship with the CHF (and the USD) and the very strong positive relationship with the AUD are prominent. These indicate that NOK has less in common than it previously did with what are widely regarded as safe-haven currencies, and has more in common with riskier currencies.

100d rolling FX correlations (20d MAV, EUR numeraire)



Source: Ecowin

Whether NOK has attracted more attention from speculative investors due to a higher interest pick-up remains an open question. This is because we do not have any data on speculative NOK positions, contrary to e.g., AUD positions. It is, however, highly likely that investors largely prefer to build up long NOK positions when risk appetite increases and reduce positions when risk aversion strengthens.

Currently, we cannot detect whether NOK has mostly low-yielding or mostly high-yielding characteristics. On the one hand the Norwegian yield spread vs. G10 is positive and increasing and NOK has started to move more in line with riskier currencies. On the other hand, NOK volatility is perceived to be relatively low going forward, which isn't exactly a carry characteristic. To get good evidence, we still need to see how NOK behaves in a risk-seeking environment.

Summing up, we believe that there has been a substantial risk premium attached to the NOK recently and that investors have priced risk more aggressively than previously. Our anticipation is that relationships with other asset classes will normalise and that oil and interest rates will favour NOK going forward. A return in risk appetite will most likely support NOK which is also backed by sound domestic economic fundamentals.

G10: Business cycle update

Kasper Kirkegaard, Analyst, +45 45 13 70 18, kaki@danskebank.com

Strong model performance

Linking FX performance to the business cycle

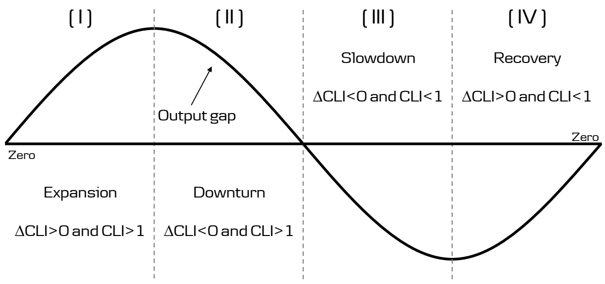
In December last year we presented an analysis of the relationship between currency movements and the global business cycle; see *FX Strategy: G10: Business cycles and FX performance, 10 December 2007*. In this article we take a look at how the model has performed since December and review the current signals of the model.

Overall we can conclude that the model has performed well and that the main results so far have proven robust out of sample. On 7 December the OECD leading indicator covering October was released and shifted from signalling a downturn to signalling a slowdown of the global economy. In such a scenario the model identifies JPY, EUR and CHF as having historically delivered positive returns and AUD, GBP and CAD as having delivered negative returns. Buying this basket would to date have delivered an annualised return of 14%, with a Sharpe ratio of 1.13. We expect the CLI to continue to signal a slowdown in the months to come and the model signal is thus unchanged.

A recap of the analysis

In accordance with OECD research we have defined four states of the global business cycle based on the OECD composite leading indicator (CLI). These are shown in figure 1 below.

Figure 1: Four business cycle phases



ΔCLI : 3 month change

We have then looked at the historical average return on each of the G10 nominal effective exchange rates in the different states of the business cycle, and identified those currencies which are systematically related to the business cycle. A summary of the results are shown in the table below, where winners (losers) are those currencies which deliver a significant positive (negative) return. As always, we remind our readers that any purely empirical relation should be considered with caution, since it is not directly explained by theory and thus could be spurious.

Table 1: Main results

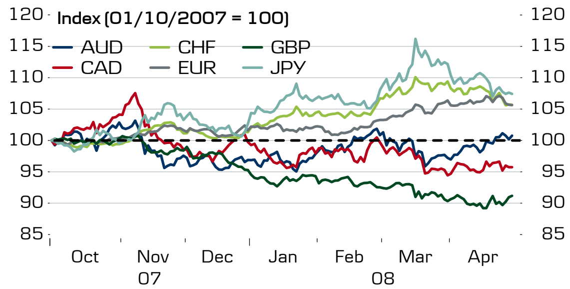
	(I) Expansion	(II) Downturn	(III) Slowdown	(IV) Recovery
		Winners:		
1	(AUD)	CHF	JPY	AUD
2	(CAD)	(GBP)	EUR	NZD
3			CHF	CAD
		Losers:		
1	NZD	(AUD)	AUD	CHF
2	CHF		GBP	EUR
3	(USD)		CAD	(JPY)

Note: Brackets indicates "close to being significant"

Very strong performance

On 7 December last year the CLI covering October was released. The October reading showed a fall to 99.3 from 99.7 in September, and the economy thereby moved from a state of downturn to a slowdown. In a slowdown the model identifies a significant positive return for JPY, EUR and CHF, while identifying a significant negative return for AUD, GBP and CAD. Figure 2 shows the change in the nominal effective exchange rates following October, when the economy moved into a slowdown.

Figure 2: Nominal effective exchange rates



Source: Reuters Ecowin

During this period we can observe that the overall exchange rate movements have been consistent with the model findings. The JPY, EUR, and CHF have all appreciated, while the CAD and especially the GBP have weakened. The only fallout of the analysis has been the AUD, which is approximately unchanged over the period.

One way of applying the model is to buy a basket of currencies defined by the significant signals of the model. Below we have shown the index return of this strategy, when it is assumed that the currency basket is bought on the day of the model signal. As can be seen from the graph, this would not have been a bad strategy. An investor who had applied this investment rule would thus have earned an annualised return of 14% to date. Even though the return would have been somewhat volatile, this has been compensated for by a Sharpe ratio of 1.13.

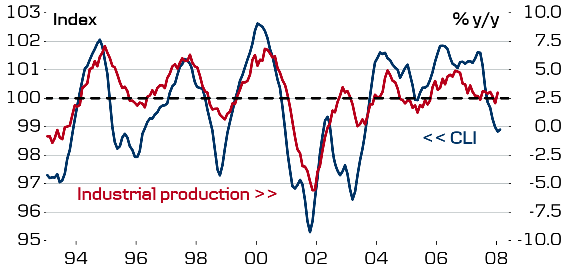
Figure 2: Buy-and-hold strategy

Source: Bloomberg and Danske Bank computations

The signal going forward

Since last fall the CLI has been falling steadily. And although the latest observation covering February showed a small increase on a month-to-month basis, the 3-month change is still negative.

Moderate slowdown in the OECD area



Source: Reuters Ecowin

The CLI is thus still signalling a slowdown and the model is therefore also still implying that JPY, EUR and CHF should outperform, while AUD, GBP and CAD should underperform

We are not yet looking for a shift in the CLI

While the February CLI reading edged slightly higher, we do not expect this to mark a trough of this business cycle. We continue to believe that the global slowdown has further to run and that it is premature to call a turnaround in just six months (the CLI is leading industrial production by six months). However, should the CLI shift to signalling a recovery, then the model will be generating a very different signal. The model would then imply that AUD, NZD and CAD should outperform, while CHF and EUR should underperform.

Conclusion

The link from business cycles to exchange rate movements goes through as different channels as monetary policy, production growth, productivity changes, flow of funds, and relative external balances. It is therefore naïve to believe that this link can be captured by any simple model. However, despite the simplicity of this model, the signal appears surprisingly strong during periods of negative output gaps, and around times of a cyclical shift in the business cycle.

The current signal of a continued economic slowdown is overall consistent with our general views. We continue to forecast a stronger JPY and CHF, while we believe that both the GBP and CAD weakness has further to run. We do believe, however, that a shift in the European business cycle is beginning to unfold, which will leave the EUR under pressure. We are furthermore not bearish on AUD in the very short-term, as we expect relative economic strength, a rising terms of trade, and favourable relative interest rates to lend further support. We are, nonetheless, still forecasting a lower AUD by year-end.

G10: Implied vol set to rise in May

Teis Knuthsen, Chief Strategist, +45 45 12 84 95, tekn@danskebank.dk

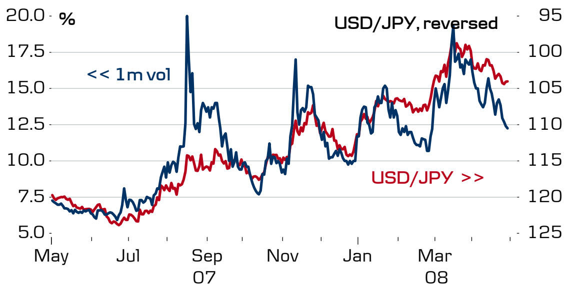
Vol set to rise, carry to underperform

Implied FX vol has risen in four distinct waves since August 2007. Each wave has seen a correction lower while keeping the trend towards higher vol intact (chart 1). Since mid-March USD/JPY implied 1m vol has fallen from 16.3% to 11.25%. The decline in volatility has coincided with a rise in risk seeking in financial markets overall (chart 2). We do not expect volatility to fall much from here and look for vol to trend higher in May. In general, we believe that volatility is likely to rise on a trend basis due to financial deleveraging and the ongoing global economic slowdown.

Chart 1: Implied JPY volatility (1m)

Source: Ecowin

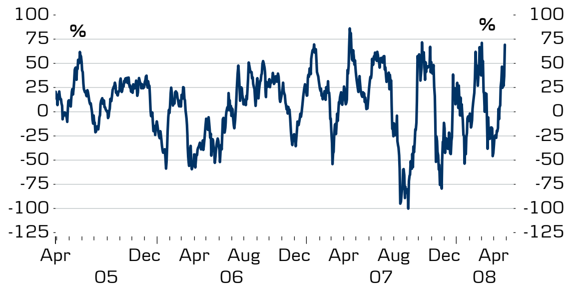
Chart 2: USD/JPY and implied volatility (1m)



Source: Ecowin

Consistent with the decline in volatility, G10 carry has performed well in the past month. A G10 carry index (long 3 high yielders vs 3 low yielders) has gained more than 5% since mid-March. In annualised terms the 1-month return is approximately 75% (chart 3). In recent history, such performance levels have coincided with a period of carry underperformance. It is always difficult to pinpoint the exact turning points, but the recent carry performance nonetheless raises a yellow flag for the coming period.

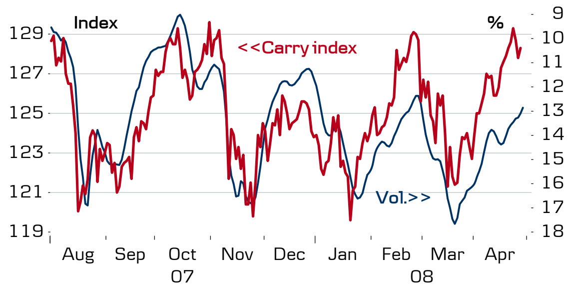
Chart 3: G10 carry index , 1m annualised return



Source: Ecowin, Bloomberg

As the final chart below highlights, carry performance and implied volatility goes hand in hand, that is, a rise in vol will coincide with carry underperformance. This is not exactly surprising since higher volatility lowers the carry-to-risk.

Chart 4: G10 carry index vs JPY vol

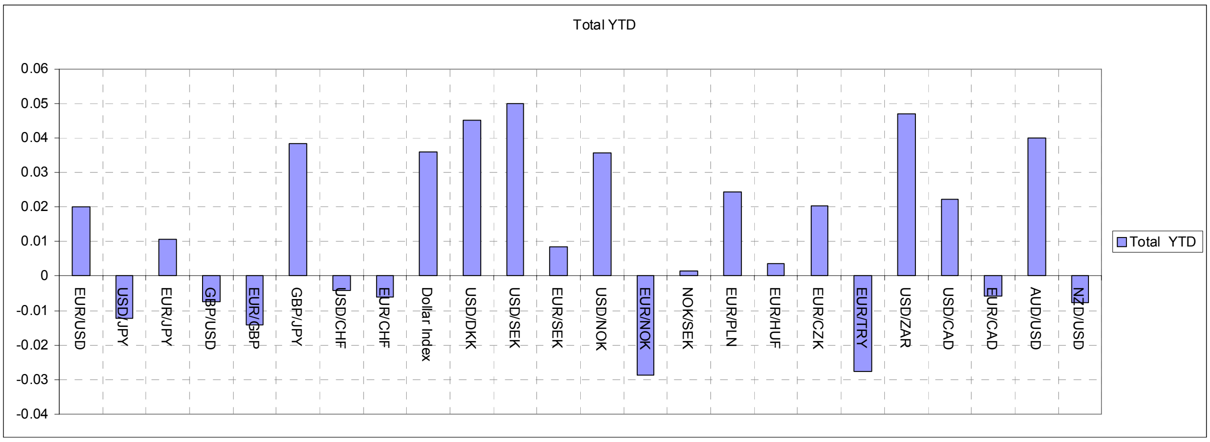


Source: Ecowin, Bloomberg

If we are right in expecting a turn in volatility as well as in carry performance, **JPY and CHF looks likely to gain** on high yielders such as AUD, GBP and NZD. Strictly speaking, USD is a funding currency in G10 terms, but **higher vol should see USD/JPY move lower**.

Trading Points

				Strategy (Short- Medium Term)						
MARKET	LAST	Trend	5DCHG	Strategy	Stop/Entry	1st Target	2nd Target	Stop/Reverse	New Target	Total YTD
CURRENCIES - Majors										
EUR/USD	**1.5556**	↘	-2.09%	**SHORT**		**1.5502**		**1.5690**	**1.5724**	**1.22%**
USD/JPY	**104.19**	↗	0.79%	**SHORT**		**103.00**		**104.37**	**105.22**	**-1.23%**
EUR/JPY	**162.01**	∨	-1.37%	**Go Long>**	**163.23**	**164.05**	**Go Short<**	**161.11**	**158.90**	**1.06%**
GBP/USD	**1.9672**	↘	-0.67%	**Go Long>**	**1.9965**	**2.0091**	**Go Short<**	**1.9595**	**1.9433**	**-0.74%**
EUR/GBP	**0.7907**	∨	-1.43%	**Go Long>**	**0.7955**	**0.8005**	**Go Short<**	**0.7823**	**0.7730**	**-1.42%**
GBP/JPY	**204.93**	∨	0.11%	**SHORT**		**202.75**		**205.35**	**207.42**	**3.83%**
USD/CHF	**1.0383**	∨	2.28%	**Go Long>**	**1.0399**	**1.0502**	**Go Short<**	**1.0300**	**1.0182**	**-0.42%**
EUR/CHF	**1.6149**	∨	0.11%	**Go Long>**	**1.6198**	**1.6304**	**Go Short<**	**1.6102**	**1.6022**	**-0.61%**
Dollar Index	**72.921**	↗	0.015	**Go Long>**	**73.2000**	**73.651**	**Go Short<**	**71.834**	**70.698**	**3.59%**
CURRENCIES - Scandies										
USD/DKK	**4.7971**	↗	2.13%	**LONG**		**4.8380**		**4.7641**	**4.7128**	**4.50%**
USD/SEK	**6.0186**	↗	2.48%	**Go Long>**	**6.0238**	**6.0635**	**Go Short<**	**5.9294**	**5.8631**	**5.01%**
EUR/SEK	**9.3619**	↗	0.33%	**Go Long>**	**9.3792**	**9.3960**	**Go Short<**	**9.3335**	**9.3152**	**0.84%**
USD/NOK	**5.1283**	↗	2.65%	**Go Long>**	**5.1600**	**5.2163**	**Go Short<**	**5.0805**	**5.0220**	**3.56%**
EUR/NOK	**7.9758**	↗	0.47%	**LONG**		**8.0335**		**7.9638**	**7.9280**	**-2.87%**
NOK/SEK	**1.1740**	↘	-0.12%	**Go Long>**	**1.1815**	**1.1913**	**Go Short<**	**1.1622**	**1.1533**	**0.14%**
CURRENCIES - Non Majors										
EUR/PLN	**3.4522**	↗	1.18%	**LONG**		**3.4882**		**3.4359**	**3.4093**	**2.44%**
EUR/HUF	**253.26**	↗	0.68%	**Go Long>**	**253.88**	**255.18**	**Go Short<**	**252.05**	**251.27**	**0.36%**
EUR/CZK	**25.212**	∨	0.58%	**Go Long>**	**25.289**	**25.664**	**Go Short<**	**24.971**	**24.415**	**2.04%**
EUR/TRY	**2.0090**	↘	-2.20%	**Go Long>**	**2.0285**	**2.0780**	**Go Short<**	**1.9896**	**1.9146**	**-2.77%**
USD/ZAR	**7.6050**	↘	-0.93%	**Go Long>**	**7.6310**	**7.7707**	**Go Short<**	**7.5188**	**7.3789**	**4.70%**
USD/CAD	**1.0083**	∨	-0.86%	**Go Long>**	**1.0215**	**1.0246**	**Go Short<**	**1.0068**	**0.9946**	**2.21%**
EUR/CAD	**1.5683**	↘	-2.94%	**Go Long>**	**1.5947**	**1.6060**	**Go Short<**	**1.5705**	**1.5388**	**-0.57%**
AUD/USD	**0.9341**	↘	-1.60%	**Go Long>**	**0.9422**	**0.9482**	**Go Short<**	**0.9292**	**0.9186**	**3.99%**
NZD/USD	**0.7771**	↘	-2.69%	**Go Long>**	**0.7865**	**0.7960**	**Go Short<**	**0.7725**	**0.7652**	**-0.76%**



Trading recommendations and G10 central bank overview

Directional trades

	Date	Start	Now	Target	Stop	P/L (incl carry)
Open						
Sell USD/JPY	*21/04/08*	*103.70*	*104.60*	*100.0*	*105.0*	*-0.91*
Recently closed						
Sell EUR/CHF	*21/04/08*	*1.61*	*1.6235*	*1.57*	*1.6235*	*-1.00*
Buy EUR/USD	*14/04/08*	*1.58*	*1.59*	*1.61*	*1.585*	*0.59*
Sell USD/JPY	09/04/08	*102.4*	*102.4*	*98.0*	*102.4*	*-0.03*
P/L 2008	**1.06%**	**Open**	**-0.91%**	**Closed**	**2.0%**	
# of trades *	**101**	**# of trades 2008**		**16**		
- average net gain	**0.33%**	**- average net gain**		**0.07%**		
- batting average	**0.50**	**- batting average**		**0.38**		

* Since 17 November 2005

Central bank overview

Country	Official interest rate	Policy rate	Next decision*	Last change
United States	Federal funds rate	2.25	30 Apr (-25bp)	18 Mar (-75bp)
Euroland	Minimum bid rate	4.00	8 May (unch)	6 June 07 (+25bp)
Japan	Overnight call rate	0.50	20 May (unch)	21 Feb 07 (+25bp)
United Kingdom	Base rate	5.00	8 May (unch)	10 Apr (-25bp)
Switzerland	3-month Libor	2.75	19 Jun (unch)	13 Sep 07 (+25bp)
Canada	Overnight rate	3.00	10 June (-25bp)	22 Apr (-50bp)
Australia	Cash rate	7.25	6 May (unch)	4 Mar (+25bp)
New Zealand	Cash rate	8.25	4 Jun (unch)	25 Jun 07 (+25bp)
Sweden	Repo rate	4.25	3 July (unch)	13 Feb (+25bp)
Norway	Sight deposit rate	5.50	28 May (unch)	23 Apr (+25bp)

* Expected decision in brackets

G10 central bank forecast overview

	FED	BOC	ECB	BOE	SNB	RB	NB	BOJ	RBA	RBNZ
Now	2.25	3.00	4.00	5.00	2.75	4.25	5.50	0.50	7.25	8.25
2008 Apr	30-Apr									
May			08-May	08-May			28-May	20-May	06-May	
Jun	25-Jun	10-Jun	05-Jun	05-Jun	19-Jun		25-Jun	13-Jun	03-Jun	05-Jun
Jul		15-Jul	03-Jul	10-Jul		03-Jul			01-Jul	24-Jul
Aug	05-Aug		07-Aug	07-Aug			13-Aug		05-Aug	
Sep	16-Sep	03-Sep	04-Sep	04-Sep	18-Sep		24-Sep		02-Sep	11-Sep
Oct	29-Oct	21-Oct	02-Oct	09-Oct			29-Oct		07-Oct	23-Oct
Nov			06-Nov	06-Nov					04-Nov	
Dec	16-Dec	09-Dec	04-Dec	04-Dec	11-Dec		17-Dec		02-Dec	04-Dec
2009 Jan	28-Jan									
Feb									03-Feb	
Mar									03-Mar	
12M	1.75	2.75	3.25	4.25	2.25	4.00	5.50	0.50	7.25	7.75

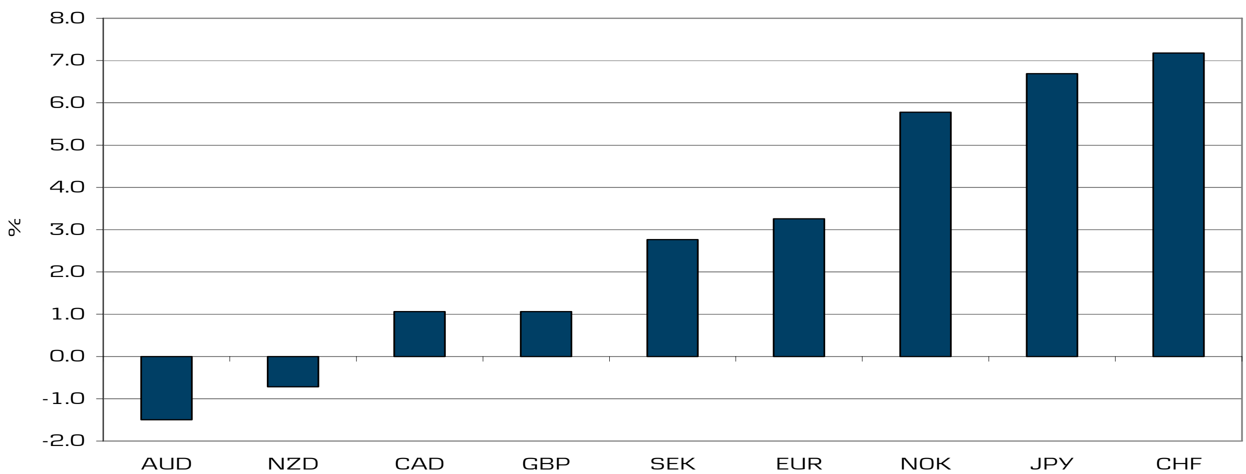
Rate cut | Rate hike

Exchange rate forecasts

		Forecast				Forecast vs forward outright, %			
	Spot	+1m	+3m	+6m	+12m	+1m	+3m	+6m	+12m
Exchange rates vs EUR									
USD	1.556	1.56	1.60	1.58	1.50	0.4	3.3	2.4	-2.1
JPY	162.62	159	155	152	150	-1.8	-3.6	-4.9	-4.3
GBP	0.791	0.800	0.810	0.820	0.780	1.0	2.2	3.2	-2.2
CHF	1.615	1.59	1.54	1.52	1.50	-1.4	-4.1	-4.9	-5.5
DKK	7.46	7.46	7.46	7.46	7.46	0.0	0.0	0.0	0.0
NOK	7.98	7.95	7.80	7.75	7.75	-0.5	-2.7	-3.7	-4.4
SEK	9.36	9.35	9.40	9.35	9.25	-0.1	0.4	-0.2	-1.4
PLN	3.45	3.55	3.60	3.60	3.65	2.7	3.9	3.6	4.3
CZK	25.21	25.30	25.50	25.50	25.50	0.4	1.3	1.5	1.6
HUF	253	265	270	275	280	4.3	5.7	6.7	6.5
TRY	2.01	2.20	2.30	2.35	2.35	8.6	11.4	10.5	3.4
Exchange rates vs USD									
DXY	72.9	72.5	70.8	71.7	73.7	-0.6	-3.0	-2.0	0.5
JPY	104.6	102	97	96	100	-2.3	-6.7	-7.2	-2.4
GBP	1.97	1.95	1.98	1.93	1.92	-0.7	1.1	-0.8	0.0
CHF	1.04	1.02	0.96	0.96	1.00	-1.8	-7.2	-7.2	-3.5
DKK	4.80	4.78	4.66	4.72	4.97	-0.4	-3.2	-2.4	2.2
NOK	5.13	5.10	4.88	4.91	5.17	-0.9	-5.8	-6.0	-2.4
SEK	6.01	5.99	5.88	5.92	6.17	-0.5	-2.8	-2.5	0.8
CAD	1.01	1.01	1.00	1.02	1.02	0.0	-1.1	0.9	0.7
AUD	0.94	0.93	0.91	0.88	0.85	-0.2	-1.5	-3.5	-4.5
NZD	0.78	0.77	0.76	0.74	0.70	-0.5	-0.7	-1.9	-4.6
ZAR	7.61	9.00	9.25	9.50	9.50	17.5	19.3	20.1	15.2
BRL	1.71	1.80	1.85	1.90	1.90	5.4	6.2	7.5	2.5
MXN	10.54	10.75	10.80	10.90	11.00	1.6	1.3	1.0	-0.3
CNY	6.99	6.99	6.92	6.77	6.60	0.5	0.8	0.8	2.7

Note: GBP, AUD and NZD are denominated in local currency rather than USD

Expected change in USD vs forwards, 3m



Head of FX Research

Teis Knuthsen	G10	+45 45 12 84 95	tekn@danskebank.dk

FX Research

John Hydeskov	GBP, NOK, SEK	+45 45 12 84 97	johy@danskebank.dk
Kasper Kirkegaard	G10	+45 45 13 70 18	kaki@danskebank.dk
Stefan Mellin	SEK	+46 8 568 805 92	mell@danskebank.se
Thomas Andersen	Hedging strategies	+45 45 12 84 96	tpa@danskebank.dk
Klaus Ikast	Technical analysis	+45 45 12 84 99	kik@danskebank.dk
Kim Cramer Larsson	Technical analysis	+45 45 12 85 01	kimn@danskebank.dk

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