

FX Crossroads

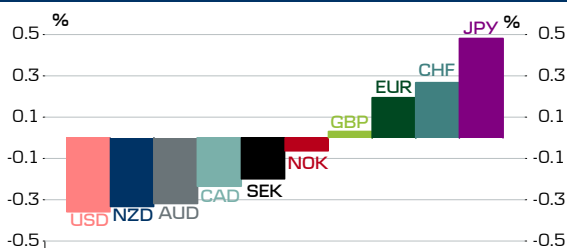
26 November 2008

It is all about risk

Summary and conclusions

- In this edition's first article, we define a risk index comprising seven components: implied equity volatility, implied FX volatility, a high yield bond spread, gold, utilities vs. financials, treasuries vs. stocks and emerging markets CDX spread. We use this index to determine the current level of risk aversion and to detect which currencies are affected positively and negatively with risk. We conclude that market sentiment remains too uncertain to enter riskier carry strategies and therefore advise sticking to safe-haven currencies for now. Although USD is found to correlate negatively with risk aversion, we think the greenback has potential due to repatriation flows.
- In the second article, we take a look at the historical depreciations of AUD and NZD. Despite the huge falls, we prefer to stay short both AUD and NZD, preferably against USD. The outlook is less negative for AUD though, and we expect the recent rise in AUD/NZD to continue beyond 1.20 in the short term. We propose two interesting options strategies using reverse knock-out (RKO) put options.
- *FX Crossroads* is published every second Wednesday. Next publication date is 10 December.

Danske Bank FX risk index vs. G10 currencies



Note: Average of 1Y rolling correlations, 2005-2008
Source: Ecwin, Danske Bank

AUD and NZD: Historical depreciations



Source: Ecwin, Danske Bank

G10: Risk and FX

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Appetite and aversion – how we think about risk in relation to FX

We have noted, quite a few times, quotes and headlines stating that: “stocks retreated due to rising risk aversion”, “declining risk appetite caused investors to favour safe-haven assets” or “risk aversion dominated markets, leading to a sell-off of high yield currencies”. But risk is most often defined in a vague manner and often just mentioned nonchalantly without referring to a specific measure. That makes it difficult to compare periods and to quantify the impact on exchange rates.

By defining a risk index, we argue that exchange rates can be affected by either the level of general risk aversion or by shifts in investors’ risk appetite. In line with *Rosenberg (2003)* we believe that investors tend to increase their exposure to risky assets in periods of high investor confidence, while they tend to reduce exposure to risky assets during periods of heightened risk. When risk is on the rise, positions in foreign exchange are often closed and exposures, especially leveraged ones, are cut to benchmarks.

Defining a risk index

Some currencies appear more vulnerable than others during periods with a high degree of risk aversion. One example of this could be a flight from high-yield currencies if speculative investors suddenly want to unwind carry trades. Another example could be countries running large current account deficits during a dry-up in demand for debt causing external balances of these countries to become unstable.

On the other hand, some currencies normally see a strengthening during periods in which investors get more cautious. In these periods, investors are willing to accept a low yield in return for higher safety. Fiscal sustainability and external balances are also important issues in these periods.

A number of ways to construct a risk index exists, but by and large they all try to capture the median investors’ perception of uncertainty in financial markets. As there is no index that all market par-

ticipants have agreed on and we like thoroughly to look at sub-index movements, we have constructed our own risk index. Another advantage is also that we can change the composition of the index if new products are being invented or even expand the index if more components are perceived as being significant when measuring risk.

Danske Bank FX Risk Index

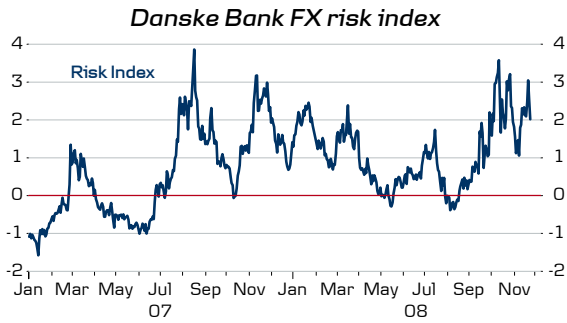
	Component	Reason for inclusion
1	VIX (expected volatility in the S&P500 index)	Captures uncertainty surrounding the US stock market. Proxy for risk on global equity markets
2	3M implied EUR/USD and USD/JPY volatility	Captures FX market uncertainty and risk
3	US high yield bond spread	Indicator for risk in US credit markets
4	Gold	Most-preferred commodity in recessionary times
5	Utilities - financials	Captures preference for safe-haven goods relative to riskier assets
6	Treasuries - stocks	Captures preference for safe-haven goods relative to riskier assets
7	Emerging markets CDX spread, 5-year	Indicator of emerging markets uncertainty and risk

Source: Danske Bank

The risk index is composed as an arithmetic average of the deviation in each component (standardised). A few things are worth mentioning on the FX risk index: First, it is comprised of a number of things that are not directly related to FX. Reason is that we generally believe that FX movements, to some extent, can be related to movements in other asset classes (see also our short-term fair value models in FX Market Update). Second, each component has the same weight. To our knowledge, no evidence exists that any of the above-listed components captures risk better than the others. And if that was the case, we could probably exclude the others and solely rely on that component. Third, we do not claim that our index captures risk perfectly or that all explaining variables have been included.

The composition of the index is arbitrarily chosen and is fully our subjective choice.

The risk index has been higher than normal since the breakout of the financial crisis – i.e. from summer last year. Although there have been periods in which risk aversion have faded, the general impression is that uncertainty has been elevated in more than one year now.

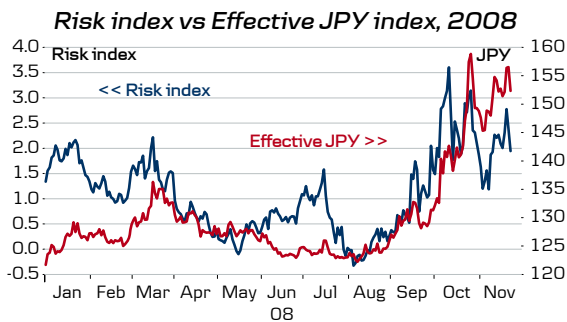


Source: Reuters Ecowin, Danske Bank

The risk index is currently at a very high level, implying that financial markets are perceived as risky and uncertainty is substantial. That is because the implied volatility in equity, bond and FX markets is high, utilities are outperforming financials, high yield bonds are losing to low yield bonds, treasuries are outperforming stocks and uncertainty on emerging markets prospects is high. The price of gold, on the other hand, is declining, dragging the risk index down.

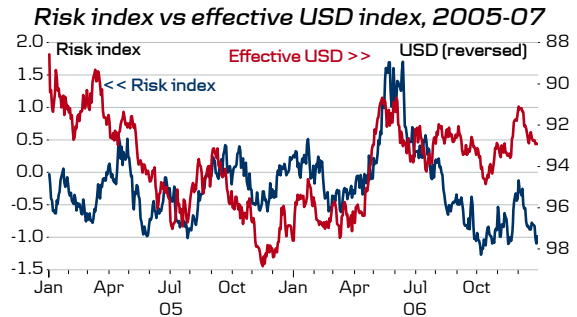
Risk and FX

Now that we have defined a risk index, the natural thing to ask is – how does change in risk relate to change in FX? To answer that we look at one-year rolling correlations with effective exchange rates since 2005 (due to data limitations it is not possible to calculate the index prior to 2005).



Source: Reuters Ecowin, Danske Bank

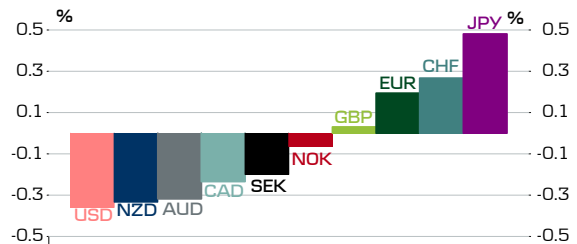
Perhaps not surprisingly, we find that JPY and CHF correlate positively with risk aversion. These two currencies have been among the lowest yielding in the G10 universe for more than a decade. Also EUR fares well when investors turn more risk averse. We have in earlier research indicated that these three currencies tend to outperform other G10 currencies during economic slowdown.



Source: Reuters Ecowin, Danske Bank

More notable is perhaps the relatively strong negative correlation between risk and the US dollar as the American currency is often perceived a safe-haven currency due to repatriation flows. The negative relationship was, however, most pronounced in the heydays of risk appetite in 2005 and 2006, whereas the dollar has been positively related to risk in 2008.

Danske Bank FX risk index vs FX (sensitivity)



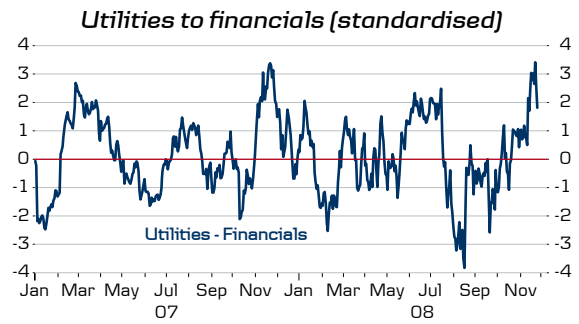
Note: Average of 1Y rolling correlations
Source: Reuters Ecowin, Danske Bank

Not surprisingly, NZD and AUD – carry-target darlings – correlate negatively with risk. SEK has a more difficult time coping with risk relative to the NOK, while GBP seems almost unaffected by changes in risk aversion/appetite.

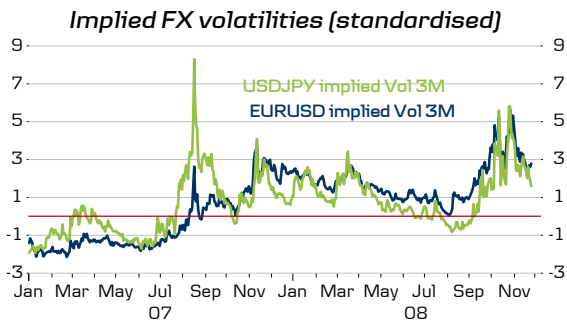
Conclusion: With risk aversion still at an elevated level we believe it is too early to abandon our “better safe than sorry” approach and enter riskier carry trades. Accordingly, we continue to favour JPY, CHF and USD relative to NZD, AUD and SEK.



Source: Reuters Ecowin, Danske Bank



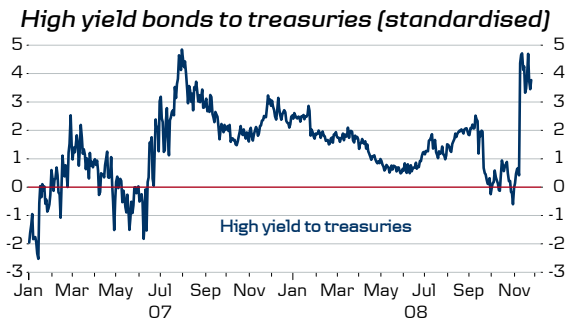
Source: Reuters Ecowin, Danske Bank



Source: Reuters Ecowin, Danske Bank



Source: Reuters Ecowin, Danske Bank



Source: Reuters Ecowin, Danske Bank



Source: Reuters Ecowin, Danske Bank



Source: Reuters Ecowin, Danske Bank

AUD & NZD: Still not time to add longs

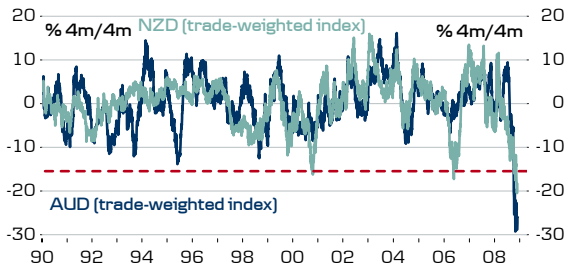
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A historical depreciation

The past four months have seen a historical correction in the currencies of Australia and New Zealand. On a trade-weighted basis, AUD has weakened by 27% and NZD by 19% since mid-July. This is the largest depreciation ever to be recorded in such a short period of time for either of the currencies.

Both AUD and NZD saw some relief in September following a large sell-off in late summer, but going into October a renewed sell-off began as sentiment deteriorated further on the financial markets. This was especially painful for AUD, which lost close to 20% on a trade-weighted measure in less than 10 trading days! Sentiment improved temporarily in late October and equity markets rallied, bringing some relief to AUD and NZD. However, both currencies have come under renewed pressure in recent weeks, as equity markets have plummeted, commodity prices have fallen further, and credit markets have seen renewed tension.

Figure 1: A historical depreciation



Source: Reuters EcoWin

Key drivers

During the summer, both AUD and NZD were sold off following a cyclical turn in monetary policy, partly triggered by and partly coinciding with weak economic activity data and a turn in commodity markets towards falling prices. The turning point came sooner for NZD, as a result of a faster deterioration of the New Zealand business cycle and an earlier collapse in soft commodities (which are important to New Zealand exports) relative to hard commodities (which are more important to Australian exports). Whereas this cyclical turn in monetary policy was a significant nail in the coffin

for both AUD and NZD, the importance of relative interest rates has faded in recent months for both currencies (see Figures 2 and 3)

Figure 2: AUD/USD correlations

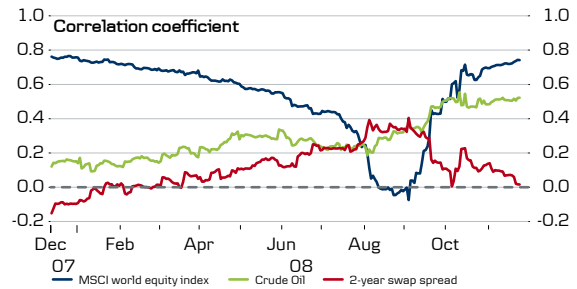
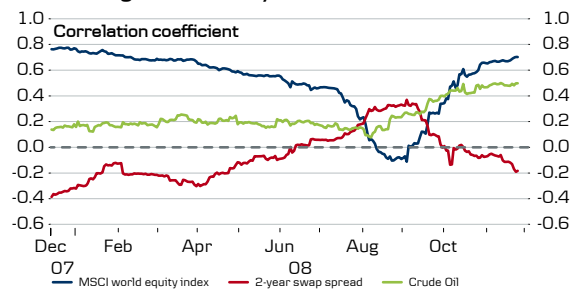


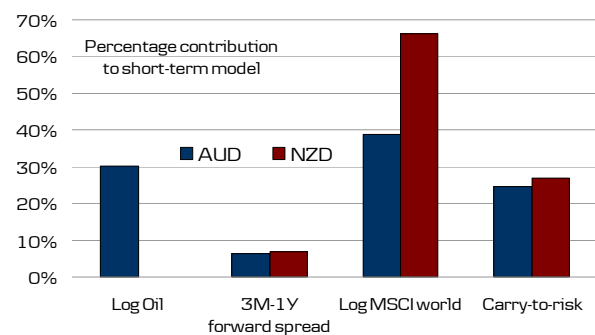
Figure 3: NZD/USD correlations



Source: Ecowin and Danske Bank calculations

In fact, relative interest rates have not contributed nearly as much to the fall in the financial short-term AUD/USD and NZD/USD model estimates, as have the fall in world equity markets (a proxy for risk sentiment and the global business cycle) and the oil price (a proxy for commodities in general).

Figure 4: Contribution to short-term models since 1 July 2008



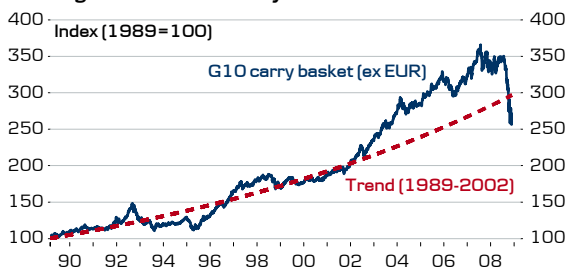
Source: Ecowin and Danske Bank calculations

Following the cyclical turn in AUD and NZD, correlations with commodity prices and equities have risen, reflecting AUD and NZD's positive relation to the global business cycle as well as overall risk appetite in the financial market.

While the burst of the commodity price bubble can explain a great deal of the weakening of both AUD and NZD via the terms-of-trade channel, the general deterioration of risk sentiment and the intensification of the financial crisis during the fall is, in our view, probably an even more important driver. As we argued in *FX Crossroads: The great carry bubble, 29 October*, we believe that the historically large build-up in carry positions (a great deal targeted at AUD and NZD) was an important driver of the fundamental imbalances created on the currency market in the period 2002-07. Not least the large overvaluation of both AUD and NZD on a trade-weighted basis and even more so bilaterally compared with the undervalued USD.

However, as overall risk sentiment deteriorated and uncertainty exploded, carry positions have been unwound, even by Japanese marginal traders who had stubbornly been adding to JPY shorts against AUD and NZD in H1. The rapid carry unwinding of historically large positions led to an unprecedented carry drawdown with losses far exceeding any prior carry corrections.

Figure 5: G10 carry basket return index

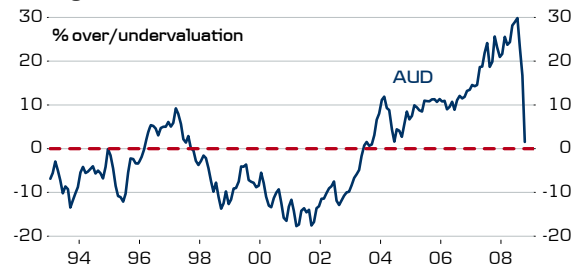


Source: Bloomberg and Danske Bank calculations

Where has the correction taken us?

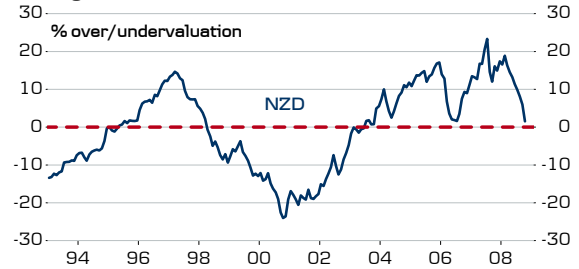
Considering long-term valuation measures, the large correction in AUD and NZD has implied that both currencies have returned to a notion of fair value after having been significantly overvalued.

Figure 6: Real effective AUD 1993-2008



Source: Ecwin and Danske Bank calculations

Figure 7: Real effective NZD 1993-2008



Source: Ecwin and Danske Bank calculations

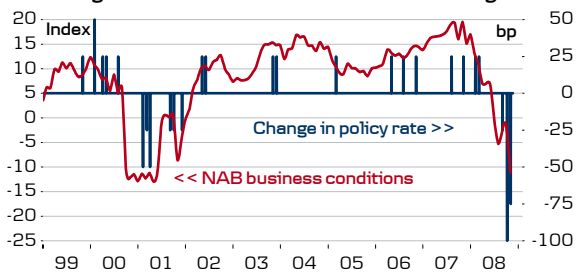
What does this tell us? First, it tells us that despite the historical correction in AUD and NZD, there is no reason to expect an 'automatic' correction back to 2007 levels – even if the financial markets normalise. Second, given the current environment of a global recession and continued financial distress, the accompanying pressure could send both AUD and NZD weaker, as both currencies are not yet meaningfully undervalued.

Outlook

Even as relative monetary policy has become less important, we still expect changes in relative interest rates to weigh on both AUD and NZD in the months to come.

The Reserve Bank of Australia (RBA) has lowered the cash rate by 200bp so far this cycle, taking the policy rate to 5.25%. Considering economic data, the RBA is likely to be slightly ahead of the curve. However, given the current high uncertainty about the global economic outlook, it is difficult to compare the current situation with previous monetary policy cycles.

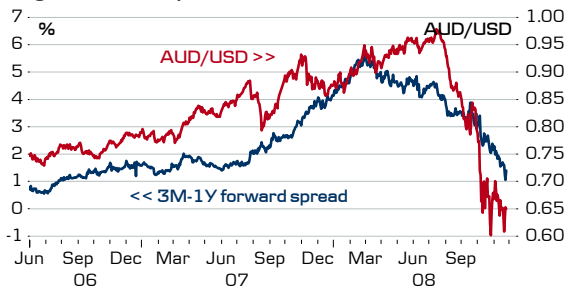
Figure 8: RBA has been front loading



Source: Ecwin and Danske Bank calculations

We believe that the RBA will remain highly dedicated to addressing economic problems and we expect it to lower the cash rate by 75bp in December. This will take the cash rate to 4.50% and we expect that monetary policy will be eased further, taking the cash rate to 4.00% and thereby well below most notions of a neutral interest rate. The market is currently pricing a bottom of around 3.25%, which we think is probably too low. However, as the cash rate is lowered, we would not be surprised to see the market pricing in an even lower base.

Figure 9: AUD/USD and relative interest rates



Source: Ecwin and Danske Bank calculations

The Reserve Bank of New Zealand (RBNZ) has so far lowered the cash rate by 175bp, taking the policy rate to 6.50%. The RBNZ has thus eased monetary policy slightly less than the RBA despite both an earlier and more marked slowdown of the economy. While we view the RBA as being slightly ahead of the curve, the RBNZ is clearly behind and we expect a 100bp cut (risks are for even more) at the December meeting. We expect the cash rate to reach a bottom around or just below 4.00% going into 2009. The market is currently pricing a bottom around 4.25%.

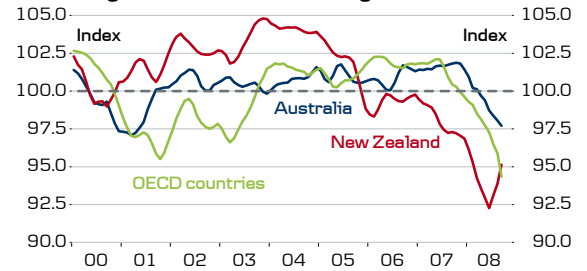
Figure 10: NZD/USD and relative interest rates



Source: Ecwin and Danske Bank calculations

Given our monetary policy expectations, we are thus looking for relative interest rates to move in favour of AUD relative to NZD. Moreover, while we expect weak commodity markets to weigh on both AUD and NZD in the short term, we expect a greater drag on NZD given the difference in export compositions between Australia and New Zealand. This suggests to us that AUD/NZD could go higher in the short term with 1.20 as a first target. Upward pressures on AUD/NZD should furthermore be fuelled by the relative economic outlook, which we still see as clearly favouring AUD over NZD.

Figure 11: OECD leading indicators



Source: Ecwin and Danske Bank calculations

Sell AUD/USD and NZD/USD on rallies, buy AUD/NZD spot

Despite the historical sell-off in AUD and NZD we still expect both currencies to depreciate going forward, not least against USD. The duo of a global recession and a financial crisis is likely to weigh on both of the very pro-cyclical currencies for some time, even as the recent unwinding of speculative long positions is likely to have limited the downward potential. Before credit markets improve, money markets normalise and a bottom has been established in the OECD leading indicator (indicating a turning point in the global recession), we prefer being short both AUD and NZD and preferably against USD. The outlook is less negative for AUD

though, and we expect the recent rise in AUD/NZD to continue beyond 1.20 in the short term.

As an alternative to spot positions, one could also position for further depreciation in AUD and NZD against USD through options. The scope for another massive sell-off should be limited and a cost-effective way of implementing this view could be to buy reverse knock-out (RKO) put options. The prices of these options offer decent entry levels, resulting from relatively high implied volatilities and risk reversals being heavily skewed for AUD and NZD puts.

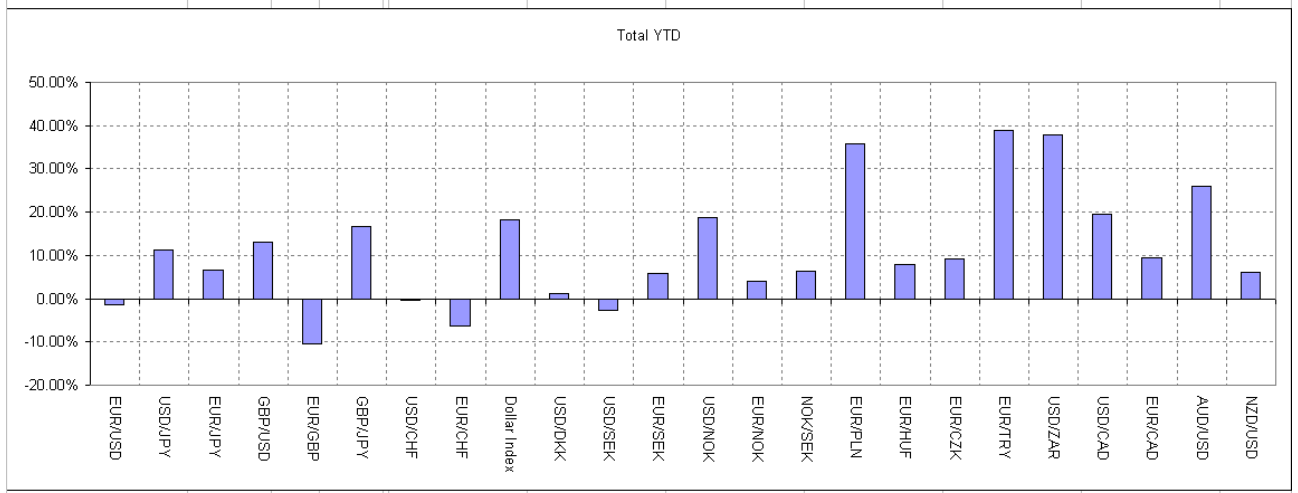
Specifically, in AUD/USD, one could enter a RKO put maturing in six weeks with strike ATMF and barrier at 0.565. This would come at price of 100 USD pips, offering a decent saving over the corresponding vanilla put which would cost 314 USD pips (indicative prices only, maturity 9 January 2009, spot/forward references 0.646/0.643). Similarly, in NZD/USD, one could enter a six-week RKO put with strike ATMF and barrier at 0.475 at a price of 105 USD pips compared with a vanilla price of 240 USD pips

(indicative prices only, maturity 9 January 2009, spot/forward references 0.548/0.545).

Naturally, the risk inherited is that the barriers are reached before expiry and the options become worthless (causing a loss of the premium paid). Nevertheless, the barriers are around 13% below the current spot level and should have a relatively low probability of being triggered. In terms of our short-term models, the barrier levels in both strategies are close to 4 standard deviations below the current model estimates.

Trading Points

										26/11/2008	11:10	(CET)		
										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	1.2966	↓	-3.81%	LONG		1.3230		1.2800	1.2677	-1.46%				
USD/JPY	95.02	↓	-0.74%	Go Long>	97.45	98.64	Go Short<	93.51	90.76	11.28%				
EUR/JPY	123.23	↔	3.07%	Go Long>	126.25	129.75	Go Short<	119.55	116.42	6.64%				
GBP/USD	1.5388	↓	2.92%	Go Long>	1.5535	1.5964	Go Short<	1.4840	1.4721	13.03%				
EUR/GBP	0.8425	↓	-0.86%	LONG		0.8586	0.8786	0.8399	0.8340	-10.35%				
GBP/JPY	146.24	↔	2.17%	Go Long>	151.75	156.10	Go Short<	141.00	134.95	16.71%				
USD/CHF	1.1935	↓	-1.70%	Go Long>	1.2235	1.2448	Go Short<	1.1830	1.1719	-0.35%				
EUR/CHF	1.5476	↓	2.08%	SHORT		1.5310	1.5058	1.5560	1.5616	-6.37%				
Dollar Index	85.207	↓	-0.024	SHORT		84.155		86.432	88.450	18.32%				
CURRENCIES - Scandies														
USD/DKK	5.7484	↓	-3.67%	SHORT		5.6590		5.8220	5.8925	1.20%				
USD/SEK	7.9534	↓	-3.03%	Go Long>	8.3645	8.5904	Go Short<	7.8200	7.6010	-2.66%				
EUR/SEK	10.3124	↓	0.67%	Go Long>	10.5500	10.8650	Go Short<	10.2050	10.1150	5.72%				
USD/NOK	7.0114	↓	-0.92%	Go Long>	7.0900	7.2022	Go Short<	6.8900	6.6800	18.70%				
EUR/NOK	9.0914	↔	2.87%	Go Long>	9.1613	9.3250	Go Short<	8.8840	8.7108	4.05%				
NOK/SEK	1.1342	↓	-2.16%	Go Long>	1.1805	1.1985	Go Short<	1.1310	1.1100	6.35%				
CURRENCIES - Non Majors														
EUR/PLN	3.7851	↓	-0.79%	Go Long>	3.9115	4.0214	Go Short<	3.7720	3.7250	35.67%				
EUR/HUF	260.90	↓	-3.99%	Go Long>	268.90	278.40	Go Short<	256.80	250.65	7.85%				
EUR/CZK	25.202	↓	-2.03%	Go Long>	25.845	26.235	Go Short<	25.000	24.685	9.08%				
EUR/TRY	2.0504	↓	-5.03%	Go Long>	2.1140	2.1472	Go Short<	2.0100	1.9725	38.94%				
USD/ZAR	9.9214	↓	-5.64%	Go Long>	10.6030	10.7790	Go Short<	9.6970	9.5200	37.79%				
USD/CAD	1.2236	↓	-2.48%	Go Long>	1.2780	1.3246	Go Short<	1.2125	1.1840	19.41%				
EUR/CAD	1.5867	↔	1.24%	Go Long>	1.6213	1.6373	Go Short<	1.5730	1.5510	9.55%				
AUD/USD	0.6472	↓	1.65%	Go Long>	0.6615	0.6790	Go Short<	0.6071	0.5784	25.98%				
NZD/USD	0.5486	↓	1.31%	Go Long>	0.5588	0.5720	Go Short<	0.5346	0.4950	6.15%				



Trading recommendations and G10 central bank overview

Directional trades

Open	Start date	Level	Now	Target	Stop	P/L (incl carry)
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We have currently no open trading recommendations

Recently closed	Start date	Level	Exit date	Level	P/L (incl carry)
Sell EUR/CHF	18/11/08	1.516	21/11/08	1.536	-1.32
Sell EUR/USD	18/11/08	1.265	24/11/08	1.285	-1.59
Buy GBP/CAD	18/11/08	1.845	24/11/08	1.877	1.75

P/L 2008	15.64%	Open	0.00%	Closed	15.64%
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# of trades *	122	# of trades 2008	37
- average net gain	0.39%	- average net gain	0.42%
- batting average	0.53	- batting average	0.57

* Since 17 November 2005

Central bank overview

Country	Official interest rate	Policy rate	Next decision*	Last change
United States	Federal funds rate	1.00	16 Dec (-50bp)	29 Oct (-50bp)
Euroland	Minimum bid rate	3.75	4 Dec (-75bp)	6 Nov (-50bp)
Japan	Overnight call rate	0.30	19 Dec (unch)	31 Oct (-20bp)
United Kingdom	Base rate	3.00	4 Dec (-50bp)	6 Nov (-150bp)
Switzerland	3-month Libor	1.00	11 Dec (unch)	6 Nov (-50bp)
Canada	Overnight rate	2.25	9 Dec (-50bp)	21 Oct (-25bp)
Australia	Cash rate	5.25	2 Dec (-75bp)	4 Nov (-75bp)
New Zealand	Cash rate	6.50	3 Dec (-100bp)	22 Oct (-100bp)
Sweden	Repo rate	3.75	17 Dec (-50bp)	23 Oct (-50bp)
Norway	Sight deposit rate	4.75	17 Dec (-25bp)	29 Oct (-50bp)

* Expected decision in brackets

G10 central bank forecast overview

	FED	BOC	ECB	BOE	SNB	RB	NB	BOJ	RBA	RBNZ
Now	1.00	2.25	3.25	3.00	1.00	3.75	4.75	0.30	5.25	6.5
2008 Nov								21-Nov		
Dec	16-Dec	09-Dec	04-Dec	04-Dec	11-Dec	17-Dec	17-Dec	19-Dec	06-Dec	03-Dec
2009 Jan	28-Jan	20-Jan	15-Jan	08-Jan				22-Jan		
Feb			05-Feb	05-Feb		11-Feb	04-Feb	19-Feb	03-Feb	
Mar	17-Mar	03-Mar	05-Mar	05-Mar	12-Mar		25-Mar	17-Mar	03-Mar	
Apr	29-Apr	21-Apr	02-Apr	09-Apr		21-Apr		7+28-Apr	07-Apr	
May			07-May	07-May			06-May	22-May		
June	24-Jun	04-Jun	04-Jun	04-Jun	18-Jun		17-Jun	16-Jun		
July		21-Jul	02-Jul	09-Jul		02-Jul				
Aug	11-Aug		06-Aug	06-Aug						
Sep	22-Sep	10-Sep	03-Sep	10-Sep	17-Sep		23-Sep			
Oct		20-Oct	08-Oct	08-Oct			28-Oct			
Nov			05-Nov	05-Nov						
Dec		08-Dec	03-Dec	10-Dec	10-Dec		16-Dec			
12M	0.50	1.00	1.50	1.50	1.00	2.25	3.25	0.30	4.00	4.00

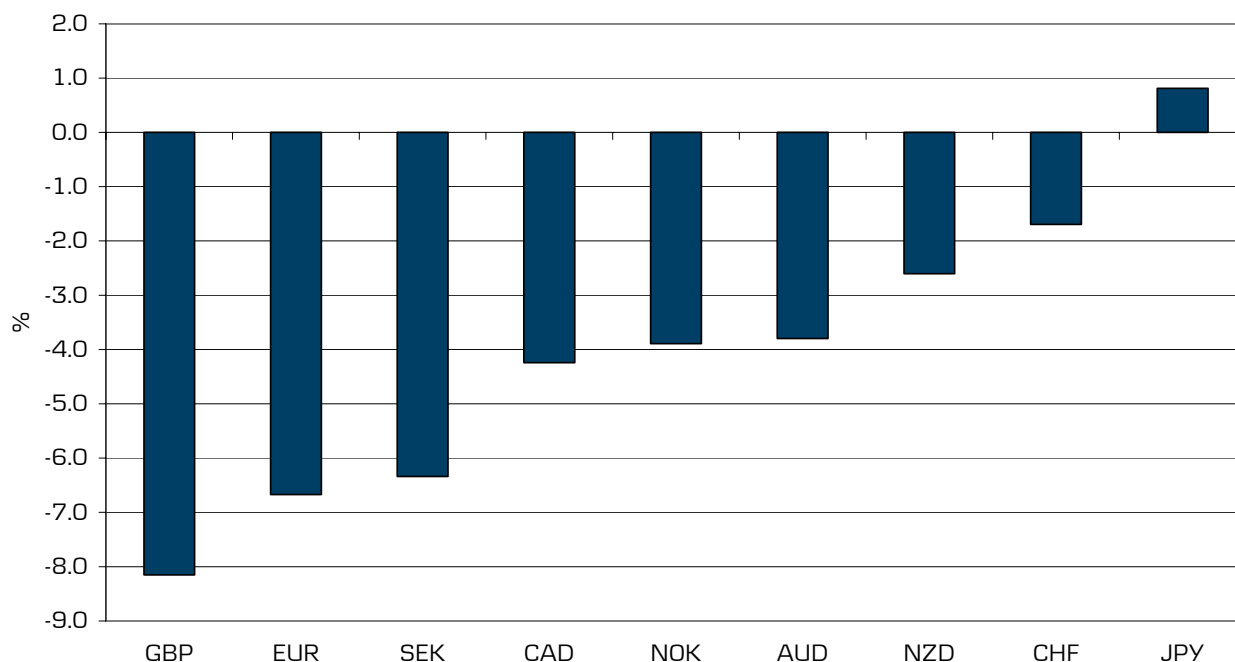
Rate cut Rate hike

Exchange rate forecasts

	Spot	Forecast				Forecast vs forward outright, %			
		+1m	+3m	+6m	+12m	+1m	+3m	+6m	+12m
Exchange rates vs EUR									
USD	1.297	1.25	1.21	1.16	1.16	-3.6	-6.7	-10.5	-10.5
JPY	123.49	118	114	114	118	-4.7	-7.4	-7.0	-2.5
GBP	0.847	0.86	0.86	0.82	0.80	1.5	1.6	-3.0	-5.4
CHF	1.547	1.50	1.46	1.48	1.48	-2.8	-5.1	-3.3	-2.8
DKK	7.45	7.45	7.45	7.46	7.46	-0.2	-0.4	-0.3	-0.4
NOK	9.04	9.00	8.80	8.40	8.20	-0.6	-3.1	-7.7	-10.1
SEK	10.28	10.20	10.20	10.00	9.50	-0.7	-0.8	-2.6	-7.5
Exchange rates vs USD									
DXY	85.3	87.3	89.0	91.0	91.0	2.3	4.4	6.9	7.1
JPY	95.2	94	94	98	102	-1.2	-0.8	3.8	8.8
GBP	1.53	1.45	1.41	1.41	1.45	-5.0	-8.2	-7.7	-5.5
CHF	1.19	1.20	1.21	1.28	1.28	0.8	1.7	7.9	8.5
DKK	5.75	5.96	6.16	6.43	6.43	3.5	6.8	11.4	11.4
NOK	6.97	7.20	7.27	7.24	7.07	3.1	3.9	3.2	0.6
SEK	7.92	8.16	8.43	8.62	8.19	3.0	6.3	8.8	3.4
CAD	1.23	1.26	1.28	1.28	1.26	2.5	4.2	4.4	2.9
AUD	0.65	0.64	0.62	0.61	0.61	-1.0	-3.8	-5.0	-4.4
NZD	0.55	0.55	0.53	0.51	0.51	0.5	-2.6	-5.7	-4.4

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

Expected change in USD vs forwards, 3m



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