

No. 3 | 2009

Economic commentaries

Norwegian krone no safe haven

*by Alexander Flatner, Senior Economist, Department for Market Operations and Analysis, Norges Bank**

Norwegian krone no safe haven

- *Since the financial turbulence began in late summer 2007, the Japanese yen and the Swiss franc have tended to function as safe haven currencies throughout the period, while the Australian dollar, New Zealand dollar, Brazilian real, South African rand and Turkish lira have reacted in the opposite direction.*
- *It seems that the US dollar acted as a non-safe haven currency until the collapse of Lehman Brothers last autumn, but has served as a safe haven currency since then.*
- *Since the financial turbulence erupted in late summer 2007, the Norwegian krone has neither been a safe haven currency nor a non-safe haven currency. The same applies to the British pound, euro, Polish zloty, Czech koruna, Swedish krona, Canadian dollar and Hungarian forint.*

Since the outbreak of financial turbulence in summer 2007, foreign exchange market participants have periodically referred to the US dollar, Japanese yen and Swiss franc as safe haven currencies, i.e. currencies preferred by investors when market prices are particularly uncertain and the primary goal of investment is to avoid losses. In other words, these currencies are attractive when risk appetite among financial market participants is low. These currencies will typically appreciate in times of market turmoil and declining equity prices. Similarly, they tend to depreciate as the turmoil eases and equity prices rise.

According to market participants, the Australian dollar and the New Zealand dollar have tended to act as non-safe haven currencies. During the period of financial turmoil, the Norwegian krone has been referred to both as a peripheral currency that participants want to avoid exposure to when uncertainty is high and as a safe haven currency.

This *Commentary* examines the various currencies to identify those that seem to have been safe haven currencies since the start of the financial turmoil in summer 2007. We compare effective exchange rates for the US, Japan, Switzerland, Australia, New Zealand, Norway, the UK, the euro area, Poland, the Czech Republic, Sweden, Canada, Hungary, Brazil, South Africa and Turkey with

- indicators of financial market turmoil
- developments in the US equity market

For all currencies, an increase in the effective exchange rate indicates an appreciation of the currency.

Relationship between exchange rate developments and indicators of turbulence

There are a number of indicators of financial market turbulence. We have focused on the following:

- a. The *VIX indicator* is a measure of expected volatility in the equity price index S&P 500. An increase indicates higher expected volatility in equity prices, which is assumed to reflect heightened unrest, greater uncertainty and reduced appetite for risk among market participants. The VIX indicator is used by many traders as a measure of financial turbulence. Our assumption is that a safe haven currency will tend to appreciate when the VIX indicator increases (positive correlation).
- b. The *GRI indicator* is a global risk indicator based on implied volatility derived from prices on 3-month currency options between EUR, USD and JPY.¹ A higher score indicates heightened turbulence. Our assumption is that a safe haven currency will tend to appreciate when the GRI indicator increases (positive correlation).
- c. The *risk appetite indicator* (RAI), which is an average of a number of different indicators.² A higher score indicates increased risk appetite and reduced turbulence. Our assumption is that a safe haven currency will tend to depreciate when this indicator increases (negative correlation).

Charts 1-6 below show the relationship (four-week rolling correlation) between the effective exchange rate for the above-mentioned currencies and the three turbulence indicators.³

- 1 For a more detailed discussion on the GRI, see Tom Bernhardsen and Øistein Reiland: "Factors that influence the krone exchange rate" in Economic Bulletin 2000/4, www.norges-bank.no.
- 2 The indicator has the same structure as UBS' risk appetite indicator. The risk appetite indicator is a composite indicator to quantify risk willingness in the market. A high score indicates high risk appetite. The indicator contains seven components: implied volatility for EURUSD and USDJPY, the VIX indicator, the gold price in USD, the return from investment in (US) equities contra bonds, the return from investment in (US) mortgage company bonds contra government bonds, the return from investment in bonds in emerging market economies contra US bonds and the difference in return from investment in "safe" contra riskier equities.
- 3 We have also examined the spread between three-month money market rates and key rates expected in the next three months in the US money market as a measure of unrest. The results did not provide any information as to whether the currencies examined in this paper are safe haven currencies or not.

Chart 1 indicates that USD did not serve as a safe haven currency in the period from summer 2007 when the financial turbulence erupted and up to the Lehman Brothers collapse in September 2008, but that it has served as a safe haven currency since the financial turbulence escalated last autumn (in the charts, SH indicates a "safe haven" currency, while NSH indicates a "non-safe haven" currency). Before the Lehman Brothers bankruptcy, the correlation between the US dollar and the turbulence indicators VIX and GRI was negative, while the correlation between the US dollar and the risk appetite indicator was positive. This means that the US dollar depreciated when the turbulence increased, which is not compatible with the perception of the dollar as a safe haven currency. One possible explanation is that a sharply cooling housing

market and prospects of weaker economic developments boosted US dollar selling in this period. After the Lehman Brothers collapse, however, the financial crisis escalated, and investors' risk appetite became considerably more important than fundamentals for developments in the foreign exchange market. Since then, increased turmoil in financial markets has tended to boost US dollar buying, i.e. the US dollar has been a safe haven currency.

The correlations between the Japanese yen and Swiss franc and our selected turbulence indicators shows that the yen and the franc have served as safe haven currencies through most of the period since summer 2007 (see Charts 2 and 3).

Chart 1. 4-weeks rolling correlation between USD and VIX, GRI and RAI. SH: safe haven currency, NSH: non-safe haven currency. Week 31 2007 – week 15 2009

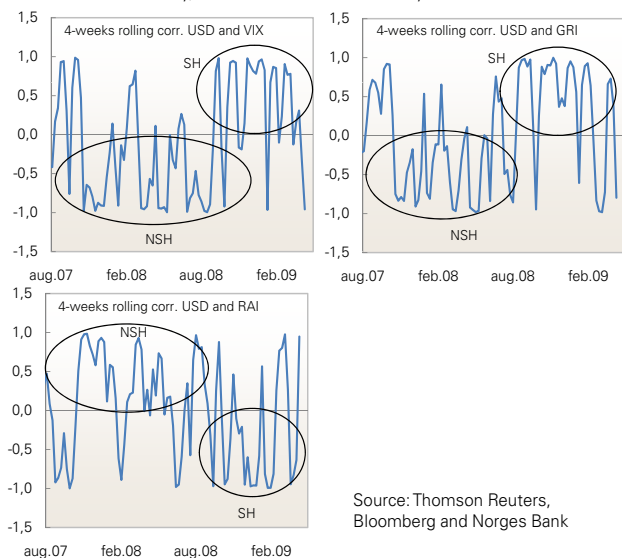


Chart 2. 4-weeks rolling correlation between JPY and VIX, GRI and RAI. SH: safe haven currency. Week 31 2007 – week 15 2009

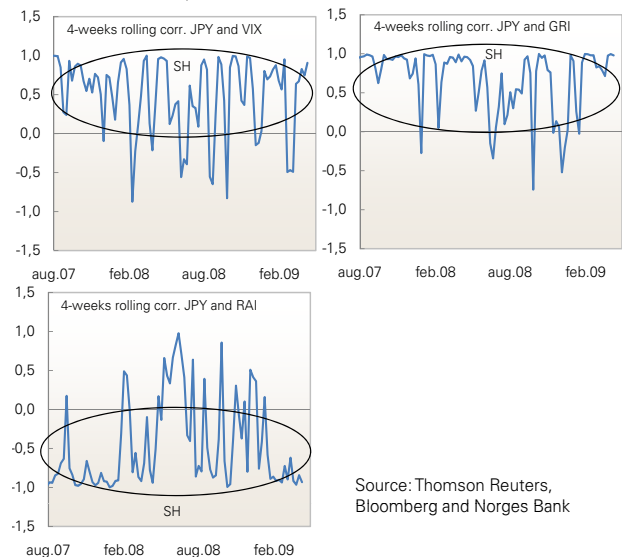
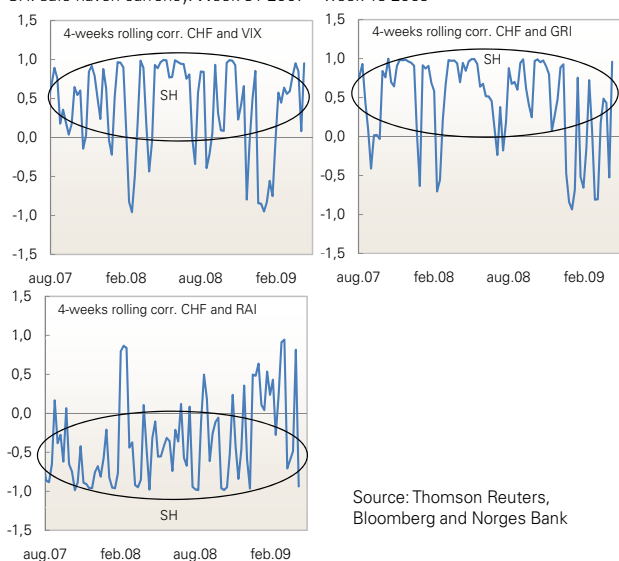


Chart 3. 4-weeks rolling correlation between CHF and VIX, GRI and RAI. SH: safe haven currency. Week 31 2007 – week 15 2009



In line with market participants' perceptions, since late summer 2007 the Australian dollar and the New Zealand dollar have largely tended to depreciate (appreciate) when financial turbulence increased (decreased) and have reacted as non-safe haven currencies through the whole period. Charts 4 and 5 indicate that there has for the most part been a negative correlation between the Australian and the New Zealand dollar and the turbulence indicators VIX and GRI, and a positive correlation with the RAI.

Chart 6 shows the relationship between our three turbulence indicators and the NOK exchange rate. In contrast to the other currencies referred to above, there is no clear relationship between the turbulence indicators and the NOK exchange rate.

Last autumn some market participants referred to the Norwegian krone as a peripheral and illiquid currency that investors did not wish to invest in when uncertainty is high. This year, on the other hand, some have referred to the Norwegian krone as a safe haven currency due to Norway's solid financial position and expectations that the Norwegian economy will fare better through the financial crisis than the economies of many other countries. However, it is difficult to find empirical evidence to support these views. The VIX index and the GRI indicate that the krone exchange rate moved in the opposite direction to safe haven currencies last autumn. The indicators do not provide evidence that the Norwegian krone has been a safe haven currency this year. The result for Norway is less definitive than for the other currencies mentioned

Chart 4. 4-weeks rolling correlation between AUD and VIX, GRI and RAI. NSH: non-safe haven currency. Week 31 2007 – week 15 2009

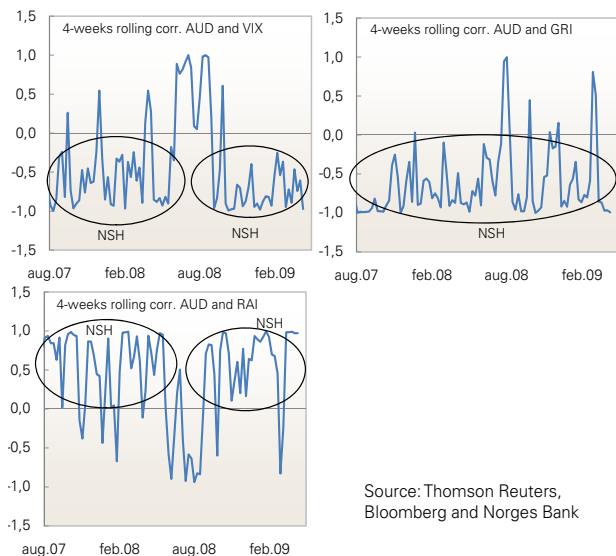


Chart 5. 4-weeks rolling correlation between NZD and VIX, GRI and RAI. NSH: non-safe haven currency. Week 31 2007 – week 15 2009

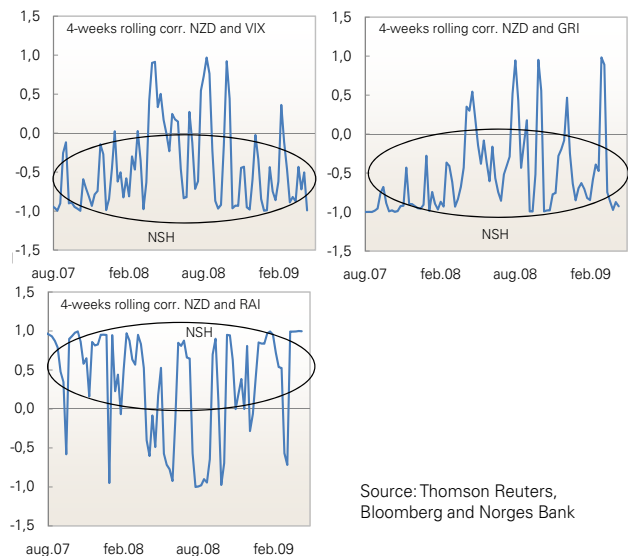


Chart 6. 4-weeks rolling correlation between NOK (I-44) and VIX, GRI and RAI. Week 31 2007 – week 15 2009

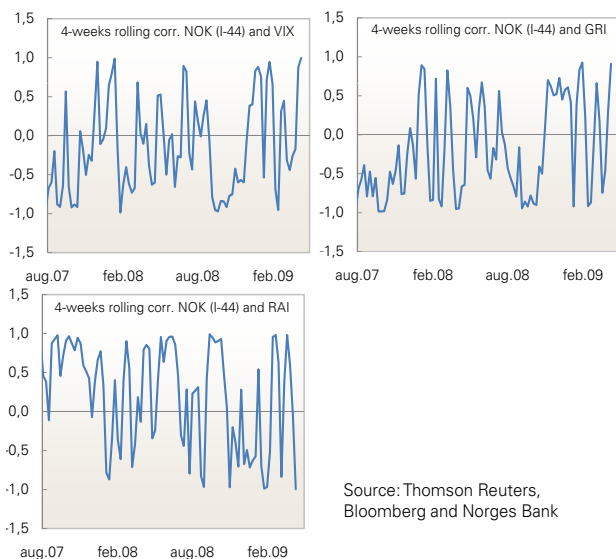
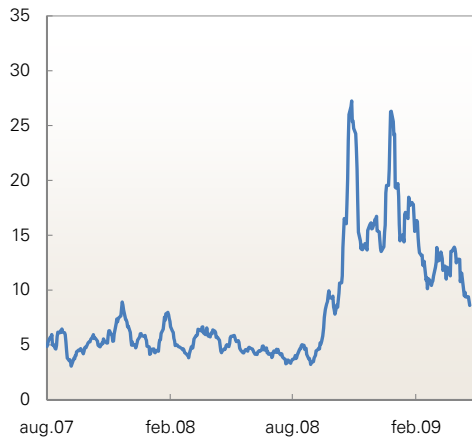


Chart 7. Difference in 1/100 NOK between daily high and low rate in EURNOK. 10-days average. 1. August 2007 – 22. April 2009



Source: Thomson Reuters and Norges Bank

above; the results for the other countries clearly shows that the Japanese yen and Swiss franc have been safe haven currencies through most of the turbulent period, the Australian and the New Zealand dollar have been non-safe haven currencies and the US dollar has been a safe haven currency after the Lehman Brothers bankruptcy last autumn.

Activity in the market for NOK must be viewed in the context of market liquidity. Market participants have indicated that liquidity has been very low since the financial turbulence escalated last autumn. Liquidity can be regarded as a measure of the amount of NOK that can be traded without substantially influencing the exchange rate. Low liquidity thus means that the exchange rate, for

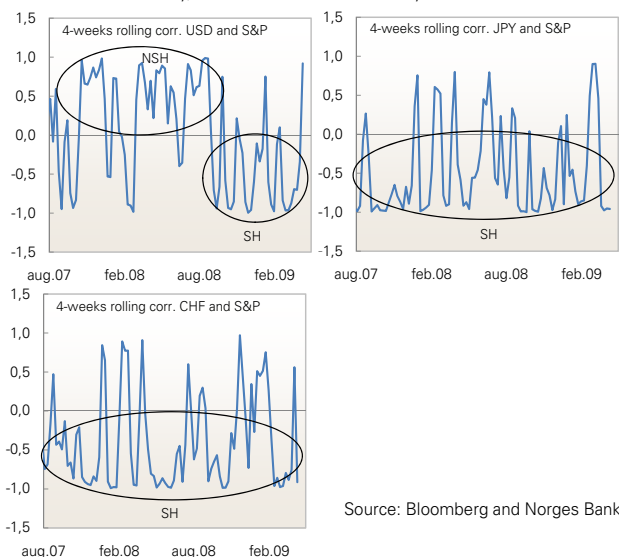
a given amount, moves more than it would have done under normal market conditions. In the absence of good measures of liquidity, the spread between the highest and lowest prices for EURNOK intraday is used as an approximate measure of NOK liquidity (see Chart 7). A wide (narrow) daily spread is interpreted to mean that liquidity in the market is low (high). The chart indicates that liquidity fell markedly when the financial turbulence escalated last autumn. Limited liquidity indicates that the term safe haven currency is not an accurate description of the Norwegian krone.

Relationship between exchange rates and equity markets

Lower equity prices can point to more difficult economic times ahead. According to a number of market participants, falling equity markets have boosted buying of safe haven currencies.

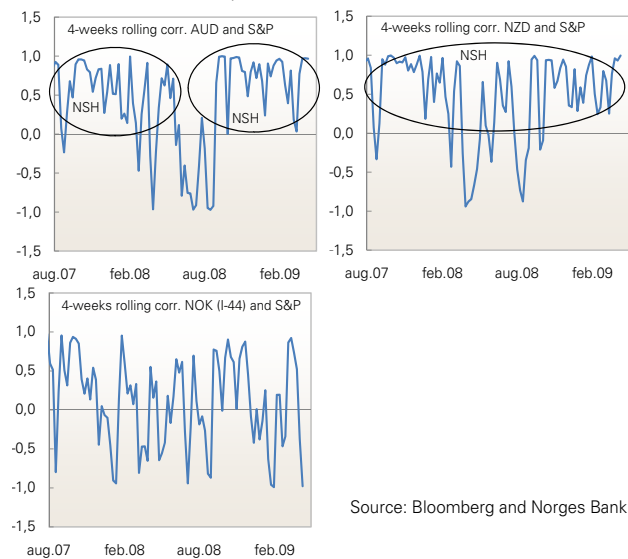
The relationship between the US dollar, Japanese yen and Swiss franc and equity market developments (as measured by the S&P 500) shows the same tendency as the relationship between these currencies and the turbulence indicators. The US dollar has acted as a safe haven currency since last autumn in that falling equity markets have largely been accompanied by a strong dollar (see Chart 8). The Japanese yen and the Swiss franc seem to have served as safe haven currencies through most of the period of financial turbulence in that downward moves in equity markets have largely been accompanied by an appreciation of these currencies.

Chart 8. 4-weeks rolling correlation between USD, JPY, CHF and S&P 500. SH: safe haven currency, NSH: non-safe haven currency. Week 31 2007 – week 15 2009



Source: Bloomberg and Norges Bank

Chart 9. 4-weeks rolling correlation between AUD, NZD, NOK (I-44) and S&P 500. NSH: non-safe haven currency. Week 31 2007 – week 15 2009



Source: Bloomberg and Norges Bank

For the Australian and the New Zealand dollar, equity markets reflect the same tendency as our selected turbulence indicators. In the period of financial turbulence, falling equity markets have largely been accompanied by a depreciation of the Australian and the New Zealand dollar (see Chart 9).

The correlation between the krone exchange rate and equity markets is less stable. Chart 9 indicates that there was a tendency last autumn for the fall in equity markets to be accompanied by a weaker krone exchange rate, but that the relationship has in periods been the opposite this year.

Other currencies

We have also examined corresponding relationships for a selection of other currencies. Based on charts similar to those above, it appears that the British pound, euro, Polish zloty and Czech koruna have neither served as safe haven currencies nor as non-safe haven currencies (these charts are not shown in this *Commentary*). For the Swedish krona, Canadian dollar and Hungarian forint, some indicators suggest that the tendency since last autumn has been towards depreciation when the financial turbulence escalated and equity markets declined, but the results are not strong enough to group these currencies among the non-safe haven currencies.

Through most of the period of financial turbulence, the Brazilian real, South African rand and Turkish lira have tended to depreciate when the financial turbulence escalated and equity markets fell, i.e. they have acted as non-safe haven currencies.

Table 1 presents a summary of the results.

Table 1: Classification of currencies.

Safe haven currencies	Non-safe haven currencies	Neither safe nor non-safe haven currencies
Japanese yen	Australian dollar	Norwegian krone
Swiss franc	New Zealand dollar	British pound
US dollar, period following Lehman collapse	Brazilian real	Euro
	South African rand	Polish zloty
	Turkish lira	Czech koruna
		Swedish krona
		Canadian dollar
		Hungarian forint

Conclusion

The Japanese yen and Swiss franc seem to have acted as safe haven currencies through most of the period since the financial turbulence erupted in summer 2007, while this has only been the case for the US dollar since the turbulence escalated last autumn.

For the Australian dollar, New Zealand dollar, Brazilian real, South African rand and Turkish lira, the tendency throughout the period has been that these currencies depreciated when the financial turbulence escalated and equity markets fell, i.e. they have acted as non-safe haven currencies.

We do not find evidence to support any general claim about the relationship between NOK and the financial market turbulence. This also applies to the British pound, euro, Polish zloty, Czech koruna, Swedish krona, Canadian dollar and Hungarian forint. In particular, we do not find evidence to support the claim that the Norwegian krone has been a safe haven currency.