
Recent developments in surveys of exchange rate forecasts

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Expectations of future exchange rates can influence moves in the current exchange rate. This article summarises recent developments in the mean forecasts for dollar/euro, dollar/sterling and sterling/euro bilateral exchange rates taken from the Reuters survey. The properties of these mean forecasts are evaluated and the article shows that they are not reliable predictors of future exchange rates.

Introduction

Expectations about the future play an important role in financial markets. The current price of an asset will depend on the expected rate of return, including the expected capital gain or loss from a change in its price. Understanding changes in market expectations can therefore help in interpreting moves in current financial prices.

In practice, it is difficult to obtain true measures of market expectations. In order to proxy these expectations the Bank often uses surveys of market participants in its analysis. Such surveys will not be perfect: results are often collected over a number of days, the average person filling in the survey may not hold precisely the same views as the average person taking positions in the market, and different people may interpret a survey question in different ways. So it is important to analyse the informational content of these surveys, rather than take them at face value.

This article looks at the foreign exchange market, and one measure of the expectation of future levels of the exchange rate, given by the Reuters survey.⁽¹⁾ This survey is of interest because it surveys foreign exchange traders and analysts, who might be expected to approximate the views of the market as a whole. The aim is to investigate the forecast accuracy of this survey. In practice, it does not seem that this survey is a very reliable predictor of future exchange rates. This is not a feature peculiar to the Reuters survey, as exchange rates are notoriously difficult to predict accurately.

The Reuters survey

Reuters surveys around 50 financial institutions for their forecasts of several bilateral rates, including dollar/euro and dollar/sterling exchange rates. The survey polls foreign exchange traders and analysts in the City of London. Those surveyed work at major investment banks, commercial banks, and other financial institutions in the City. The survey is taken on the first Monday and Tuesday of every month and asks for forecasts of the exchange rates one, three, six and twelve months ahead.⁽²⁾

Reuters survey data are available from November 1997 for the dollar/sterling exchange rate and from January 1999 for dollar/euro. A projection for sterling/euro can be calculated by dividing each forecaster's dollar/euro forecast by their dollar/sterling forecast.

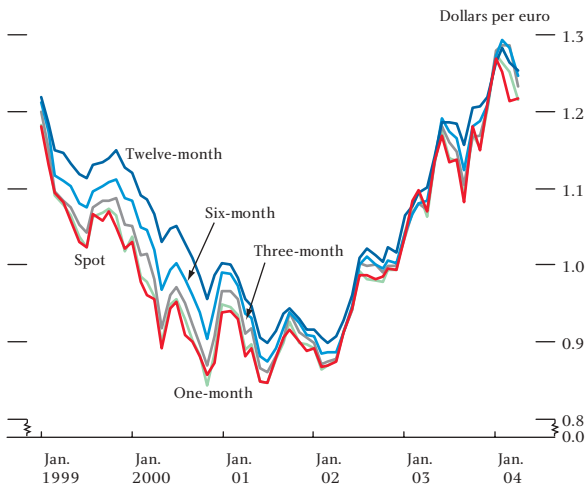
Recent changes in the mean forecasts

Charts 1 to 3 show the evolution of the mean of the Reuters forecasts and the spot exchange rate for the three currency pairs. The sample period provides an interesting case study, covering some large moves in spot exchange rates. During the appreciation of sterling and the dollar versus the euro in 1999 and 2000, the Reuters survey suggested that the weakness of the euro was not expected to persist. But by the start of 2001 the survey indicated a less rapid depreciation of sterling and dollar versus the euro over the subsequent twelve months than was suggested before 2001. The level of the survey rates was much closer to the spot rates during the appreciation of the euro after 2002, perhaps indicating

(1) The Bank also uses other surveys, such as the Consensus survey, for reference purposes.

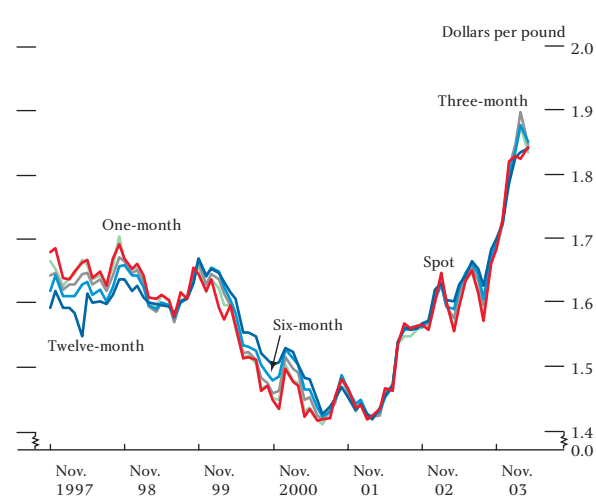
(2) Strictly, the survey horizon is slightly less than one, three, six and twelve months. For example, the January survey would ask for forecasts of the exchange rates at the end of January, March, June and December.

Chart 1
Dollar/euro spot and one, three, six and twelve-month forecasts



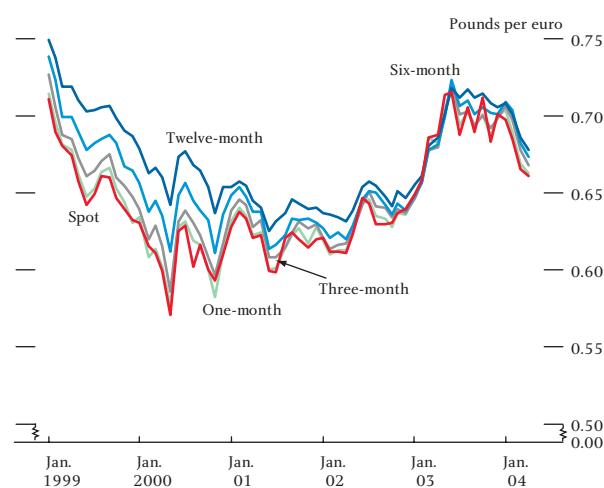
Sources: Bank of England and Reuters.

Chart 2
Dollar/sterling spot and one, three, six and twelve-month forecasts



Sources: Bank of England and Reuters.

Chart 3
Sterling/euro spot and one, three, six and twelve-month forecasts



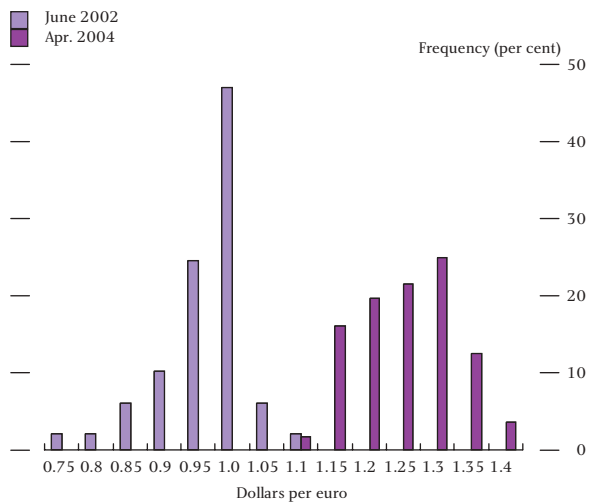
Sources: Bank of England and Reuters.

that some euro appreciation was then seen as sustainable. The dollar/sterling survey has moved more closely with the spot rate throughout the sample period.

Changes in the forecast dispersion

The mean forecast of a market survey is often considered to be a measure of the market forecast. But there can be considerable dispersion within any survey. Chart 4 shows two histograms of dollar/euro forecasts. In June 2002 over two thirds of respondents were forecasting between 0.925 and 1.025 dollars per euro. By April 2004, not only had the mean of the distribution shifted up—in line with the higher spot exchange rate—but the shape had also changed.

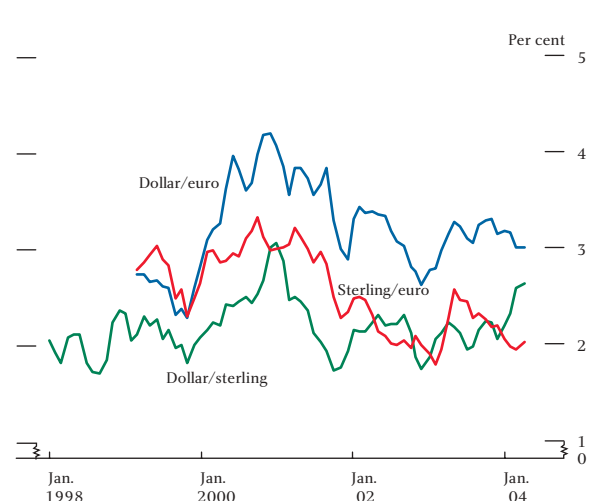
Chart 4
Dispersion of twelve-month dollar/euro forecasts



The x-axis labels refer to the centres of the histogram's ranges. The ranges are all of width \$0.05.

Source: Reuters.

Chart 5
Rolling three-month average of standard deviations of analysts' three-month forecasts



Source: Reuters.

Chart 5 shows forecast dispersion: the period covers episodes of both sterling stability (2000–02) and sharp sterling movements (for example in the first half of 2003). The main feature is a peak in dispersion of all the bilaterals at the start of 2001, otherwise the standard deviations appear to have been relatively stable.

Forecast dispersion and exchange rate uncertainty

It is important to recognise that forecast dispersion is not the same as the market's uncertainty about future exchange rates. This is because the survey collects each respondent's 'best guess' of the exchange rate, which does not capture the individual's subjective uncertainty. To emphasise this point, consider a survey where all the respondents forecast the same outcome, for example that dollar/euro will be 1.20 dollars per euro in twelve months' time. In this situation there is no dispersion. But there may be considerable uncertainty in each forecaster's mind about this forecast being realised; each forecaster may believe the dollar/euro bilateral rate could be anywhere between 1.00 and 1.40 in a year's time, with 1.20 as their best estimate. Nevertheless, we do observe a correlation between dispersion and uncertainty.

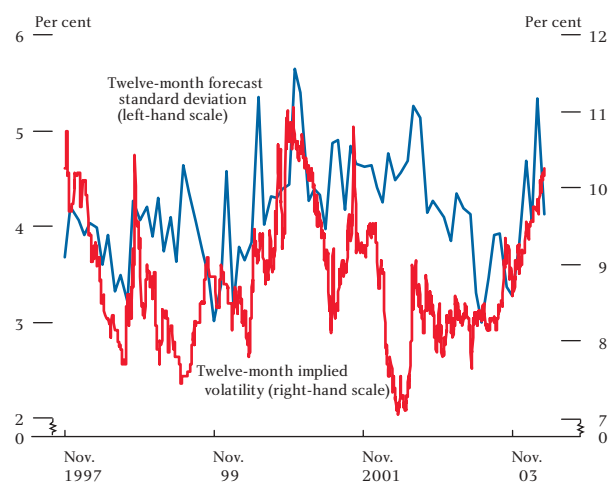
Charts 6 to 8 show the standard deviations of the forecasts against each exchange rate's implied volatility (which is a forward-looking measure of exchange rate uncertainty derived from option prices). There is some association evident between the distribution of forecasts and implied volatility for dollar/euro and sterling/euro (see Charts 7 and 8), although for dollar/sterling the association is weaker. The standard deviations are lower than the implied volatilities for all three currency pairs.

Do the mean survey forecasts follow the spot rate?

One way to assess the information in exchange rate surveys is to examine how 'good' the survey mean is at predicting the future exchange rate. Although it does not reflect the forecast of any individual respondent, it is likely that the mean forecast will average out idiosyncratic views.

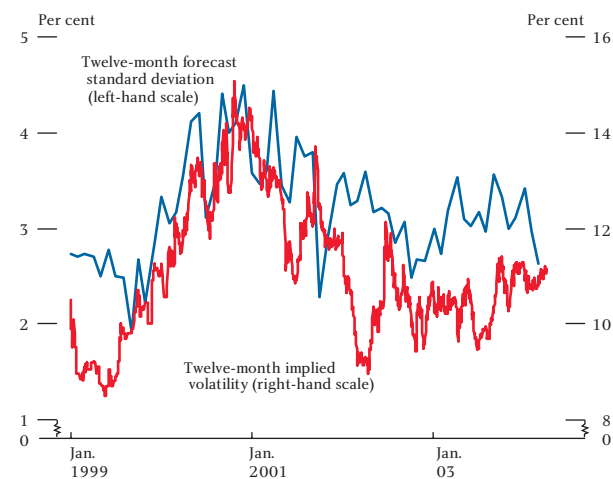
A frequent criticism of surveys of exchange rate forecasts is that the forecasts appear to follow merely the spot exchange rate. The following regression was run to test this:

Chart 6
Dollar/sterling twelve-month implied volatility and twelve-month forecast standard deviation



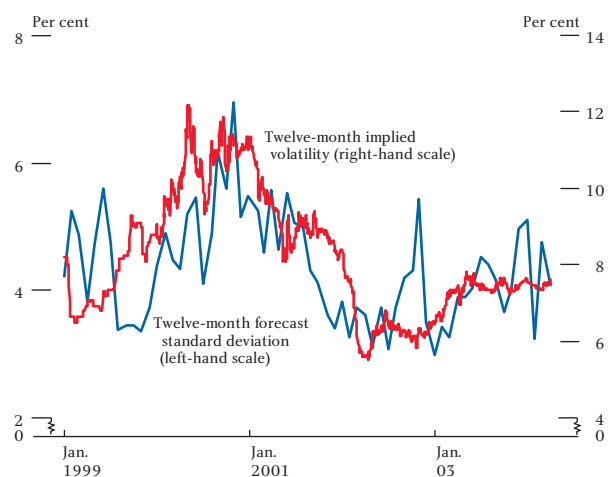
Sources: Reuters and UBS.

Chart 7
Dollar/euro twelve-month implied volatility and twelve-month forecast standard deviation



Sources: Reuters and UBS.

Chart 8
Sterling/euro twelve-month implied volatility and twelve-month forecast standard deviation



Sources: Reuters and UBS.

$$E_t(s_{t+h}) - E_{t-1}(s_{t-1+h}) = \alpha + \beta(s_t - s_{t-1}) + \varepsilon_t \quad (1)$$

In equation (1), $E_t(s_{t+h})$ is the log of the mean forecast at time t of the exchange rate in h months' time, and s_t is the log exchange rate at time t .

The interpretation of this equation is that revisions to the h month ahead forecast between time $t - 1$ and time t are linearly related to the actual change in the exchange rate between $t - 1$ and t .

We examine the joint hypothesis that $\alpha = 0$ and $\beta = 1$. This would imply both that the change in the forecasts maps one for one with that in the spot rate on average ($\beta = 1$) and that the change in the forecasts does not diverge from that in spot exchange rates over time ($\alpha = 0$). Of course, it might be entirely rational for the forecast and the spot rate to move together, as the spot rate is forward looking.

Table A shows the regression coefficients (β), the probabilities of $\alpha = 0$ and $\beta = 1$ (using an F-test), and the R-squared statistics of the regressions.⁽¹⁾ It shows the extent to which forecast revisions are related to recent changes in the exchange rate. All coefficients on changes in the spot rate are positive and significantly different from zero—changes in exchange rate forecasts are correlated with changes in the spot rate. The results support the hypothesis that changes in short-horizon forecasts are highly responsive to changes in the spot rate from month to month.

Table A
Regression coefficients on the change in the Reuters forecast

| | Dollar/sterling | Dollar/euro | Sterling/euro |
|----------------|-----------------|-------------|---------------|
| One-month: | | | |
| β | 0.88 | 0.97 | 0.90 |
| p -value (a) | (0.00) | (0.68) | (0.17) |
| R ² | 0.84 | 0.90 | 0.85 |
| Three-month: | | | |
| β | 0.76 | 0.85 | 0.76 |
| p -value (a) | (0.00) | (0.01) | (0.00) |
| R ² | 0.76 | 0.81 | 0.77 |
| Six-month: | | | |
| β | 0.67 | 0.72 | 0.64 |
| p -value (a) | (0.00) | (0.00) | (0.00) |
| R ² | 0.71 | 0.76 | 0.67 |
| Twelve-month: | | | |
| β | 0.55 | 0.54 | 0.49 |
| p -value (a) | (0.00) | (0.00) | (0.00) |
| R ² | 0.56 | 0.70 | 0.66 |

(a) P -value of F-test of joint hypothesis $H_0: \alpha = 0, \beta = 1$.

However, we reject the joint hypothesis $\alpha = 0$ and $\beta = 1$ for all but the dollar/euro and sterling/euro one-month forecasts; so a change in the exchange rate does feed through to a change in the forecast, but not to an equivalent change. The responsiveness of forecasts to changes in the spot rate declines for longer horizons, suggesting that respondents may hold stronger convictions about longer-term expectations. The R-squared statistics of the regressions are high, more so at the shorter maturities, so that a high proportion of the revision to the forecast can be explained by the change in the spot rate.

Is there any predictive power contained in the mean survey forecasts?

To investigate the predictive power of the Reuters surveys, we compare the forecast accuracy of the mean survey forecast to the forecast accuracy of the random-walk model. The simple random-walk model predicts that the current spot rate is the best estimate of the future exchange rate and is quite widely accepted as one of the best predictors of future exchange rates.

Random-walk forecasts are calculated using financial market data, so they can be taken on any trading day. We simulate these forecasts monthly on the dates of the Reuters survey.

A root mean squared error (RMSE) criterion can be used to evaluate the predictive power of the forecasts relative to the simple random-walk model. The RMSE statistic is

$$RMSE = \sqrt{\frac{\sum_{t=1}^n (E_t(s_{t+h}) - s_{t+h})^2}{n}} \quad (2)$$

As before, $E_t(s_{t+h})$ gives the forecast, so $E_t(s_{t+h}) - s_{t+h}$ gives the forecast error, and n is the number of forecasts available. The more accurate the forecast, the smaller the RMSE.

The results are shown in Table B. The Diebold and Mariano⁽²⁾ test statistic was used to determine whether there was a statistically significant difference between the RMSEs. We found that the Reuters forecast RMSEs were significantly larger than the random-walk RMSEs for sterling/euro and dollar/euro at all horizons. Hence, for these bilateral exchange rates, we conclude that the

(1) To account for the overlapping error structure in the regressions (which occurs when the forecast horizon is greater than the frequency of the forecasts), the Newey-West correction was used.

(2) See Diebold, F and Mariano, R (1995), 'Comparing predictive accuracy', *Journal of Business and Economic Statistics*, Vol. 13 No. 3, pages 253–63.

Table B
RMSE of the mean forecast versus random-walk forecast (RW)

| | Dollar/sterling | Dollar/euro | Sterling/euro |
|---------------|-----------------|---------------|---------------|
| One-month: | | | |
| Reuters | 0.0327 | 0.0318 | 0.0146 |
| Random Walk | 0.0332 | 0.0291 | 0.0151 |
| Three-month: | | | |
| Reuters | 0.0547 | 0.0657 | 0.0277 |
| Random Walk | 0.0559 | 0.0573 | 0.0257 |
| Six-month: | | | |
| Reuters | 0.0831 | 0.0936 | 0.0392 |
| Random Walk | 0.0804 | 0.0773 | 0.0295 |
| Twelve-month: | | | |
| Reuters | 0.1204 | 0.1603 | 0.0607 |
| Random Walk | 0.1159 | 0.1330 | 0.0454 |

Bold: RMSE is statistically significantly smaller.

mean forecasts are less accurate predictors of exchange rate movements than a simple random-walk model.

Can the survey forecasts predict the direction of exchange rate moves?

It may be the case that survey respondents are more focused on the direction of the exchange rate than its scale. Also, if respondents form their exchange rate expectations using uncovered interest parity (UIP), the existence of an uncertain risk premium may affect the size of movements expected, even when the direction of change is predicted correctly. In these cases, the RMSE would not be the correct criterion to judge the forecasts; forecasts could be much worse than a random walk in a RMSE comparison, but predict the correct exchange rate direction every period.

The proportions of correct directional predictions by the Reuters mean forecasts are shown in Table C. Table C also shows *t*-statistics for the forecasts relative to a 50% success level. The correct Reuters forecast proportions are not significantly different from 50% for any cases except the twelve-month sterling/euro forecast. The twelve-month sterling/euro forecast is correct almost two thirds of the time, significantly better than 50%. Excluding this case, the Reuters mean exchange rate forecast is not significantly better at predicting the direction of exchange rates than the toss of a coin. In fact, in half of the cases the mean of the Reuters forecasts correctly predicted the direction of the exchange rate less than 50% of the time.

Is there little information content in surveys?

The preceding analysis appears to suggest there is little informational value in the mean survey forecast. More

Table C
Percentage of Reuters forecasts that accurately predicted direction of change and *t*-statistics for whether proportions were significantly better/worse than 50%

| | Dollar/sterling | Dollar/euro | Sterling/euro |
|---------------------|-----------------|-------------|---------------|
| One-month: | | | |
| Per cent | 61 | 43 | 46 |
| <i>t</i> -statistic | 1.84 | -1.26 | -0.75 |
| Three-month: | | | |
| Per cent | 53 | 46 | 39 |
| <i>t</i> -statistic | 0.58 | -0.64 | -0.13 |
| Six-month: | | | |
| Per cent | 47 | 51 | 42 |
| <i>t</i> -statistic | -0.58 | 0.13 | -0.65 |
| Twelve-month: | | | |
| Per cent | 54 | 53 | 64 |
| <i>t</i> -statistic | 0.61 | 0.41 | 2.13 |

Bold: proportion is significantly different from 50%.

precisely, it finds that mean survey forecasts were beaten by a random-walk 'no change' forecast in a mean squared error sense. And if one had been interested in predicting the future direction of the exchange rate, then flipping a coin would have been as reliable a strategy as relying on the mean forecast in all cases but the twelve-month sterling/euro forecast.

Despite the results, there are possible reasons why they should not be interpreted as implying that market participants are unskilled at forecasting exchange rates. Respondents may not submit their true expectation, because it is commercially sensitive. Some may not wish to be too far from what they perceive the consensus to be, while others may feel an incentive to produce a forecast different from everyone else's.

Another measure of the 'market' forecast might be one that is money-weighted to reduce the influence of small players, who might have no impact on the price determination process, and who could affect the mean by submitting an extreme forecast.⁽¹⁾ In practice, this measure would be hard to construct.

This article has deliberately not discussed the issue of forecaster or survey rationality. The survey mean may not represent any individual forecaster, so testing each individual's forecast performance should complement any attempt to assess the rationality of the 'market' forecasts.

One possible interpretation of the apparent poor forecasting performance in recent years is that respondents had simply built into their forecasts the probability of an adjustment to the level of the exchange

(1) Another way to avoid this potential problem would be to use the modal forecast.

rate that was not realised as quickly as expected. This may well have been the case for the euro exchange rates between 2000 and 2002, when the euro was widely seen as considerably undervalued against the dollar and sterling—the correction did eventually occur. It could be argued that survey respondents were right in their long-term predictions for euro exchange rates, even though they were consistently wrong over a particular period.

Currently it appears that market participants are not forecasting a significant appreciation or depreciation of the euro. The forecasts of euro exchange rates may have entered a mode of behaviour similar to forecasts of dollar/sterling in recent years—when both short and longer-term expectations tracked the spot rate closely, possibly suggesting consensus that the exchange rate was not far from some long-term equilibrium level.

Conclusions

The mean Reuters forecasts for dollar/euro, dollar/sterling and sterling/euro bilateral rates have all been closer to the spot rates in recent months than

historically. But this year's survey results so far still suggest that sterling is expected to depreciate against the euro, although by much less than in 1999 and 2000.

Regressions support the idea that changes in short-term exchange rate forecasts are highly associated with recent changes in the exchange rate. The correlation between changes in exchange rate forecasts and recent changes in the spot rate falls at longer forecast horizons.

In a mean squared error sense, the mean Reuters forecast is a weaker predictor of future exchange rates than a simple random walk. And, excepting sterling/euro at the twelve-month horizon, survey forecasts are not significantly better than tossing a coin in determining the direction of exchange rate moves. Overall, the Reuters mean exchange rate forecasts do not appear to have much predictive power. And, especially at short horizons, the mean forecasts appear to be very responsive to recent changes in the actual exchange rate. This could potentially reflect either the fact that survey respondents react to recent changes in the exchange rate, or that exchange rates are forward looking.