EURO/DOLLAR: EVERY BODY CAN MAKE MISTAKES*

Forecasts of exchange rate movements generally have a miserable record. Those complied by Consensus Forecasts *concerning the euro have been true to form. Analysing the results of this survey indicates a worrying unanimity of error, which raises questions about the way forecasts are compiled. Are they not a result of herd behaviour? Also, if forecasts influence markets, at least in part, how is it possible to reconcile the expected appreciation of the euro from early 1999 to early 2001 with the depreciation that actually occurred? The answers provided to these questions here suggest that it was the lack of sufficiently strong conviction about euro/dollar exchange rate which prevented expectations from playing a truly stabilising role.*

*P*ost mortems carried out on forecasts are often unjust as they tend to blame forecasters for errors that stem from unexpected events. A *post mortem* analyst obviously has all the available information at hand, whereas a forecaster must anticipate the movement of all the variables likely to influence the forecast. Forecasts made about the euro/dollar exchange rate are not immune to this rule. Apart from any judgements that can be made about their value, *a posteriori* analysis of forecasts sheds particular light on past exchange rate movements, which in principle are strongly influenced by agents' expectations, if indeed agents take out positions reflecting their expectations.

■ A High Degree of Unanimity

Given that no instruments exist which directly reveal forex expectations in the markets, these can only be analysed using polls made of agents' opinions. The data used here stems from surveys made by *Consensus Forecasts* (London). At the start of each month, this organisation surveys a panel of more than a hundred banks and forecasting institutions about their forecasts for the major currencies, over various time horizons. A "consensus" forecast is then calculated as an average of the individual forecasts for the currencies and the time horizons. The consensus is then sent back to the members of the panel, within the month.

Graph 1 shows the evolution of the consensus forecast euro/dollar exchange (in black) from January 1999 to March 2001 (the number of euros per dollar). The consensus rate follows the actual exchange rate (in green) quite closely, over a 3-month horizon, in as far as each forecast leads on from the observed rate (instead of aiming at an absolute level), while nearly always underestimating the strength of the dollar[1]. Over a 12-month horizon, the consensus forecasts underestimated the value of the dollar substantially (by 18.5% on average); the actual exchange rate was very often above the upper estimate.

Hence, forecasters as a whole were generally wrong in their predictions. Looking at a sub-sample of seven "conscientious" forecasters[2], it may be noted that they all suffered from the same bias: about 20% over a 12-month horizon and 7% over three months. The table shows that they would have been better off adopting a "naive" approach to forecasts, which anticipates a future rate similar to the actual rate (or by anticipating no change in the exchange rate for a specific date, which amounts to the same thing). Such naive forecasting would have limited the bias over 12 and 3 months to 8.5% and 2.8% respectively. This confirms the well-known result that it is very difficult to achieve better results than a random walk[3], even if macroeconometric models (which market economists do not necessarily use) are today able to "beat" the random walk over a sufficiently long period of time[4].

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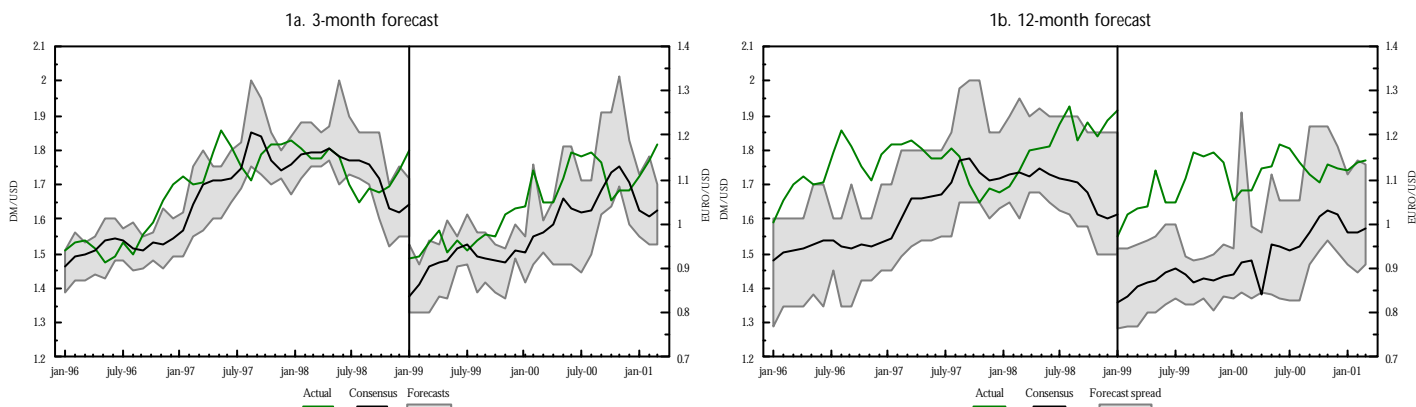* This text draws on research currently in progress, carried out in association with Michel Beine and Hélène Colas.
1. A. Brender and F. Pisani made the same observation on the basis of the Bloomberg consensus, see *Les Marchés et la Croissance*, Economica, 2001, p. 103.
2. These forecasters provided regular estimates for the survey (from January 1996 to March 2001) for the yen, the Deutschemark and the euro, for a 3 and a 12-month horizon. Forecasters were excluded if they did not reply to the survey 10 or more times (for a given exchange rate or horizon) and if they did not reply 3 or more times in succession.
3. R. Meese & K. Rogoff (1983), "Empirical exchange rate models of the seventies: do they fit out of sample?", Journal of International Economics, 12, 3-24.
4. R. MacDonald (1999), "Exchange rate behaviour: are fundamentals important?", The Economic Journal, 109, pp 673-691, November.

1a. 3-month forecast	1b. 12-month forecast

Actual   Consensus   Forecasts

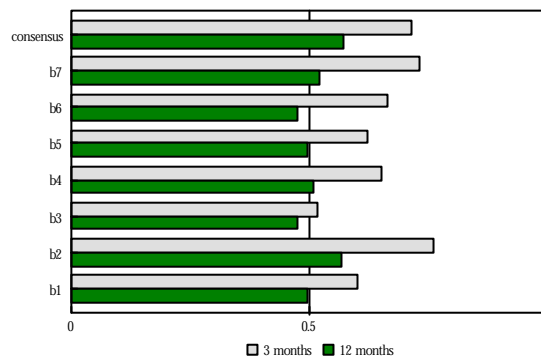Actual   Consensus   Forecast spread

Source: Consensus Forecasts.

N.B. The expected exchange rate variation can be read as the gap between the consensus rate and the actual rate of the previous month.

Such systematic underestimation of a currency (and hence overestimation of another) is not unusual. Forecasters in the same panel had already massively underestimated the dollar against the mark, over a twelve month period, in 1996 and early 1997, and similar errors can be found relating to the yen. But the errors made forecasting the euro were more visible as the bias was in the same direction for several months, whereas upward and downward errors made in forecasting the yen rate partly offset each other.

Table — Average forecast error, euro/dollar, January 1999 to March 2001
(in %, a negative figure indicates an under-estimation of the dollar)

	Individual forecasts (b)							Consensus	Naive Forecast
	b1	b2	b3	b4	b5	b6	b7		
3 months	-7.1	-4.6	-9.9	-7.2	-7.3	-6.5	-5.6	-6.3	-2.8
12 months	-20,0	-18.9	-22.4	-21.1	-21.6	-22.6	-19.7	-18.5	-8.5

Source: Author's calculations based on *Consensus Forecasts.*

Poor Forecasting

To evaluate the performance of forecasters for the euro/dollar exchange rate and those of other currencies of which upward and downward errors partly offset each other, the root mean squared error[5] is compared for each forecaster with that of a "naive" forecaster, who anticipated no change in the exchange rate. The ratio of the latter to the former provides a performance index which is greater than unity when the individual in question performs "better" than the random walk, and less than unity when otherwise.

Still, a forecaster's function may be not so much to give a figure for future exchange rates as to predict the trend in a currency's movement — upwards or downwards. It is better to be wrong about the scale of a currency movement than t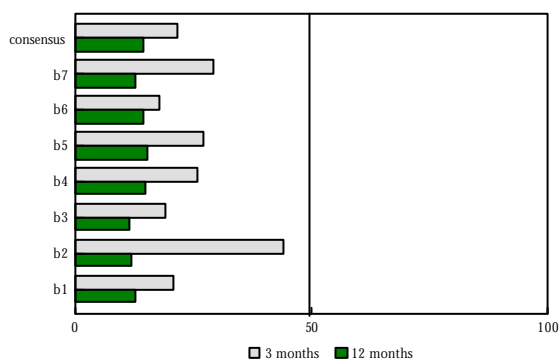o predict a rise in the euro when it actually falls. A complementary indicator is thus given by the percentage of forecasts correctly anticipating the trend of a currency's movement. In this case, 50% is the reference value, as it corresponds to the random probability of being right.

Graph 2 — The performance of forecasters for the euro/dollar exchange rate, January 1999 to March 2001

2a. Ratios of root mean squared errors
("naive" individual/selected individuals)

□ 3 months ■ 12 months

2b. The share of forecasts correctly anticipating direction of variation (in %)

□ 3 months ■ 12 months

Source: Author's calculations based on *Consensus Forecasts.*

Graph 2 maps both these performance measures for forecasts of the euro/dollar exchange rate over 3 and 12-month horizon, between January 1999 and 2001, using data for

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5. The average root mean squared error is the square root of the average of squared errors. Another approach would be to calculate the cumulative earnings of an agent who follows the advice of market economists by buying, say, a $1 forward contract to be sold on the spot market after 3 or 12 months each time the forecast value of the dollar is greater than its forward rate, or selling forward in the opposite case. The results of such a trading rule are not reported here, but are similar to those given by calculating the average root mean squared error

"conscientious" individuals (see footnote 2). It is absolutely clear that for this period, forecasters performed less well than a "naive" individual would have. Looking at a longer period stretching from 1996 to 2001 (which aggregates forecast performances for the mark and the euro), the consensus forecasts (in terms of the root mean squared errors) are inferior to a naive model by 19% and 30% for the 3 and 12-month horizon. This is comparable to the performance observed concerning forecasts of other currencies (the yen) and other periods (the early 1990s).

To Follow the Herd or To Be Original?

The massive and generalised nature of these forecast errors questions the role of originality in the forecasting profession: if the consensus only correctly predicts the direction of exchange rate movements 40% of the time (the average level for 1996-2001), then holding the opposite view to the consensus should achieve a success rate of 60%.

Indeed, there is a negative correlation (-0.37) between the share of forecasts in the same direction as the consensus and the share of forecasts with the correct polarity: forecasters generally anticipating a variation in the exchange rate which has the same sign as the consensus are more often wrong than others. Forecasts for the mark (and the euro) were particularly unanimous between 1996 and 2001: each forecaster predicted the exchange rate to move in the direction of the consensus forecast in 80% of cases. For the yen, however, some forecasters did not follow the consensus and were rewarded in consequence.

So why are there not more original forecasters? Economic theory provides a number of answers to this question that are compatible with rational behaviour by agents. According to one explanation, based on so-called "informational" herd behaviour[6], each individual has uncertain information (for example, an agent may believe that a larger government deficit will lead to an appreciating currency, though this is not sure). But, the declared expectations held by other forecasters provide additional information (for example, information about what other people consider to be the link between the deficit and the exchange rate). The agent in question may then ignore his/her own information and adopt the expectations of others. A second explanation, grounded in "reputational" herd behaviour[7], is based on the uncertainty about the ability of each forecaster to process information. Each forecaster then runs with the crowd to limit the risk of exposing his/her weaknesses publicly. A third explanation lies more with traders in the markets than with the forecasters. It is linked to the way agents are rewarded, which is a function of the spread between traders' performance and the market benchmark. This encourages traders not to stray too far from the benchmark.

A recent study carried out by the CEPII, and based on the survey by *Consensus Forecasts*[8], indicates that some causalities do exist between forecasters' view. However, these are not very frequent, though herd behaviour, is stronger over a 3-month horizon than a 12-month one. But this is a dynamic form of herd behaviour in as much as there is a one-month time lag between the behaviour of the leaders and the followers. To be sure, it may be that herd behaviour takes place within the span of a month, but the data available does not allow for a distinction to be made between such a shorter lag and a simultaneous reaction to a set of common information. In the latter case, the errors observed in the euro/dollar markets arise more out of convention than herd behaviour. Given a large set of information which is potentially relevant to forecasting the exchange rate, forecasters tend to favour certain types of information rather than others. The manner in which the convention emerges remains mysterious: the model each forecaster uses is the one he/she believes the majority will chose, and it may change abruptly[9]. For Paul de Grauwe[10] , it is precisely the errors made in forecasting which lead agents to concentrate on other variables. As a result, market economists have progressively revised their evaluation of the dollar upwards, as shown by Graph 1.

The Fall of the Euro

In December 1998, the forecasts made of a strong euro were based on the expectation that growth would be higher in the eurozone than in the United State, in 1999 and 2000. This fact, combined with the us's current account deficit and the creation of a single financial market in Europe, should have led the euro to being a strong currency[11]. In fact, US growth did not slow in these two years, while investment in the US, linked to the restructuring of major European companies, the attractiveness of the us's "New Economy" and the diversification of European portfolios all lead to a strong demand for dollars. Market economists then progressively included these factors in their expectations of the euro/dollar exchange rate level, while at the same time still expecting a *variation* in the exchange rate in favour of a stronger euro (Graph 2).

Hence, forecasts by market economists were not self-fulfilling. This may stem from the fact that forecasts by market agents (fund managers, traders, bank clients etc.) are different to those held by economists who inundate them

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6. See, for example, A. Banerjee (1992), "A model of herd behaviour", *Quarterly Journal of Economics*, 107(3), p. 797-817.
7. D. Scharfstein & J. Stein (1990), "Herd behaviour and investment", *American Economic Review*, 80 pp 465-479.
8. M. Beine, A. Bénassy-Quéré & H. Colas (2002), "Imitation amongst exchange-rate forecasters: evidence from the survey data", Mimeo, September.
9. A. Orléan (1989), "Pour une approche cognitive des conventions économiques", *Revue Economique*, vol. 41 No 5, September.
10. P. de Grauwe (2001), "Exchange rates in search of fundamentals: the case of the euro-dollar rate", *International Finance*, 3 (3), pp. 329-356, November.
11. See A. Bénassy-Quéré, "Les surprises de l'euro", *La Lettre du CEPII*, No 193, September 2000.

Graphique 3 — The euro/dollar exchange rate. Expected variations by the *Consensus Forecast* and by the forward rate, January 1999 to March 2001 (in %)

3a. Three months

3b. Twelve months
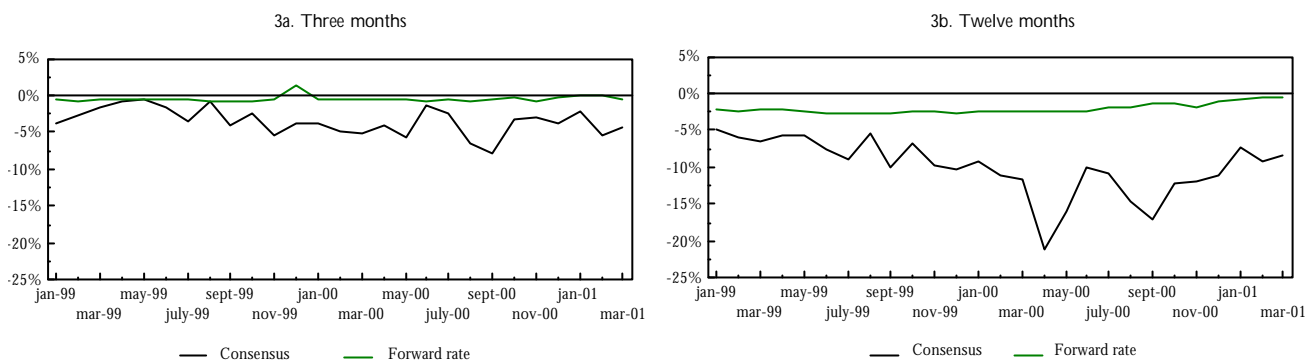
Source: Author's calculations based on *Consensus Forecasts*.

with information and do not themselves take positions in the market. Nevertheless, it is hard to see how these two groups, which work closely together, may hold diametrically opposing forecasts for the euro[12]. According to a second explanation, industrialists and fund managers investing in the US economy knew that they were exposing themselves to the risk of a devaluation of the dollar over the medium term, but they still believed their respective market positions would serve their industrial strategies and risk diversification best. This explanation raises the problem of explaining why forecasters did not anticipate the consequences for the exchange rate of such portfolio reallocations. The last explanation is based on an end to speculation over the time horizons considered: market positions over 3 and 12-month horizon would result purely from transactions by non-financial agents operating in the real economy (for trade, foreign direct investment etc.) and not from expected spreads in yields. In this case, traders and portfolio managers would have adopted a prudent attitude for the time horizons considered, though possibly taking very short term market positions. This would explain why expectations had such a limited impact on redressing market trends.

These three explanations are coherent with the forward euro/dollar exchange rate, which indicated continuously a dollar depreciation throughout the period, but to a lesser degree than was expected by the *Consensus Forecasts* (Graph 3). In all three cases, the lack of any strong conviction about the exchange rate parity prevented expectations from playing a truly stabilising role.

Agnès Bénassy-Quéré
a.benassy@cepii.fr

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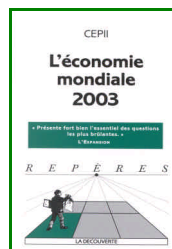
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12. A comparison made of the Consensus Forecast data and a one-off survey of 3000 market operators, carried out in August 1998 by Olivier Davanne, indicates a convergence of views on the yen/dollar exchange rate (the only rate available from both sources), even though the time horizons are slightly different. See O. Davanne (1998), *Instabilité du Système Financier International*, Rapport du CAE No 14, annex 3.