

Available online at www.sciencedirect.com

SCIENCE @ DIRECT®

European Journal of Political Economy
Vol. 21 (2005) 115–141European Journal of
POLITICAL
ECONOMYwww.elsevier.com/locate/econbase

Investor reactions to news: a cognitive dissonance analysis of the euro–dollar exchange rate

Henriëtte M. Prast*, Marc P.H. de Vor

*De Nederlandsche Bank, P.O. Box 98, 1000 AB Amsterdam, The Netherlands*Received 4 September 2003; received in revised form 12 September 2003; accepted 5 January 2004
Available online 1 August 2004

Abstract

This paper investigates whether the depreciation of the euro vis-à-vis the US dollar exchange rate during 2000 can be attributed to asymmetric investor reactions to economic and political news, including central bank statements. Daily euro–dollar exchange rate changes from April 1, 2000 through September 22, 2000 are regressed on economic and political news about the US and the euro area. The results suggest an asymmetry in the investors' response to news, depending on whether it comes from the US or the euro area. Moreover, investors react differently to 'good' and 'bad' news, which suggests cognitive dissonance reduction.

© 2004 Elsevier B.V. All rights reserved.

JEL classification: D83; F31; G14

Keywords: Behavioural finance; Cognitive dissonance; Exchange rates

1. Introduction

The possible role of emotions in economic decision making has been recognised by both psychologists and economists. Thus, [Kahneman and Tversky \(1979\)](#) found that individuals exhibit behaviour that systematically violates expected utility theory. Over the past decade, the implications of their so-called prospect theory and of other psychological characteristics of individual decision making and information gathering for the behaviour of financial market participants have been studied both theoretically and empirically (see [Barberis and Thaler, 2002](#) for a survey article). This has resulted

* Corresponding author. Tel.: +31-20-5243738; fax: +31-20-5243669.

E-mail address: h.m.prast@dnb.nl (H.M. Prast).

in explanations of anomalies like over-and underreactions of stock prices to news (Daniel et al., 1998), excessive trading by investors (Odean, 1998a,b) and the equity premium puzzle (Benartzi and Thaler, 1995).

More than two decades prior to the paper by Kahneman and Tversky (1979), Festinger (1957) developed the theory of cognitive dissonance, which states that individuals filter information in order to make it correspond to what they already believe. Over the past decades, his theory has been applied in economic theory. Akerlof and Dickens (1982) have used the concept of cognitive dissonance to explain behaviour in labour markets, whereas Goetzmann and Peles (1997) have used it in studying the behaviour of mutual fund investors. A related psychological phenomenon used in behavioural finance theory to explain underreactions of stock prices to news is conservatism (Edwards, 1968). In this paper, we study empirically whether information filtering due to cognitive dissonance might contribute to explaining the fall in the exchange rate of the euro vis-à-vis the US dollar in the 6 months preceding the first coordinated intervention in the exchange rate markets by the European Central Bank and others in September 2000. It has been argued, both by public authorities and in academic circles, that the depreciation of the euro vis-à-vis the dollar in the course of 2000 was difficult to explain on the basis of economic fundamentals only. Especially when the economic growth differential between the US and the euro area started to narrow in the second quarter of 2000, it was suggested by, for example, Welteke (2000), Wellink (2000) and De Grauwe (2000) that investor sentiments might account at least partly for the weakening of the euro (see Fig. 1 for the euro–dollar exchange rate since January 1, 1999; dollars per euro). The aim of the paper is to assess whether the data support this view. To this end, we study the daily response of the euro–dollar

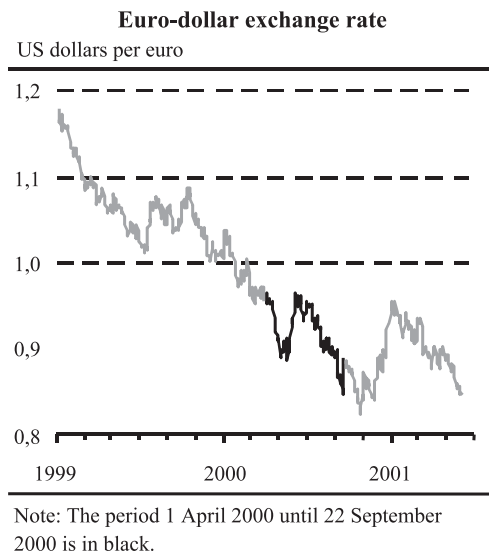


Fig. 1. Euro–dollar exchange rate.

exchange rate to news about the US and news about the euro area, focusing on whether asymmetries can be found in the reaction pattern. Specifically, we concentrate on differences in the reaction to US news and euro area news, and to differences in the response to good and bad economic and political news about these areas. As pointed out, we have analysed the daily euro–dollar exchange rate changes recorded from April 1, 2000, when it had become obvious that the growth differential started to narrow, to the first coordinated exchange rate intervention on September 22, 2000. We have regressed these changes on economic and political news about the US and the euro area. In addition, we have assessed whether the exchange rate reacted differently to good and bad news.

Our findings suggest that in the period under consideration investors in foreign exchange markets did indeed react in an asymmetrical manner to news about the US and the euro area. In fact, the exchange rate did not respond to economic news about the euro area, whereas it did to US economic news. This may explain at least partly why, contrary to what exchange rate theory would predict, the recovery of the economy in the euro area in the course of 2000 was not followed by an appreciation of the euro vis-à-vis the dollar. Our findings suggest that as far as political news—statements by central bankers and politicians—is concerned, the reaction to euro area news was stronger than that to US news. This asymmetric reaction pattern may be related to the fact that the ECB did not have an established reputation yet, and to the possibility that investors may have been focusing on the political viability of the Economic and Monetary Union (EMU), and not so much on its economic prospects.

The paper is structured as follows. The next section briefly describes a few phenomena in asset markets where asymmetric reactions to news and investor sentiments may have played a role. In Section 3, the method and data of our empirical analysis are outlined. Section 4 presents the results and the conclusions are summarised in Section 5.

2. Other studies of news filtering

In general, economic theory assumes that agents gather, process and interpret information in a rational way. While this assumption is no doubt useful for building models of market behaviour, economists—as, for example, [North \(1990\)](#) points out—can enhance their understanding of many phenomena by allowing for other behavioural aspects in their models. Both theoretical research and empirical evidence by cognitive psychologists on the processing of information has shown that individuals exhibit biases in processing information. The behavioural finance literature increasingly applies many of these concepts, including that of cognitive dissonance, to explain anomalies in financial markets. According to [Kindleberger \(2000\)](#), cognitive dissonance is an important source of herding in financial markets. [Goetzmann and Peles \(1997\)](#) (see previous section) conclude that the concept explains why investors in mutual funds judge their own funds more favourably than is justified by the fund's results. Using questionnaire studies of mutual fund investors about evaluations of past fund performance, they find that the bias depends on the previous investor choice.

According to the authors, this type of behaviour may be interpreted as a result of the tendency to reduce cognitive dissonance.¹

Some researchers argue, however, that, even if individuals are biased in their judgement of information, this does not automatically imply that markets are inefficient. As long as not all market participants are influenced, there might be room for markets to function efficiently, as market clearing prices are set by marginal, not average behaviour. Thus, [Jacobsen et al. \(2002\)](#) find in their experimental study of a political stock market that the market worked efficiently, even though individual traders exhibited judgement biases. Nonetheless, as [Barberis and Thaler \(2002\)](#) reason, limits to arbitrage make it costly and risky for rational traders to fully benefit from the inefficiencies caused by less rational traders. According to [Shleifer and Vishny \(1997\)](#), full arbitrage is even less likely to occur because of the ‘separation of brains and capital’: most traders manage not their own funds, but those of their customers. Finally, psychological research suggests that deviations from full rationality apply to human beings in general. [Statman \(1999, p. 20\)](#) formulates it as follows: “Standard finance people are modelled as ‘rational’, whereas behavioural finance people are modelled as ‘normal’”.

The hypothesis that news filtering may play a role in explaining price movements in financial markets has been the subject of a number of empirical studies. [Ayrer et al. \(2001\)](#) find that, during the boom on the stock market in late 1999 and early 2000, new-economy stocks in Germany reacted more strongly to positive news than did old-economy equity, whereas there were no discernible effects in the reaction to negative news. During the period of declining prices after March 2000, however, it was the reaction to negative news that was more pronounced for new-economy stocks than for old-economy stocks, while no significant difference in the reaction to positive news was found. Similar research by [Keijer and Prast \(2001\)](#) also shows that the hype in technology shares on the Amsterdam Stock Exchange (AEX) was at least partly due to a biased reaction by investors to news about the IT sector. Their results indicate that the increase in IT-prices following good news about this sector was significantly larger than the decrease in case of unfavourable news releases. [Jansen and De Haan \(2003\)](#) study the reaction of the euro–dollar exchange rate to ECB statements during the first years of EMU. They conclude that ECB statements have mainly influenced volatility and that the Bundesbank has dominated news coverage.

Another example is related to the performance of newcomers on the Amsterdam stock market. Research covering the period 1983–1999 suggests that from the third year after their initial public offering, the performance of newcomers on the Amsterdam stock market, measured in terms of their share prices, trails that of established firms, and that in the fifth year the difference amounts to 30% ([Bosveld and Venneman, 2000](#)). Further analysis demonstrates that from the first year after their introduction, growth figures and profits of newcomers declined. This is not reflected in the stock prices, however, until the third year. Hence, investors show a long lag in their reaction to bad news about newcomers, something the researchers are unable to explain. [Kaminsky and Schmukler \(1999\)](#), finally, in an attempt to account for the 20 largest 1-day swings in stock prices in nine Asian countries during 1997

¹ In fact, behavioural finance theory uses insights from cognitive psychology to build models of investor behaviour that explain observed phenomena which do not seem to fit in completely with conventional rational expectations theory. See for example [Barberis et al. \(1998\)](#).

and 1998, find that some of these swings cannot be explained by economic or political news only. Their evidence points out that with the deepening of the crisis stock prices overreact, as investors react more strongly to bad news than to good news. They suggest that bad news in periods of crisis may increase uncertainty and promote herd behaviour.

3. Method and data

Our empirical analysis concentrates on the reaction of the euro–dollar exchange rate (dollars per euro) on economic and political news. The analysis is not concerned with explaining the euro–dollar exchange rate on the basis of a particular exchange rate model, but focuses instead on the impact of news on daily movements in the exchange rate. The impact of news on exchange rates has been the subject of extensive research, although most studies concentrate on announcements of US macroeconomic data (Edison, 1996). Some studies have been undertaken to analyse the effects of economic news released in the UK, Germany and Australia (Clare and Courtenay, 2000). Our approach differs in a number of respects as we include statements by central bankers and politicians, as well as political events, as explanatory variables. Moreover, by distinguishing between good and bad news, we assess to what extent investors filter information. Specifically, it will be verified whether they have an a priori, perhaps irrational, dislike for the euro, which would make them react more strongly to bad news than to good news about the euro area. The approach used in this paper is similar to the one undertaken by Kaminsky and Schmukler (1999) (see previous section). In order to test the hypothesis of potentially biased response to news, we have studied the daily effect on the euro–dollar exchange rate of news in the period from April 1, 2000 until the coordinated exchange-rate intervention on September 22, 2000. At the start of this period, the growth differential between the US economy and the economy of the euro area began to decrease and could no longer be the fundamental factor behind the depreciation of the euro in the period under consideration (see Fig. 2). From 1 April onwards, increasingly positive euro area news was released.

We have used the electronic real time news of the Dutch financial newspaper ‘*Het Financieele Dagblad*’ (2000) as source of information. It has been verified that this information is consistent with alternative news sources such as Bloomberg. Included in the analysis are the relevant news items released during the 24 h *before* the ECB fixing euro (2.15 p.m. European Standard Time). As far as the relevant economic news variables are concerned we have included three categories: real economic variables (economic growth, industrial production, (un)employment rates, confidence indicators, trade deficits, budget deficits and changes in the fields of taxes and social security systems), inflation and statements by central bankers and politicians about monetary and exchange rate policy. For reasons of symmetry, only news items referring to the euro area as a whole and/or to the three largest countries—Germany, France and Italy—have been taken into account. Likewise, news items referring to single US states have not been used.

Table 1 summarises the data set (see Appendix A for the full data set). The narrowing growth differential between the US and the euro area is broadly reflected in the numbers of favourable and unfavourable news items about the real economy and inflation in both economic areas: regarding the euro area, there were more favourable news items about the

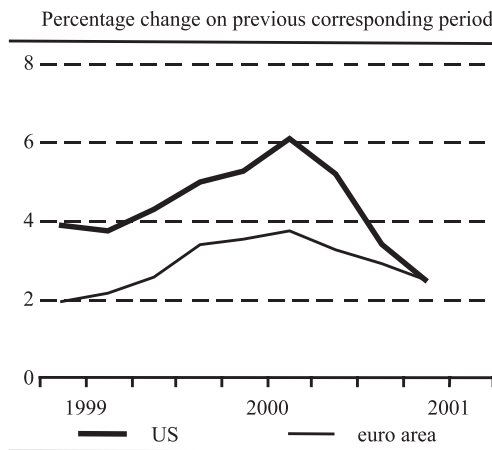


Fig. 2. Gross domestic product.

real economy than unfavourable ones, whereas inflation news was on balance unfavourable. The opposite pattern is observed for the US. Table 1 also shows that there were more statements about the euro–dollar exchange rate from euro area officials than from US officials. This is partly related to the fact that the euro area, being composed of 11 countries in this period, simply numbers more central bankers and politicians that may express their opinions about the exchange rate. Moreover, the decline of the euro itself has often prompted euro area officials to address the exchange rate issue on a frequent basis.

It should be emphasised that these news items may be thought of as reflecting changes in fundamentals. Relevant information is incorporated into market prices; hence an analysis of daily exchange rate changes should concentrate on the new information releases in the interval between the previous and the current exchange rate. Obviously, there may be intraday movements in response to news, but we have confined our analysis to daily figures. Where possible, the announcements of news figures are compared with consensus forecasts

Table 1

News releases on the euro area and the United States relevant for the euro–US dollar exchange rate, by category

Type of news	<i>n</i>	Favourable €	Unfavourable €
<i>Euro area</i>	232	132	100
Real economy	132	88	44
Inflation	38	13	25
Statements and political events	62	31	31
	<i>n</i>	Favourable \$	Unfavourable \$
<i>United States</i>	95	45	50
Real economy	70	31	39
Inflation	15	8	7
Statements and political events	10	6	4
Total	327	177	150

by market participants. An unexpected increase in real economic activity is assumed to be good news, whereas inflation figures exceeding market expectations are classified as unfavourable. Statements by central bankers hinting at future interest rate increases are classified as favourable as it becomes more attractive to invest in the currency concerned, especially in the short run.² Of course, depending on the view of investors on the long run effects of interest rate increases on the economy, their reaction to hints at future interest rate increases may differ. However, given that central banks do have price stability as their main goal—as is the case of the ECB—, or price stability and macroeconomic stability as their primary concern—as is the case with the Federal Reserve—it can be expected that interest rate increases will be announced precisely in times when inflationary pressure is expected to continue or increase. These inflationary pressures—which lower the expected real rate of return—can be assumed to be common knowledge to investors and are already reflected in the exchange rate, whereas the hint at an interest rate increase is ‘news’. Hence, this kind of news can be assumed to increase the expected real rate of return on the currency.³ Statements by politicians interfering with monetary policy are categorised as unfavourable, because it is generally assumed that independent central banks have more credibility in safeguarding the internal and external value of their currencies. This applies especially to the euro area, where the Euro system decides on monetary policy for an area currently covering 12 countries, all with their own governments.

4. Results

4.1. Which type of news affects daily exchange rate movements?

To examine the impact of economic news and statements/political events on the euro–dollar exchange rate, we have run a regression of the changes in the euro–dollar exchange rate (dollars per euro) on the news variables mentioned above. The news categories are transformed into separate dummy variables. The regression equation is:

$$(E_t - E_{t-1})/E_{t-1} = \alpha + \sum \beta_i D_{i,t} + \varepsilon_t, \quad (1)$$

$$(i = 1, 2 \dots 6)$$

where $(E_t - E_{t-1})/E_{t-1}$ is the percentage change in the euro–dollar exchange rate between $t-1$ (2.15 p.m.) and t (2.15 p.m.). D_i ($i=1 \dots 6$) represent dummy variables

² It may be argued that any statement by a central banker should be interpreted as a hint at future interest rate policy. However, such may not be the case in all instances, because central bankers also tend to give pep talks and issue warnings, as is confirmed by their press secretaries.

³ This said, it may of course be that under certain conditions our assumption may imply a myopic view by investors, i.e. a neglect of the medium and longer term effect of interest rates on the macroeconomy, as higher interest rates may reduce economic activity.

reflecting news about, respectively, the euro area real economy, euro area inflation and political news concerning the euro area, the US real economy, US inflation and political news concerning the US in the same period. We have also run regressions including official interest rate changes by the ECB and the Fed as separate news variables, but these explanatory variables did not turn out to be significant. This may be because they were mostly anticipated by market participants, and hence incorporated into the exchange rate. Moreover, there were but a few official interest changes. Each dummy variable takes a value of +1 if the relevant news is favourable, -1 if it is unfavourable and 0 if there was no news. For example, the 'real economy' variable takes the value +1 if the release suggests a better outlook for the real economy, -1 if the outlook is worse and 0 otherwise.

This approach implies that all news items are considered equally important, as we have proceeded from the assumption that the press, in selecting items worth publishing as news, applies a selection mechanism based on the importance of new information. Our method enables us to include news that is not of a quantitative nature. Indeed, it is generally acknowledged that messages by central bankers and politicians influence market behaviour even if they do not contain figures. Moreover, it should be borne in mind that our focus is not on the elasticity of the exchange rate with respect to, say, a change in the trade balance, but on whether the reaction pattern of investors depends on the news item being about the euro area or the US. However, on the account of the uniform weighting of events, the dummy approach involves a measurement error, resulting in a downward bias of the coefficients, and implying an increase in the standard error. Therefore, the analysis may lead to an underestimation of the importance of the explanatory variables.⁴

Table 2 gives the regression results of Eq. (1). As is clear, all coefficients, except those for euro area inflation news, have signs that are in accordance with intuition. Thus, good news about the real economy of the euro area and favourable statements have a positive effect on the euro-dollar exchange rate, whereas the coefficients of US dummies in these different categories have a minus sign. Furthermore, the effect of news about the real economy of the euro area is not significant, whereas that of real economic US news is, with a 99% confidence level. In addition, statements regarding the euro area are significant (at a 99% confidence level), whereas those regarding the US are not. Finally, the constant has a negative sign, suggesting a downward trend in the exchange rate, but it is not significant. Note that the R^2 is quite low, but this is customary in regressions of exchange rate models. In fact, the seminal article by [Meese and Rogoff \(1983\)](#) shows that many exchange rate models were unable to beat the random walk in forecasting the nominal exchange rate over short and medium horizons.

⁴ In general, measurement errors can substantially alter the properties of the estimated regression parameters. Specifically, least-squares estimates of the regression parameters will be biased and inconsistent, the degree of bias and inconsistency being related to the variance of the measurement error. An evaluation of the estimates of the regression parameters in the limit as the sample gets large may show that the presence of the measurement error—as is the case in our dummy analysis—leads to an underestimation of the true regression parameters if ordinary least-squares techniques are used (see, for example, [Pindyk and Rubinfeld, 1991](#), pp. 159–161).

Table 2
Regression results Eq. (1)

Explanatory variables	Dependent variable	
	Percent change in euro–dollar exchange rate ^a	
	Coefficient	<i>t</i> -Statistic
Constant	– 0.10	– 1.30
Real economy, euro area	0.05	0.56
Real economy, US	– 0.32***	– 2.97
Inflation, euro area	– 0.04	– 0.32
Inflation, US	0.13	0.67
Statements/political events, euro area	0.33***	2.89
Statements/political events, US	– 0.29	– 0.88
Number of observations	124	D-W statistic 2.02
Method	OLS	<i>F</i> -statistic 2.62
R^2	0.12	
Adjusted R^2	0.07	

^a Dollar per euro.

*** Indicates significance at 99% confidence level.

The finding that US economic news has a significant impact illustrates the dominance of the US economy on foreign exchange markets. Furthermore, the sensitivity of the euro to statements may be related to the ECB not having an established reputation yet, and to investors looking for a pattern in ECB monetary policy. Moreover, they may regard political rather than economic circumstances as a relevant factor for monetary developments and stability in the euro area. In their eyes, these factors are not that important in the US.

4.2. Do investors react differently to good and bad news?

We now turn to the question whether there is evidence that the depreciation of the euro vis-à-vis the dollar during the second and third quarters of 2000 can be explained in part by an asymmetric reaction to good and bad news, which in turn might be attributed to the tendency to reduce cognitive dissonance. We assume that the investors' *framework of reference*, to use Festinger's terminology, about the euro area is unfavourable compared with that about the US economy. According to the theory of cognitive dissonance, the framework of reference, or the a priori opinion, of investors is important because it may result in asymmetric news filtering in such a way that the validity of existing opinions is confirmed. The reason for this unfavourable framework may be market participants' fear of political interference with the ECB's monetary policy. Also, investors may have doubts about the feasibility of a monetary union without a political or fiscal union, as well as concerns about the eastward expansion of the EU. Given this assumption, the theory of cognitive dissonance predicts that market participants filter news in a biased way, paying more attention to bad than to good news about the euro area, whereas news about the US economy is treated in the opposite way. To assess whether this may be the case, we split up the news releases

into good and bad information, and constructed good (bad) news dummies taking on a value of 1 if there is good news, -1 if there is bad news and 0 if there is no news in that particular area. We ran the following regression:

$$(E_t - E_{t-1})/E_{t-1} = \alpha + \beta_1 \text{GEA}_t^e + \beta_2 \text{BEA}_t^e + \beta_3 \text{GUS}_t^e + \beta_4 \text{BUS}_t^e \\ + \beta_5 \text{GEA}_t^p + \beta_6 \text{BEA}_t^p + \beta_7 \text{GUS}_t^p + \beta_8 \text{BUS}_t^p + \varepsilon_t, \quad (2)$$

where $(E_t - E_{t-1})/E_{t-1}$ is the percentage change in the euro–dollar exchange rate between $t-1$ (2.15 p.m.) and t (2.15 p.m.), where GEA and GUS are dummies for good news about the euro area and the US, respectively, and BEA and BUS dummy variables reflecting bad news about these respective areas. The superscript e indicates economic news; the superscript p indicates political news. Being far from significant in Eq. (1), inflation news and the no news dummy were left out. Regression results not shown here indicate that inclusion of those variables would not have altered our conclusions.

From Table 3, several conclusions can be drawn. First, it is obvious that investors do not react differently to good and bad economic news about the euro area: neither good nor bad economic news has a significant effect on the exchange rate. Second, both good and bad economic news about the US affects the exchange rate significantly, if a 90% confidence level is accepted. The positive reaction of the euro to bad economic US news, however, equals the negative reaction to good economic US news. Third, favourable statements about the euro area and the US have a significant effect on the euro–dollar exchange rate, whereas the influence of unfavourable statements is not significant.

Table 3
Regression results Eq. (2)

Explanatory variables	Dependent variable	
	Percent change in euro–dollar exchange rate ^a	
	Coefficient	<i>t</i> -Statistic
Constant	−0.14	−0.86
Good economic news, euro area	0.10	0.60
Bad economic news, euro area	−0.05	−0.27
Good economic news, US	−0.30*	−1.70
Bad economic news, US	0.33*	1.83
Good statements/political events, euro area	0.42**	2.23
Bad statements/political events, euro area	−0.25	−1.37
Good statements/political events, US	−1.54*	−1.94
Bad statements/political events, US	−0.01	−0.04
Number of observations	124	D-W statistic 2.04
Method	OLS	<i>F</i> -statistic 2.37
R^2	0.14	
Adjusted R^2	0.08	

^a Dollar per euro.

* Indicates statistical significance at a 90% confidence level.

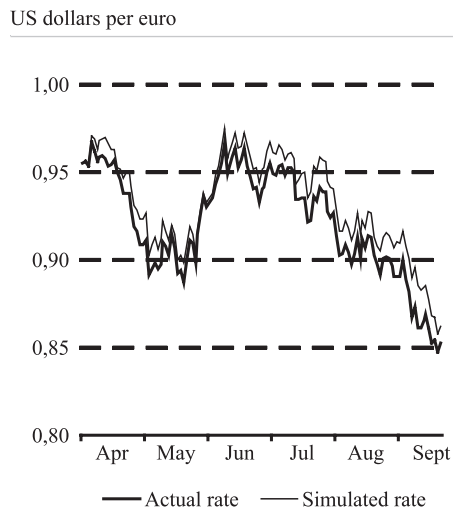
** Indicates significance at a 95% confidence level.

Summarising, the results confirm the asymmetry in investors' response to news, in the sense that the nature of the reaction depends on where the news comes from. This outcome may explain why the upswing of the business cycle in the euro area starting in the first half of 2001 did not have the hoped-for effect on the euro. It also indicates that those who argued that the fall of the euro could hardly be explained by economic fundamentals were right. In addition, we have found a difference in the magnitude of the reaction to good and bad political news, which may imply some news filtering by investors.

4.3. *Anti-monde*

Given the significant effect of news, notably political news, on the daily changes of the euro–dollar exchange rate, it is interesting to study an anti-monde, assessing how the exchange rate might have developed in the absence of political news. To this end, we have computed the fictitious time path of the exchange rate in the absence of political news. We have concentrated on political euro-news, as the EMU was a new experiment not only from the point of view of economic integration, but also in a political sense. Thus, the ECB has an independent political status, but obviously national governments may be tempted to politically influence its decisions.

To compute the anti-monde, we have taken the coefficients resulting from our regression analysis and have simulated the resulting exchange rates in the absence of political news about the euro area, taking as a starting point the actual exchange rate at the beginning of the period under consideration. The result is graphically presented in Fig. 3, which includes both the actual exchange rate and the anti-monde assuming no political euro news.



Period: 1 April 2000 until 22 September 2000.

Fig. 3. Actual and simulated euro–dollar exchange rate.

Fig. 3 shows that in the absence of political news the euro–dollar exchange rate would have depreciated less in the period under consideration. Still, the exchange rate at the end of the period under consideration, when central bankers decided to intervene to support the euro, would have been only slightly higher in the absence of political news. Our simulation exercise would predict an exchange rate of \$0.86/euro on September 21, 2000, whereas in reality the exchange rate was \$0.85/euro.

5. Conclusion

In this paper, we studied the reactions of the euro–dollar exchange rate to economic and political news about the euro area and the US. Our aim was to assess whether the changes in the exchange rate can be attributed partly to biased information filtering by market participants. Given the nature of the data set, the results should be interpreted with caution. Nonetheless, it appears that there are asymmetries in the reaction pattern to news. Investors focus on political news and central bank statements as far as the euro area is concerned, whereas they pay less attention to economic news. For news about the US, our analysis suggests that the opposite holds: economic news is important, political news is less so. The asymmetry of this pattern may explain why the narrowing of the economic growth differential between the US and the euro area starting in the first half of 2001 did not cause the euro to appreciate. Investors simply ignored the relatively positive economic news releases about the euro area.

We have also found some difference in magnitude in the reaction to good and bad news. However, in the period under consideration investors did not seem to close their eyes to favourable euro news while welcoming good US news. Rather, they seemed to be concerned with the viability of EMU and with the credibility of ECB monetary policy. This may in turn have been related to the historical fact that monetary unions without political union did not survive (Vanthoor, 1996). Obviously, for the markets the proof of the pudding is in the eating, and market participants needed more reassurance that EMU is viable. Meanwhile, the development of the euro in recent times suggests that market participants have become more confident about the viability of monetary union without political union, about the independence of the ECB and about the quality of monetary management in the euro area.

Acknowledgements

The authors thank two anonymous referees and Robert Paul Berben, Wilko Bolt, Jaap Bos, Maarten Gelderman, Aerdt Houben, Klaas Knot, Job Swank and Carlo Winder for useful suggestions and comments to earlier versions of this paper, and Miriam Holman and Frans Vermeer for research assistance. The views expressed in this paper are those of the authors and do not necessarily reflect those of De Nederlandsche Bank.

Appendix A

News items relevant to the euro–dollar exchange rate. April 1, 2000–September 21, 2000

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Monday 03 April	0.12	Euro area: trade balance January € – 3.8 bn against €+2.8 bn in December	Ec./EU
		France: car sales up 4.2% in March	Ec./EU
		Italy: industrial production down 1.1% in January, after earlier announcement of 0.8% fall	Ec./EU
		USA: GDP growth up 4.6% in fourth quarter 1999; again revised upward	Ec./USA
Tuesday 04 April	– 0.27	IMF: GDP growth in euro area this year 3.2% after earlier expectation of 2.3% growth	Ec./EU
		IMF: US GDP growth this year 4.3%; earlier expectations were 2.6% growth	Ec./USA
		USA: NAPM-production index decreased slightly in March, but more strongly than expected	Ec./USA
		USA: NAPM-price index up from 74.1 to 79.8 in March; highest level since February 1995	Ec./USA
Wednesday 05 April	1.42	Duisenberg/Hämäläinen: “upward pressure on inflation continues to threaten euro area”	Statements/EMU
		Germany: unemployment up again in March; positive trend continues (Jagoda)	Ec./EU
		Germany: wholesale sales up 2.8% from IPP in February 10.6% against PCP	Ec./EU
		France: March consumer confidence at record high compared to February	Ec./EU
Thursday 06 April	– 0.50	Welteke: “inflation to accelerate if weaker euro and rising oil prices push up import prices”	Statements/EMU
		Euro area: producer prices up 5.7% in February CPD to PCP; acceleration caused mainly by oil prices	Ec./EU
		Euro area: producer and consumer confidence reaches record high in March	Ec./EU
		Germany: manufacturing order portfolios up 4.7% from IPP in February; rise is much stronger than expected	Ec./EU
		France: budget deficit increased in February	Ec./EU
		Greenspan: “danger of labour and goods shortages has not diminished”	Statements/USA
Friday 07 April	– 0.63	Duisenberg: “I do not expect ecofin to place the euro’s weakness against the dollar and the yen on the agenda”	Statements/EMU
		Germany: industrial production in February up 3.4% from IPP: four times the expected figure	Ec./EU
		USA: corporate stocks increased by 0.7% in February, as expected	Ec./USA
		USA: job growth in USA much greater than expected	Ec./USA
		USA: unemployment in March at 4.1%, unchanged from February; decline to 4% was expected	Ec./USA

(continued on next page)

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Monday 10 April	0.27	Duisenberg: “even resumed growth, a weak euro and persistently high oil prices, will not make the danger of inflation go away” Euro area: GDP up 0.9% in fourth quarter, fastest growth for ca. 2 years	Ec./EU
Tuesday 11 April	0.04	France: annual inflation rate below ECB norm at 1.7% in March	Ec./EU
Wednesday 12 April	– 0.19	EC: “medium term control of public spending in euro area core nations is below par” EC: euro area inflation projection jumps from 1.5% to 1.8% EC: projected euro area economic growth adjusted upward to 3.4%	Statements/EMU Ec./EU Ec./EU
Thursday 13 April	– 0.41	Euro area: trade surplus increased Euro area: retail sales for January up 0.3% from PCP Germany: exports rise 19% due to low euro IMF: favours higher US interest rates USA: retail sales higher than expected USA: producer price rises above expectations USA: unemployment benefit applications below expectations USA: continued rise of import prices in March, strongest rise in 10 years	Ec./EU Ec./EU Ec./EU Statements/USA Ec./USA Ec./USA Ec./USA Ec./USA
Friday 14 April	0.03	Amato: “G7 not to make specific references to exchange rate levels” USA: highest inflation rate increase for 5 years recorded in March	Statements/EMU Ec./USA
Monday 17 April	0.35	G7 statement: silence on measures to support the euro Germany: six major research institutes indicate Germany is in the midst of a period of fast economic growth Germany: wholesale prices up 0.8% in March, more than expected France: unemployment declined to 10.2% in March, lowest figure in 8 years USA: industrial production up 0.3% in March from PCP, 0.1% more than expected	Statements/EMU Ec./EU Ec./EU Ec./USA
Tuesday 18 April	– 0.79	Welteke: “De ECB to make forceful stand against inflation” Euro area: 2.1% March inflation rate exceeds ECB norm for the first time Germany: unexpected 0.4% fall in Ifo index business confidence in March	Statements/EMU Ec./EU Ec./EU
Wednesday 19 April	– 0.38	Italy: PM D’Alema resigns Germany: German research institutes expect economic growth to decline in the course of 2001 USA: housing construction down 11.2% in March; steepest fall in 6 years	Statements/EMU Ec./EU Ec./USA

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Thursday 20 April	– 0.90	ECB: “weak euro and rising oil prices pose a clear risk of inflation being pushed up to unacceptable levels” Italy: Ciampi government steps down Euro area: money growth rises to 6.2% in March (norm = 4 1/2%) Germany: CPI growth appears to slow down in two German states USA: trade deficit hits another record high in February; analysts unpleasantly surprised	Statements/EMU Statements/EMU Ec./EU Ec./EU Ec./USA
Friday 21 April	0.00	France: France wants variable speed within EU Jospin: unemployment in France will dip below 10% France: February sees industrial production rise for the first time in 3 months, performance exceeds expectations	Statements/EMU Statements/EMU Ec./EU
Monday 24 April	0.00	No relevant items	
Tuesday 25 April	– 0.79	Germany: industrial production grew much faster in February than had been reported earlier: 3.6% (3.4%) Germany: Duitse inflation levels off in five states due to lower oil price USA: economists project slight fallback in first quarter economic growth	Ec./EU Ec./EU Ec./USA
Wednesday 26 April	– 1.17	Germany: CPI in April unchanged from March USA: slightly lower consumer confidence in April	Ec./EU Ec./USA
Thursday 27 April	– 0.33	ECB: Refi rate increased by 0.25% to 3.75% Germany: another stiff import price rise in March: 0.8% IPP France: producer confidence rises from 29 to 37 points in April USA: March sees 2.6% rise (IPP) in durable product orders, more than expected.	Ec./EU Ec./EU Ec./EU Ec./EU Ec./USA
Friday 28 April	– 0.85	EC: “low euro rate no cause for concern” Euro area: trade deficit declines further in February Euro area: industrial production rose again in February, by 1.2% USA: GDP rose by 5.4% during first quarter, analysts counted on 5.9–6% USA: wage cost index up 1.4% during first quarter: fastest rise for over 10 years	Statements/EMU Ec./EU Ec./EU Ec./USA Ec./USA
Monday 01 May	0.00	No relevant items	

(continued on next page)

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Tuesday 02 May	0.34	Euro area: money supply rose by 6.5% instead of 6.1% in March	Ec./EU
		USA: NAPM production index down from 55.8 to 54.9 in April, lower than projected	Ec./USA
		USA: NAPM price index down from 79.8 to 76 in April	Ec./USA
Wednesday 03 May	−2.23	Noyer: “further decline of euro should be avoided; currency expected to recover”	Statements/EMU
		Euro area: third quarter BBP growth expectation 3.1%, not 3%	Ec./EU
Thursday 04 May	0.38	Euro area: further rise in business confidence index	Ec./EU
		Euro area: unemployment down from 9.5% to 9.4% in March	Ec./EU
		Germany: government employee unions step up industrial action	Ec./EU
Friday 05 May	0.41	Euro area: producer prices rose 0.6% in March	Ec./EU
		IPP; continued rises for 13 months now	
		Germany: order portfolio shrank by 0.9% in March 0.9% IPP, i.e. 11.1% against PCP	Ec./EU
		USA: annual rise in labour productivity up 2.4% during first quarter, analysts expected 3%	Ec./USA
Monday 08 May	−0.36	USA: annual rise in wage costs up 1.8% during first quarter, analysts expected 1.5%	Ec./USA
		Duisenberg: “common currency under close scrutiny, prices are stable”	Statements/EMU
		Eichel: “intervention tool is ever at our disposal”	Statements/EMU
		Ecofin meeting: ministers worried about low euro exchange rate and point to currency’s lack of strong foundation”	Statements/EMU
		Germany: March sees industrial production decline 2.5% from February, analysts expected −0.6%	Ec./EU
		USA: unemployment down from 4.1% in March to 3.9% in April	Ec./USA
Tuesday 09 May	0.29	Kühbacher (CB): “euro not about to bounce back to dollar parity”	Statements/EMU
		Germany: March unemployment, at 9.6%, dips below 10% for the first time in 4 years	Ec./EU
Wednesday 10 May	1.44	Remsperger (CB): “ECB set to intervene if decline of euro threatens to provoke inflation rise”	Statements/EMU
Thursday 11 May	−0.31	Euro area: growth set to pick up sharply	Ec./EU
		Duisenberg: “I will not accept any further decline of the euro”	Statements/EMU
Friday 12 May	−0.55	France: current account surplus up sharply in February	Ec./EU
		France: CPI declines less sharply in April than expected	Ec./EU
		USA: import prices in April down 1.6% IPP; first decline in 10 months	Ec./USA
		USA: retail sales in April down 0.2%; first decline in 18 months	Ec./USA

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Monday 15 May	1.31	ECB: “euro rate too low given euro area fundamentals” Germany: retail sales declined again in March, by 2% Italy: industrial production unchanged in March; analysts expected a 0.4% rise from IPP OECD: US GDP growth adjusted upward from 3.1% to 4.5% USA: producer prices down 0.3% in April; first decline in more than a year	Statements/EMU Ec./EU Ec./EU Ec./USA Ec./USA
Tuesday 16 May	− 0.90	Welteke: “no intervention jointly with FED before US elections” Germany: April sees consumer confidence decline to 20-month low USA: unexpected strong rise in industrial production in April: 0.9%	Statements/EMU Ec./EU Ec./USA
Wednesday 17 May	− 1.58	Euro area: inflation slowdown in April to 1.9%, or below ECB ceiling France: trade surplus increases in March due to weak euro Greenspan: “alludes to another interest rate change”	Ec./EU Ec./EU Statements/USA
Thursday 18 May	0.22	Euro area: exports boom in February Germany: April Ifo business confidence index to 9-year high at 101.2 points France: highest number of jobs since fourth quarter of 1970	Ec./EU Ec./EU Ec./EU
Friday 19 May	− 0.75	Eichel: “further weakening of euro exchange rate unless <i>Bundesrat</i> approves tax plans”	Statements/EMU
Monday 22 May	1.41	ECB Monthly Bulletin: CB will not tolerate further decline of euro FT: euro ministers agree on several tax measures Germany: construction order portfolios up 4.9% in March USA: trade deficit hits record high due to spending wave	Statements/EMU Ec./EU Ec./USA
Tuesday 23 May	1.23	Germany: Bavarian CPI down 0.1% in May, by 1.3% from PCP France: industrial production receives further 0.5% boost in March Italy: industrial production up 0.8% in mei, survey claims	Ec./EU Ec./EU Ec./EU
Wednesday 24 May	− 0.14	Bundesbank: “euro still 20–30% undervalued” Bundesbank: GDP up 0.75% during first quarter amid stable growth Moscow (FED): “expect about 4% GDP growth this year”	Statements/EMU Ec./EU Statements/USA
Thursday 25 May	− 1.29	Euro area: industrial production up 0.6% in March Germany: import prices down 0.3% in April from IPP	Ec./EU Ec./EU

(continued on next page)

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Friday 26 May	1.80	Welteke: "interventions in support of euro not ruled out" USA: first quarter GDP growth unchanged at 5.4%, contrary to expectations (5.2%)	Statements/EMU Ec./USA
Monday 29 May	1.30	Euro area: April sees money supply grow by 6.5%, faster than expected Italy: March retail sales unexpectedly declined by 0.4%	Ec./EU Ec./EU
Tuesday 30 May	1.05	USA: April sales of durable goods down 6.4% from March in strongest decline since December 1991 OESO: euro area interest rate increase now less urgent OESO: euro area GDP growth 3.5% in 2000 and 3.3% in 2001 Germany: first quarter GDP growth up 0.7% CPD to fourth quarter, up 3.3% in annual terms	Statements/EMU Ec./EU Ec./EU
Wednesday 31 May	-0.60	No relevant items	
Thursday 01 June	0.29	Euro area: PMI below expectations, declined from 60.7 to 59.7 France: unemployment decreases to 9.8% in April, lowest level since December 1991; expected figure was 9.9%	Ec./EU Ec./EU
Friday 02 June	0.27	USA: mild inflation figures USA: NAPM industrial production declined slightly in May compared to April, whereas a slight rise was expected	Ec./USA Ec./USA
Monday 05 June	0.83	Fabius: Calls to ECB to refrain from increasing interest rates Italy: Italian pensions system on the brink of collapse USA: May sees employment growth slacken, unemployment increase, wage costs rise less strongly than expected	Statements/EMU Statements/EMU Ec./USA
Tuesday 06 June	0.55	Euro area: unemployment declines from 9.3% to 9.2% in April Euro area: consumer and business confidence undiminished in May	Ec./EU Ec./EU
Wednesday 07 June	0.73	Italy: pension reform can wait Euro area: retail sales declined in March for the first time since 1996 Germany: unexpected strong growth of order portfolios in April USA: NAPM less buoyant in May USA: labour productivity up 2.4%; more than expected	Statements/EMU Ec./EU Ec./EU Ec./USA Ec./USA
Thursday 08 June	1.19	ECB: steps up refinancing rate by 0.50% to 4.25% Germany: Industrial production in April up 1.5% from IPP, higher than expected	Ec./EU Ec./EU

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Thursday 08 June	1.19	Germany: unemployment declines in May, to 9.3% or below expectations USA: consumer borrowing up again in April amid slight levelling of growth	Ec./EU Ec./USA
Friday 09 June	- 1.84	Euro area: first quarter GDP growth up 0.7% from IPP and rising USA: America's buoyant mood continues, Bloomberg survey shows USA: import prices up 0.6% from IPP in May, analysts expected 0.5% rise	Ec./EU Ec./USA Ec./USA
Monday 12 June	0.39	USA: producer prices unchanged in May	Ec./USA
Tuesday 13 June	0.59	No relevant items	
Wednesday 14 June	0.55	Germany: CPI down 0.1% in May from IPP, 1.4% from PCP USA: retail sales in May down 0.3%	Ec./EU Ec./USA
Thursday 15 June	- 1.16	Welteke: "no interest rate hike until September" Germany: April retail sales up 1.6% from PCP amid slight sales increase France: record employment growth in first quarter: up 1.1% from IPP	Statements/EMU Ec./EU Ec./EU
Friday 16 June	0.43	Trichet: "the euro area economic has embarked on a period of sustained growth, allowing the euro to appreciate further" USA: industrial production rose unexpectedly in May (by 0.4% IPP); a decline was predicted	Statements/EMU Ec./USA
Monday 19 June	0.78	Euro area: May CPI up 0.1% IPP (up 1.9% from PCP), below analysts' expectations USA: housing construction declined in May, by 3.9% from IPP; analysts expected a 2.6% decline	Ec./EU Ec./USA
Tuesday 20 June	- 1.06	Duisenberg: "no need for rise in European interest rates in the near future" Germany: Ifo-index for May at 102.1 compared to 101.2 for April, a 9-year record high Italy: June sees continued pick-up of industrial production at +0.5%	Statements/EMU Ec./EU Ec./EU
Wednesday 21 June	- 0.71	Germany: construction sector landed fewer contracts in April Germany: accelerated inflation for three states in June USA: trade deficit slightly down in April	Ec./EU Ec./EU Ec./USA
Thursday 22 June	- 0.69	France: industrial production down 0.2% in April; analysts predicted +0.5%	Ec./EU
Friday 23 June	0.09	Germany: June sees CPI rise by ca. 2% from PCP, level with ECB norm France: prices of imported raw materials rise by 7.1% in May Italy: 2.7% annualised rise of CPI in June raises concerns	Ec./EU Ec./EU Ec./EU

(continued on next page)

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Monday 26 June	− 0.91	Euro area: industrial production April grew by 6.5% from PCP, the highest rate this year Germany: 1.9% annual CPI rise, up 0.5% from May Italy: April's unemployment at lowest level in almost 7 years	Ec./EU Ec./EU Ec./EU
Tuesday 27 June	0.79	France: May consumer spending 2.6% up from IPP, twice the expected figure Clinton: "US budget surplus double the expected figure"	Ec./EU Statements/USA
Wednesday 28 June	0.15	France: business confidence in June reaches highest level since 1976	Ec./EU
Thursday 29 June	0.95	Euro area: money growth in May at 5.9% against 6.5% in April Germany: orders for machines up 34% in May Greenspan: "US economy continues to grow very fast, threatening growing inflation"	Ec./EU Ec./EU Statements/USA
Friday 30 June	0.55	USA: orders for durable goods rose rapidly in May Euro area: trade surplus in April at € 1.1 bn, against € 2.5 bn in March France: producer prices up 1.3% in May, twice the expected increase	Ec./USA Ec./EU Ec./EU
Friday 30 June	0.55	USA: first quarter inflation rate much higher than reported earlier: 3.5% instead of 3.1%	Ec./USA
Monday 03 July	− 0.66	Italy: producer prices rose by 0.9% from April to May; 0.5% was expected	Ec./EU
Tuesday 04 July	− 0.06	Euro area: unemployment remained unchanged in May Euro area: business confidence at record level in June USA: NAPM industrial production index down in June, from 53.2 to 51.8, the lowest level in 17 months	Ec./EU Ec./EU Ec./USA
Wednesday 05 July	0.53	Euro area: April sees 4.1% annual rise in retail sales France: consumer optimism rises further in June	Ec./EU Ec./EU
Thursday 06 July	0.05	Duisenberg: "economic outlook is better than it has been in 25 years" Euro area: highest producer price rise for 5 years in May Germany: favourable development despite slight rise in unemployment in June (Jagoda) Germany: further growth of industrial order portfolios in May	Statements/EMU Ec./EU Ec./EU Ec./EU
Friday 07 July	− 0.62	USA: leading economic indicator falls in May, by 0.1% from IPP, against − 0.2% expectations Germany: parliament passes controversial tax plan OESO: France should keep closer look on public deficit Germany: industrial production in May rises by a further 2.2% on IPP	Ec./USA Statements/EMU Statements/EMU Ec./EU

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Friday 07 July		France: Insee predicts 3.5% GDP growth in 2000 USA: number of unemployment benefit applications declined in the past week; industrial orders grew sharply in May despite a weakening expected by analysts	Ec./EU
Monday 10 July	0.42	USA: employment grew by only 11,000 persons in June, against an expected increase of 250,000	Ec./USA
Tuesday 11 July	0.04	No relevant items	
Wednesday 12 July	-0.29	Germany: goods exports up 30.7% in June	Ec./EU
		Germany: according to Ifo survey, German enterprises inflate investment aspirations	Ec./EU
		Germany: CPI hits 2% level in June	Ec./EU
		France: CPI comes out at 1.9% in June	Ec./EU
		Greenspan: "can see no signs of slowdown in productivity growth"	Statements/USA
Thursday 13 July	-1.58	Euro area: first quarter GDP growth higher than expected at 0.9% instead of 0.7%	Ec./EU
		Germany: retail sales in May up 10.3% from PCP	Ec./EU
		IMF: "staff perceives a need to tighten monetary policy further if inflationary pressures are to be contained"	Statements/USA
Friday 14 July	-0.05	ECB: "surprised by high wage rises in euro area" Italy: industrial production up 2.2% in May from IPP; strongest rise since January 1999	Statements/EMU Ec./EU
Monday 17 July	0.09	ECB: "accumulated pension promises cause concern" Germany: go-ahead for tax plan implementation	Statements/EMU Statements/EMU
		USA: industrial production up 0.2% in May from IPP; analysts expected 0.3%	Ec./USA
		USA: Capacity utilisation declined slightly in June	Ec./USA
		USA: Pressure on prices eases amid increased retail sales: 0.5%, against expected 0.4%	Ec./USA
Tuesday 18 July	0.01	Euro area: CPI up 2.4% in June, compared to 1.9% in May	Ec./EU
Wednesday 19 July	-1.46	Germany: Ifo-confidence index unexpectedly bleaker in June	Ec./EU
		USA: CPI 0.6% higher in June; expected rise was 0.4–0.5%	Ec./USA
Thursday 20 July	0.04	France: IMF denounces French government's budgetary policy	Statements/EMU
		USA: trade deficit hits new high in May	Ec./USA
Friday 21 July	1.55	Germany: CPI for Bavaria increased slightly in July, to 1.8% annually	Ec./EU
		France: industrial production up 0.7% in May from IPP	Ec./EU

(continued on next page)

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Friday 21 July	1.55	Italy: industrial production up 6% in July from PCP Greenspan sees beneficial slowdown of US economy	Ec./EU Statements/USA
Monday 24 July	-0.33	Euro area: industrial production in May up 7.2% compared to PCP, higher than expected Germany: sales prices in May up 2.9% from PCP, the strongest rise in almost 9 years	Ec./EU Ec./EU
Tuesday 25 July	0.84	Italy: consumer confidence rises sharply in July to highest level in 13 months USA: analysts less gloomy about interest rates	Ec./EU Ec./USA
Wednesday 26 July	-0.21	No relevant items	
Thursday 27 July	-0.01	Euro area: Ifo-institute: inflation forces ECB to increase interest rate Euro area: Ifo-institute estimates a 3.4%, rather than 2.9%, GDP growth for the EU	Ec./EU Ec./EU
Friday 28 July	-1.20	Euro area: money growth at 5.4% in June, down from 5.9% in May: lower than expected France: unemployment in June, at 9.6%, lowest since 1991 USA: demand for durable goods increases by 10% in June against a 7% rise in May	Ec./EU Ec./EU Ec./USA
Monday 31 July	-0.36	Euro area: sales prices continued to rise in June, though at a slower pace than in May USA: second quarter GDP growth at 5.2%, outstripping expectations by 2.75%	Ec./EU Ec./USA
Tuesday 01 August	0.23	Welteke: "euro exchange rate set to rise in coming months; the currency is still undervalued" USA: NAPM industrial production index unchanged in July (at 51.8); growth had been expected	Statements/EMU Ec./USA
Wednesday 02 August	-1.32	Euro area: May retail sales up 0.2% from IPP; for April, the figure had been 1.2% Italy: slightly decreased business confidence in June	Ec./EU Ec./EU
Thursday 03 August	-1.25	No relevant items	
Friday 04 August	0.03	Germany: industrial order portfolio grew by 0.4% in June; more than expected	Ec./EU
Monday 07 August	0.59	Germany: industrial production in June down 3.5% from IPP, more than expected USA: employment declined in July for the first time in 4.5 years, surprised analysts	Ec./EU Ec./USA
Tuesday 08 August	-0.41	Germany: unemployment declined July from 9.6% NAAR 9.5%, decline set to continue into 2002	Ec./EU
Wednesday 09 August	-0.82	USA: second quarter productivity rose 5.3% year-on-year, analysts were counting on 4.5%	Ec./USA

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Thursday 10 August	0.65	Germany: CPI rose 2% in July, against 1.9% in June Germany: export growth ran out of steam in June: a percentage of 12.2% is lower than in first 6 months Italy: industrial production in June 0.7% below May results, the strongest decline in 5 months	Ec./EU Ec./EU Ec./EU
Friday 11 August	1.12	ECB Monthly Bulletin: pressure on prices above estimates	Ec./EU
Monday 14 August	-1.33	USA: July retail sales up 0.7% from IPP, well above 0.4% predictions	Ec./USA
Tuesday 15 August	1.19	Eichel: "euro has upward potential" Germany: wholesale prices jumped 5.8% from PCP in July, steepest jump in 11 years and greater than expected USA: substantial growth of corporate stocks in June	Statements/EMU Ec./EU Ec./USA
Wednesday 16 August	-0.50	USA: industrial production up 0.4% in July; 19th consecutive month of rising production	Ec./USA
Thursday 17 August	0.75	Issing: "ECB policy-makers fear the weak euro and high oil price will further fan inflation" USA: number of homes under construction in July sharply down from previous months	Statements/EMU Ec./USA
Friday 18 August	-0.14	Euro area: CPI in July 2.4% up from PCP and above the 2% norm France: employment grew by 95,000 jobs in second quarter	Ec./EU Ec./EU
Monday 21 August	-1.14	Germany: Eichel maintains that the UMTS auction revenues must be used to reduce public debt USA: trade deficit hits \$30.6 bn record in June, analysts counted on over \$31 bn	Statements/EMU Ec./USA
Tuesday 22 August	-0.57	Germany: business confidence index down again in July according to Ifo survey	Ec./EU
Wednesday 23 August	-0.60	Italy: Central Bank questions budgetary target Germany: three states report lower inflation	Statements/EMU Ec./EU
Thursday 24 August	1.15	Issing: "effect of interest rate increases was neutralised by simultaneous acceleration of inflation, therefore ECB monetary policy cannot be called restrictive" Euro area: trade surplus down in June Germany: sales prices soared in July, sharpest increase in 9 years	Statements/EMU Ec./EU Ec./EU
Friday 25 August	0.00	Welteke: "the low exchange rate poses risk of accelerating inflation caused by imported high prices through foreign trade" Germany: August CPI was down 0.2% from IPP, 1.8% annual rate was down 0.1% from PCP USA: sharp decrease in durable goods orders in July: -12.4%, whereas -7% was expected	Statements/EMU Ec./EU Ec./USA

(continued on next page)

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Monday 28 August	-0.16	Euro area: 5.3% annual growth of M3 in July, down from 5.4% in June (ref. value=4.5%)	Ec./EU
		USA: second quarter GDP growth 5.3% instead of 5.2%; inflation underestimated by 0.1%	Ec./USA
Tuesday 29 August	-0.47	Germany: second quarter GDP growth up 3.1%, fastest growth in 2 years	Ec./EU
		USA: US savings hit lowest level since 1959	Ec./USA
		USA: consumer confidence declined in August, from 143.0 to 141.1	Ec./USA
Wednesday 30 August	-0.62	Kühbacher: "ECB not to take real action until some time in October"	Statements/EMU
Thursday 31 August	-0.03	Germany: retail sales down 8% in July	Ec./EU
		ECB: refinancing rate increased by 0.25% to 4.50%	Ec./EU
		Italy: government looking for further reduction of tax burden	Statements/EMU
		France: industrial production declined 0.6% in June	Ec./EU
		France: unemployment rose from 9.6% to 9.7% in July	Ec./EU
		Italy: July sees producer prices rise by 0.5% from IPP	Ec./EU
		USA: index of leading indicators declines for third consecutive month	Ec./USA
Friday 01 September	-0.04	Euro area: industrial production down 0.4% in June	Ec./EU
		USA: NAPM index declined from 52.0 to 46.5 in August, analysts expected slight increase	Ec./USA
		USA: July: sharpest fall in manufacturing orders since 1974 (-7.5%), analysts had expected -7%	Ec./USA
Monday 04 September	1.10	Trichet: "euro is clearly undervalued"	Statements/EMU
		Euro area: oil price depressed trade surplus in June	Ec./EU
		USA: sharper-than-expected decrease in employment in August	Ec./USA
Tuesday 05 September	-1.27	USA: unemployment up from 4.0% to 4.1% in August	Ec./USA
		Schröder: "well-pleased with low rate of euro" Euro area: industry sales prices went up 0.5% in July, have risen 17 months in a row	Statements/EMU Ec./EU
Wednesday 06 September	-0.77	Euro area: retail sales up 1.8% in June	Ec./EU
		Germany: new orders up 0.7% in July after a decline in June mainly due to external causes	Ec./EU
		Germany: unemployment unchanged in August at 9.5%	Ec./EU
		Italy: further upward adjustment of 2000 GDP growth by employers	Ec./EU

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Thursday 07 September	– 1.59	EC: commission calls for further tax relief Germany: strong recovery of industrial production in July: +3.5 against – 3.7% in June USA: considerable upward adjustment of productivity growth: 5.7% not 5.3%	Statements/EMU Ec./EU Ec./USA
Friday 08 September	0.66	Germany: exports grew sharply in first half of 2000: 19%	Ec./EU
Monday 11 September	– 1.44	EU: France under heavy criticism from EU Ministers for lowering excise duties	Statements/EMU
Tuesday 12 September	0.06	Duisenberg: “claims that euro rate is far from bottoming out are pure nonsense” EU: excise duties on diesel fuel under attack throughout EU Germany: further decline of trade surplus in July France: CPI up 0.2% in August; annual rate of 2% is above expectation USA: NABE expects robust economic growth with end of boom spell nowhere in sight	Statements/EMU Ec./EU Ec./EU Ec./USA
Wednesday 13 September	0.46	Duisenberg: “intervention instrument is still available” Germany: retail sales unchanged in July; Bundesbank reported a 0.7% decline	Statements/EMU Ec./EU
Thursday 14 September	0.45	Kühbacher: “currency intervention not credible without US participation” IMF: euro area GDP to grow by 3.4% in 2001 Focus money: “French EU presidency is holding talks with USA on joint intervention” ECB: accrued interest income on foreign reserves to be sold in exchange for euro. Euro area: second quarter GDP growth at 3.8% against 3.4% in first quarter IMF: US GDP to grow by 3.2%	Statements/EMU Statements/EMU P.M. Ec./EU Statements/USA
Friday 15 September	– 0.90	Germany: wholesale prices rose by 0.1% in August, below expectations Italy: 6.7% more new orders in June; +13.5% had been expected France: July sees trade balance dip into the red for the first time USA: sales prices down 0.2% in August USA: retail sales up 0.2% in August, less than expected	Ec./EU Ec./EU Ec./EU Ec./USA Ec./USA
Monday 18 September	– 1.03	Euro area: 2.4% annual rise in CPI in August (ECB norm = 2%), unchanged from July USA: CPI down 0.1% in August for the first time in over 14 years, surprised analysts USA: industrial production up 0.3% from IPP	Ec./EU Ec./USA Ec./USA
Tuesday 19 September	0.18	Welteke: “the euro is clearly undervalued and intervention is now a real option”	Statements/EMU

(continued on next page)

Appendix A (continued)

Date	% change in €/\$-rate ¹ from the previous day	News item	News category
Wednesday 20 September	– 0.76	IMF: “weak euro poses risk to all currency blocks. Taboo on intervention must go. There is no doubt now that the euro is seriously undervalued” Germany: business confidence went down in August, from 99.1 naar 99.0; analysts expected a rise Italy: second quarter GDP growth up 0.3% from IPP, where a 0.7% rise was expected USA: number of new home construction contracts went up 0.3% from IPP; first increase for 4 months	Statements/EMU Ec./EU Ec./EU Ec./USA
Thursday 21 September	0.57	USA: record trade deficit in July	Ec./USA

IPP-Immediately Preceding Period; PCP-Previous Corresponding Period.

¹ ECB-fixed (2:15 p.m.). Sources: HFD, Datastream.

References

- Akerlof, G., Dickens, W.T., 1982. The economic consequences of cognitive dissonance. *American Economic Review* 72, 307–314.
- Ayrer, B., Uppel, C., Werner, T., 2001. Stock market valuation of old and new-economy firms. Paper prepared for the Working Group on the Financing of the New Economy of the Committee on the Global Financial System, Bank for International Settlements, Basel.
- Barberis, N., Thaler, R., 2002. A survey of behavioral finance. NBER Working Paper 9222, National Bureau of Economic Research, Cambridge.
- Barberis, N., Shleifer, A., Vishny, R., 1998. A model of investor sentiment. *Journal of Financial Economics* 49, 307–343.
- Benartzi, S., Thaler, R., 1995. Myopic loss aversion and the equity premium puzzle. *Quarterly Journal of Economics* 110, 75–92.
- Bosveld, R., Venneman, M.A., 2000. Initial public offerings on the Amsterdam Stock Exchange: an analysis of short-run and long-run performance. Unpublished paper, NUON nv/Boston Consulting Group.
- Clare, A., Courtenay, R., 2000. Financial market reactions to interest rate announcements and macroeconomic data releases. *Bank of England Quarterly Review* 40, 266–273.
- Daniel, K., Hirshleifer, D., Subrahmanyam, A., 1998. Investor psychology and security market under- and overreactions. *Journal of Finance* 53, 1839–1885.
- De Grauwe, P., 2000. The euro–dollar exchange rate in search of fundamentals: the case of the euro–dollar rate. *International Finance* 3, 329–356.
- Edison, H.J., 1996. The reaction of exchange rates to news releases. International Finance Discussion Paper no. 570, Board of Governors of the Federal Reserve System, Washington, DC.
- Edwards, W., 1968. Conservatism in human information processing. In: Kleinmütz, B. (Ed.), *Formal Representation of Human Judgment*. Wiley, New York, pp. 17–52.
- Festinger, L., 1957. *A Theory of Cognitive Dissonance*. Stanford Univ. Press, Stanford.
- Goetzmann, W., Peles, N., 1997. Cognitive dissonance and mutual fund investors. *Journal of Financial Research* 20, 145–158.
- Het Financieele Dagblad, various issues, April 1, 2000–August 19, 2000.
- Jacobsen, B., Potters, J., Schram, A., van Winden, F., Wit, J., 2002. (In)Accuracy of a European political stock market: the influence of common value structures. *European Economic Review* 44, 205–230.

- Jansen, D.-J., de Haan, J., 2003. Statements of ECB officials and their effect on the level and volatility of the euro–dollar exchange rate. Working Paper no. 927, CESifo, Munich.
- Kahneman, D., Tversky, A., 1979. Prospect theory: an analysis of decision under risk. *Econometrica* 47, 263–291.
- Kaminsky, G.L., Schmukler, S.L., 1999. What triggers market jitters? A chronicle of the Asian crisis. *Journal of International Money and Finance* 18, 537–560.
- Keijer, M., Prast, H.M., 2001. De telecomhype: hij was er echt (The telecom hype: it actually existed). *Economisch Statistische Berichten* 86, 288–289.
- Kindleberger, C., 2000. *Manias, Panics and Crashes: a History of Financial Crises*. Palgrave, Basingstoke.
- Meese, R.A., Rogoff, K., 1983. Empirical exchange rate models of the seventies: do they fit out of sample? *Journal of International Economics* 14, 201–218.
- North, D.C., 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge Univ. Press, Cambridge.
- Odean, T., 1998a. Volume, volatility, price and profit when all traders are above average. *Journal of Finance* 53, 1887–1934.
- Odean, T., 1998b. Do investors trade too much? *American Economic Review* 89, 1279–1298.
- Pindyk, R.S., Rubinfeld, D.L., 1991. *Econometric models and Economic Forecasts*. McGraw-Hill, New York.
- Shleifer, A., Vishny, R., 1997. The limits of arbitrage. *Journal of Finance* 52, 35–55.
- Statman, M., 1999. Behavioral finance: past battles and future engagements. *Financial Analysts*, 18–27.
- Vanthoor, W.F.V., 1996. *European Monetary Union since 1848: A Political and Historical Analysis*. Edward Elgar, Cheltenham.
- Wellink, A.H.E.M., 2000. Het Financieele Dagblad. May 25.
- Welteke, E., 2000. A currency hobbled by the herd instinct. *Financial Times* 31 (May).