Look Who's Talking:

ECB communication during the first years of EMU

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Abstract

This paper studies communication by European central bankers during the first years of the European Economic and Monetary Union. Our data shows that central bankers have different focal points in their communication. We also find that central bank statements on interest rates, inflation and economic growth in the Eurozone have often been contradictory. However, over the years, interest rate statements have become more in line with each other. Furthermore, the ECB Executive Board is the only group of central bankers to observe radio silence before ECB Governing Council meetings. Finally, national central banks continue to dominate communication on monetary policy.

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1 Introduction

When the European Central Bank (ECB) started its operations in 1999, financial markets were not yet fully acquainted with the way the ECB would operate. Even though the details of the ECB monetary policy strategy had already been made public, there was considerable uncertainty on how the ECB would implement this strategy. Under these circumstances, clear and coherent ECB communication was of paramount importance. Many observers feel that the ECB has not been very successful in this respect. According to Hämäläinen (2001), who was ECB Executive Board member at the time:

> It is true that we have not always been very successful in our communication despite ambitious intentions. But communication is not easy in a pan-European context in which differing cultures, languages, traditions and motives affect how messages are interpreted by the different counter-parties involved.

The creation of the ECB implied that the roles of national central banks changed. The German Bundesbank, the focal point of European monetary policy for many years, became just one of the twelve national central banks within the European System of Central Banks (ESCB). The German central bank had a firm reputation of a tough and successful inflation fighter. Financial market participants in search for information on future monetary policy might, therefore, turn to the old and trusted Bundesbank in order to gather information. In the words of a market participant: 'Bundesbank council members are probably as close as one can get to being a fly on the ECB's wall'[1].

This paper evaluates communication by ECB and Bundesbank officials during the first years of the European Economic and Monetary Union (EMU). We investigate three main issues: i) to what extent have comments by various European central bankers been contradictory? ii) have different groups of central bankers followed different communi-

[1] Source: Bloomberg, 1 August 2001.

cation strategies surrounding Governing Council (GC) meetings? and iii) how has ECB communication evolved over time?

Our first research question is tackled in two parts. First, in order to study coherence in ECB communication, we study whether different (groups of) central bankers made different statements. We make a distinction between members of the ECB Executive Board (EB), national central bank (NCB) presidents and high-level Bundesbank policymakers. We report the topics that were mentioned in their respective statements as well as their contents. In addition, we construct an indicator that measures to what extent ECB comments were contradictory.

Our second research question concerns communication strategies before and after ECB GC meetings. Communication before GC meetings may be used to influence the public's expectations. Alternatively, the ECB may choose to observe radio silence before GC meetings, therewith avoiding confusing financial markets. We hypothesize that the ECB has chosen the latter course. Therefore, we test whether there were less statements *before* GC meetings than after. We also test whether different groups of central bankers have followed different communication strategies.

Our final research question is related to changes in ECB communication over time. It may be expected that, after some initial problems, ECB communication has improved. So, we would expect possible dispersion in communication on monetary policy to decrease over time. Also, we expect the role of national central banks to decrease. In particular, we investigate whether the agreement of July 1999 between European Ministers of Finance and central bankers to streamline ECB communication on the euro has been successful. According to this agreement, central bankers, save Duisenberg, would make fewer comments, so that financial markets would be less easily confused by ECB communication.

Most research on central bank communication is theoretical in nature (see, for example, Morris and Shin (2002)). This paper uses comments by central bankers as reported

by Bloomberg to study central bank communication from an *empirical* perspective. This approach is relatively new. Three closely related papers are Kohn and Sack (2003), Jansen and De Haan (2005) and Ehrmann and Fratzscher (2004)[2]. Kohn and Sack (2003) focus on statements by the US Federal Open Market Committee and statements by Alan Greenspan. They find that market interest rates are significantly affected by Fed communication. Using the same database that is used in this paper, Jansen and De Haan (2005) examine the impact of statements by ECB and Bundesbank officials on the euro-dollar exchange rate. Similarly, Ehrmann and Fratzscher (2004) analyse to what extent the conditional mean and volatility of interest rates, exchange rates and stock indices have reacted to statements by the US Fed, the Bank of England and the ECB.

Our results are as follows. We conclude that in some respects ECB communication has improved over the years. First, ECB communication on the interest rate has become less contradictory. Furthermore, ECB communication on the external value of the euro has been streamlined over the years. In contrast, statements on inflation and growth have become more diffused. In addition, national central banks, in particular the Bundesbank, continue to play an important role in communication on European monetary policy. Finally, only the ECB Executive Board has consistently observed radio silence before GC meetings.

The remainder of this paper is structured as follows. Section 2 discusses the importance of central bank communication. Section 3 describes our methodology, whereas section 4 gives a first description of the data. Section 5 analyses the coherence of ECB communication. Section 6 analyses the distribution of statements surrounding GC meetings, while section 7 examines developments in ECB communication over time. Section 8 summarizes and concludes.

[2]Other studies include Siklos and Bohl (2003), who analyse Bundesbank communication before 1998, and Andersson, Dillén and Sellin (2001), who focus on communication by the Sveriges Riksbank. Fratzscher (2004) and Beine, Janssen and Lecourt (2004) focus on one particular aspect of communication, namely communication in relation to (possible) interventions.

2 The importance of central bank communication

2.1 Three possible benefits for monetary policy

The literature has identified, at least, three reasons why central banks can benefit from proper communication. First, communication may increase the effectiveness of monetary policy. For example, clear and consistent communication on the long-term inflation target can be used to influence the public's long-run inflation expectations. If this is done successfully, the central bank has more leeway to respond to short-run shocks, as deviations from the inflation target are not interpreted as an indication of a lack of commitment (King (1997)). Building greater trust by credibly communicating a long-term inflation objective may lead to less inflation persistence, since there is a strong belief that inflation will return to its target level.

Kuttner and Posen (2001) find support for this view. In a study of the response of bond markets (as a proxy for inflation expectations) in Canada, New Zealand, and the UK before and after the central banks in these countries adopted inflation targeting, they find that interest rates decreased, which is consistent with the view that the adoption of inflation targeting increases flexibility. Kuttner and Posen (1999) report similar results for a broader range of countries: inflation targeting reduces inflation persistence, in contrast to other elements of the monetary framework, like central bank independence. However, Ball and Sheridan (2003), who compare seven OECD countries that adopted inflation targeting in the early 1990s to thirteen countries that did not, find that after the early 1990s, performance improved in both the targeting and the non-targeting countries. If targeters improved more than non-targeters, regression to the mean plays an important role: targeters performed worse than non-targeters before the early 1990s. Once regression to the mean is accounted for, there is no evidence that targeting improves performance.

Second, communication may be used to reduce noise in markets (see Posen (2003)).

Greater disclosure and clarity over policy may lead to greater predictability of central bank actions. This, in turn, reduces the uncertainty in financial markets. The results reported by Kuttner (2001) offer support for this point of view. Changes in the Federal Reserve's disclosure policy have reduced market volatility and increased predictability. Research on the predictability of ECB decisions suggests that most were in line with financial markets' expectations. Gaspar, Pérez Quirós and Sicilia (2001) have analysed whether the announcements of ECB decisions have a significant impact on the behavior of overnight rates (EONIA) in Europe. Their results suggest that markets are able to predict the ECB's interest rate decisions quite accurately over the period of analysis. Somewhat less supportive evidence has been reported by Ross (2002) and De Haan, Eijffinger and Waller (2005), who find that while upward ECB rate changes were generally well predicted, the markets have had more difficulty in fully and correctly anticipating ECB rate cuts in terms of either timing or magnitude.

Finally, communication is important, or rather necessary, if one thinks about accountability. Accountability requires disclosure, in whatever form (see e.g. De Haan and Eijffinger (2000)). Communicating via statements is one channel through which information can be transmitted to the public.

2.2 How has the public perceived ECB communication?

Even if a central bank is very active in providing information, the public may, nevertheless, feel that it does not fully understand the central bank's actions. The extent to which the activities of the central bank will lead to a better understanding depends on many factors. One of the crucial factors, of course, is the quality of the information provided. No matter how often a central bank publishes information, if the public feels that this information is hard to understand, the central bank is not perceived as transparent.

There are clear indications that financial markets initially did not have a good un-

derstanding of the ECB's strategy[3]. According to a survey by Goldman Sachs held in February 2000 in which a sample of financial market participants was asked to rate on a scale of 1 to 5 (a higher grade indicating a better understanding) how well they understood the reasoning behind monetary policy decisions of four central banks, the ECB came out last (see Gros (2000)). Also, in a more recent survey by De Haan et al. (2005), professional economists do not rank the ECB as a highly transparent central bank.

From this perspective, an important issue is whether the messages of various officials are the same. If there is disagreement, the public may get confused. On more than one occasion, European central bankers issued statements about the external value of the euro that were conflicting[4]. In order to improve upon this situation, Euro area Finance ministers and central bankers agreed to exercise restraint in their comments about the exchange rate in July 1999. In section 7, we analyze whether policy makers have been successful in this respect.

[3]This has led Issing (2001) to conclude that the ECB faces a 'communication gap': 'On the one hand, few observers contest the success and credibility of the ECB in delivering on its primary objective and on the appropriateness of most of its policy actions in this regard... On the other hand, however, the overall perception of the ECB by the public, academics, financial analysts, market participants, and not least, journalists continues to remain - at best - rather mixed'.

[4]An often cited example is Noyer, at the time the ECB Vice-President, who stated in February 2000 that markets had been reading too much in the words of the Monthly Bulletin. Analysts expected an immanent interest rate rise. But on 24 February Noyer reversed this expectation by his remarks. The markets concluded that a rise was unlikely at the next meeting of the Governing Council. In reaction, the euro fell to its lowest level against the dollar at the time. Indeed, the ECB did not change its rates at its meeting of 2 March, but it did so two weeks later. Duisenberg explained later that one reason to wait was to avoid appearing to overreact to the euro's weakness. According to Sims and Wessel (2000), it 'still isn't clear whether Mr. Noyer was trying to send a signal, or whether there was disagreement inside the ECB.' Questioned recently about the episode, Noyer says he was giving 'exactly the same message we have tried to convey many times'.

3 Methodology

3.1 Data

We have collected data on statements by European central bankers using Bloomberg. We have searched the archive of news reports by scanning the report headlines. In particular, we selected news reports of which the headline contains a reference to the ECB or an ECB Governing Council member. Furthermore, we selected statements made by high-level Bundesbank policy makers. We have collected 931 news reports over the period January 4, 1999 to May 17, 2002.

Some caveats of the methodology should be emphasized. First, news-wire services, like Bloomberg, are selective in their reporting. However, as we are interested in the perception that financial markets have of the ECB, it makes sense to focus only on the statements that actually reach market participants. Second, Bloomberg may wrongly report on an issue or misinterpret central bank statements. Again, as we wish to assess communication from the perspective of financial markets, it makes sense to use information on which they also heavily rely.

3.2 Classification of ECB statements

We classify the statements both by the person making the statement and the content of the statement. Concerning persons, we focus on three groups of central bankers (the ECB Executive Board, national central bank presidents, and Bundesbank officials) and several important individuals. The classification for the topics is given in table 1. We distinguish two main categories of statements: monetary policy and the euro. There are four subcategories in the monetary policy category: statements on (1) interest rates in the euro area, (2) statements on money growth in the euro area (the former 'first pillar'), (3) economic growth and (4) inflation (the latter two being elements of the 'second pillar').

(Table 1 here)

The second main category are statements on the euro. During the sample period, developments in the euro-dollar exchange rate were widely discussed. The ECB paid much attention to the euro-dollar exchange rate in its communication for, at least, three reasons. First, politicians and central bankers had predicted that the euro would be a strong currency. The continued external weakness of the euro was often considered to be in contrast with this promise. Therefore, ECB officials tried to reassure the public that the decline of the euro was unjustified and temporary. Second, there has been quite some confusion about the role of the exchange rate in the monetary policy strategy of the ECB. Sometimes it was thought that the ECB had an exchange rate objective, which it did not. However, the ECB closely watched the external value of the euro under what is now called the economic analysis (the previous 'second pillar'), because exchange rate shocks may affect inflation. A final reason why the ECB closely follows exchange rates is that there is always a risk that actual exchange rates may be out of line with economic fundamentals. Indeed, the concerted intervention by the ECB and other central banks at the end of 2000, was, according to an ECB press release, motivated by the 'shared concern about the potential implications of recent movements in the euro exchange rate for the world economy.' Not only via interventions, but also through communication may the ECB try to affect the external value of the euro.

The first subcategory under the second main heading contains statements expressing beliefs on the future direction of the exchange rate. The second subcategory contains statements pertaining to the possibility of future ECB foreign exchange market interventions. Finally, there are statements explaining the position of the euro in the ECB monetary policy strategy.

4 Overview of the data

4.1 The ECB Executive Board

Table 2 shows classifications for the statements made by members of the ECB Executive Board (EB). Columns 2 to 5 show the number of statements on monetary policy, whereas column 6 to 8 present statements on the euro-dollar exchange rate. The final column shows the total number of news reports in which statements were mentioned. The EB has appeared in 360 of such reports.

(Table 2 here)

From table 2, we can conclude that, in comparison to variables from the second pillar of the ECB monetary policy strategy, M3 is hardly mentioned. Growth and inflation are often discussed by the EB members, whereas they are more cautious about discussing the interest rate. Duisenberg has most statements, closely followed by Issing.

Clearly, Duisenberg, Noyer and Issing were quite concerned about the external value of the euro. Not only did they often discuss the future development of the euro-dollar rate, but they also often explained that the euro's external value was not a target for monetary policy. Only Duisenberg and Noyer made a significant number of statements on interventions in the foreign exchange markets.

4.2 National central bank presidents

Table 3 shows the total number of statements of NCB presidents[5]. Similar patterns emerge as for the EB. There is relatively little attention for M3 growth; policy makers are more prone to talk about growth and inflation than on interest rates.

[5]For Germany, Spain and Portugal, the presidency switched during the sample period. Therefore, these countries have two presidents listed.

(Table 3 here)

However, there are interesting differences. The EB members made a similar number of statements on growth and inflation, whereas the NCB presidents made more statements on inflation than on economic growth. Bundesbank president Welteke mainly accounts for the difference. In addition, he accounts for more than 60% of the statements on M3 growth. Put differently, in his statements Welteke appears to stick to the German monetary tradition with its attention for money growth and a clear emphasis on inflation. The other NCB presidents seem to share his interest in inflation: in most cases they are more often cited on inflation than on growth. Overall, Welteke has made the most statements on monetary policy. Not only has he spoken more on this issue than other national central bank presidents, he also is cited more often than any of the members of the ECB Executive Board. So, in this sense the Bundesbank has kept its pivotal role in European monetary policy. Trichet, the current ECB president, is also quite outspoken. He is cited, approximately, as often as Duisenberg on growth and inflation. Interestingly, Trichet seems to have been relatively silent on interest rate changes. He is cited about 40 times on the first two issues, but only 11 times on interest rates. The Belgian and Austrian central bank presidents have also been in the news quite often. Quaden is cited relatively often on interest rates (16 times), whereas Liebscher is cited more on economic growth and inflation (24 and 25 times, respectively).

Regarding the opinions of NCB presidents on the euro's external value, we find 52 statements on the future value of the euro against the dollar, 20 statements on interventions and 52 statements on the position of the euro in the ECB's monetary policy strategy. Once again, we find that Welteke is cited most often. Trichet has made only few comments on interventions.

4.3 High-level Bundesbank officials

The statements by Bundesbank policy makers warrant some further attention. We have statements by members of the Executive Board (*Direktorium*), as well as presidents of the regional central banks (*Landeszentralbanken*)[6]. Table 4 shows that the presidents of the *Landeszentralbanken* have made more statements than the members of the *Direktorium* (except for the Bundesbank president). The number of statements is more or less evenly distributed over the different categories, although there seems to be a slight preference for comments on the interest rate. Especially Meister and Kuehbacher talked relatively often about the interest rate.

(Table 4 here)

Finally, the Bundesbank officials have 17 reported statements on M3 growth. To put this into perspective, the ECB Executive Board was cited only 32 times on this topic. Furthermore, the NCB presidents were cited 17 times if we exclude the observations on Tietmeyer and Welteke.

Statements by Bundesbank officials on the euro were made by the Direktorium as well as Landeszentralbank presidents. We find that the number of statements is more or less evenly distributed among the two groups when the future value of the euro or the position of the euro in monetary policy are concerned. In contrast, the *Direktorium* made only one statement about interventions, whereas the presidents of the *Landeszentralbanken* made seven.

[6]Just before the end of our sample period, three presidents of regional central banks became member of the Bundesbank Executive Board (Kotz, Reckers and Zeitler). However, since their statements were made before this transition, they are only listed in the second category.

5 Coherence of ECB communication

5.1 Results for groups

Did European central bankers differ in the way they communicated about the various topics that we distinguish? Table 5 presents the results for four different groups: the ECB Executive Board, NCB presidents, Bundesbank officials (exluding the president) and the full sample. The entries in the table show the percentage of the total number of statements in a particular category. For example, the top-left entry, indicates that of all ECB Executive Board statements on the interest rate 12.9% suggested a rise of the interest rate.

(Table 5 here)

The distribution of statements by the ECB Executive Board and the NCB presidents on interest rates is surprisingly similar. Indications of rising rates are about 13 to 14% of the total number of observations. In by far the majority of cases (around 82-84%) the statement is neutral in character. However, Bundesbank policy makers make fewer neutral statements.

Table 5 shows that the distribution of EB statements on M3 growth is approximately uniform. In contrast, NCB presidents have less often hinted at a rise in M3 growth, whereas Bundesbank policy makers have pointed to rises in money supply in 40% of the cases. When it comes to economic growth, the EB and the NCB presidents are both optimistic in the majority of cases. For the Bundesbank, we see markedly more negative statements on growth. We see a similar pattern in the statements on inflation. In this case, the Bundesbank is more inclined to point to higher inflation than the other two groups. Finally, it is interesting to note that the ECB EB is the least outspoken on the subject of inflation. In almost half of the cases EB members make neutral statements on

this subject. The NCB presidents are more inclined to indicate a lower inflation rate.

As far as statements on the euro are concerned, we find that all central bankers focus on the potential of the euro to appreciate against the dollar. When talking about intervention, the ECB EB generally indicated that interventions were not likely or remained neutral. The NCB presidents have been slightly more inclined to hint at future interventions. The exception, once again, are the Bundesbank officials who seem to oppose interventions. Finally, all three groups of central bankers have stressed the importance of the external value of the euro with respect to inflation.

5.2 Results for individuals

We now focus on the statements of some of the leading European central bankers: Duisenberg, Noyer, Issing, Welteke and Trichet. Concerning statements on interest rates, we find rather similar patterns: in most cases the statement is neutral ($> 85\%$) and in some cases it indicated higher interest rates ($10 - 15\%$). Only Noyer and Welteke explicitly hinted at lower rates.

(Table 6 here)

Do country-specific characteristics for certain types of statements exist? When looking at the category 'growth', one would almost be tempted to answer this question in the affirmative. Consider Noyer and Trichet: in both cases almost all statements on growth are positive ($92.5 - 93.5\%$). Duisenberg is also quite upbeat on economic growth, although to a lesser extent than Noyer and Trichet. Finally, Issing and Welteke have also been positive in the majority of cases, but in approximately a fifth of the cases they made negative statements on future economic growth.

Statements on inflation by Trichet are uniformly distributed. The other 4 persons have predominantly made neutral statements ($40 - 50\%$ of the cases). Issing was most

likely to hint at higher inflation rates, whereas Noyer pointed mostly at falling inflation rates.

On the euro, there is little disagreement. The central bankers unrelentingly stressed that the euro would rise in the near future. Statements on intervention were more diverse. Trichet only made neutral statements on intervention. Duisenberg and Issing have ruled out future intervention the most, whereas Welteke and Noyer seem to have been the biggest advocates of intervention. Finally, Trichet and Noyer have emphasized the euro as a possible target for the ECB. Actually, the evidence is quite overwhelming: Noyer has done this in 87 % of the cases and Trichet in 94 %. For Welteke and Issing we find similar results, although less marked. For Duisenberg the balance tilts towards negative statements. In over 50 % of the cases, he emphasized that the euro is *not* an explicit target.

5.3 Measuring the level of contradiction in statements

The preceding results suggest that, on the whole, ECB communication has been fairly consistent. However, we have not yet taken the timing of the statements into account. Therefore, we next examine statements on interest rates, inflation and growth during periods between GC meetings[7].

We use an indicator that measures the extent of disagreement in ECB statements. The indicator ranges between 0 (no disagreement) and 1 (complete disagreement). We first code each statement on a ternary scale, which measures whether a variable is projected to go downwards (e.g. lower Eurozone inflation would receive a -1), upwards (e.g. higher economic growth would receive a 1) or stay at its current level (e.g. a constant interest rate would receive a 0).

The indicator is constructed as the total distance between the scores divided by the maximum total distance between the scores[8]. For example, consider the case in which

[7]This means that, in general, our event window is a two-week period.

[8]The maximum distance is calculated as $0.5n^2$ if n is an even number and $0.5((n^2)-1)$ if n is an odd

three central bankers comment on the Eurozone inflation. Of these three, one suggests a higher level of inflation is to be expected, whereas the other two remain fairly neutral. The scores in this case would be 1, 0 and 0. The total distance between the statements equals 2 and, as the maximum total distance equals 4, so that the indicator equals 0.5.

Figures 1 and 2 show the development of the indicators based on statements for interest rates and inflation[9] over the years 1999 until mid-2002. Three conclusions stand out. First, considerable disagreement between ECB statements existed, especially on inflation and growth. Second, over time, the inconsistency in communication on the interest rate has diminished. One might argue that fewer statements on this subject have been made, thus reducing potential disagreement. However, the opposite is true, as the number of statements on interest rates has increased over the time period under consideration. Finally, the indicator for inflation shows that disagreement has actually increased over the years.

(Figures 1 and 2 here)

Summarizing, it seems that the coherence of ECB communication has improved only partly. On the most important policy instrument, there is more clarity. However, on the two most important policy goals, there is more diffusion[10].

number, where n denotes the number of statements.

[9]Results for statements on economic growth (not shown) are similar to those on inflation. Results available upon request.

[10]One might argue that the results are influenced by our inclusion of ECB and Bundesbank statements. However, the analysis gives similar results when the Bundesbank comments are excluded. Results are available upon request.

6 Statements surrounding GC meetings

The number and nature of statements surrounding interest rate decisions may be of prime importance for the effectiveness of monetary policy. A central bank may choose to prepare markets for the upcoming decisions by giving hints. Alternatively, there may be relatively few statements *before* rate meetings in order to prevent turbulence in financial markets. In this latter case the distribution of statements around rate meetings will be skewed towards more statements *after* rate meetings than before.

Figure 3 displays the number of statements on interest rates per day for the Executive Board, NCB presidents and Bundesbank officials[11]. For the EB there is a peak on the Fridays preceding GC meetings with a total of nine statements. Subsequently, there is a relative calm over the weekend with 3 statements on Saturday and 4 on Sunday, before a rise on the Monday to 11 statements. In this respect, there is a stark contrast with the other two groups of central bankers. On Tuesdays and Wednesdays before GC meetings there were 12 and 10 statements by NCB presidents and 7 and 8 statement by Bundesbank officials, respectively.

(Figure 3 here)

After the ECB has decided on the refinancing rate, statements are important for two purposes: explaining the decision and predicting future policy. On the three days after the GC meeting, the EB dominates the news reports. In the week after the GC meeting, the NCB presidents make most statements (14 on Mondays and 18 on Tuesdays). The Bundesbank officials keep a low profile during these days.

To test formally for differences in communication after and before rate meetings, we

[11]Note that, due to possible overlapping observations, we can only use the six days before and after a rate meeting. Therefore, the total number of statements in figure 1 does not correspond with the figures in tables 2, 4 and 6. The dates of ECB GC meetings were downloaded from the ECB web-site.

use the Wilcoxon signed-rank test for matched-pairs [12]. Define x_i^b as the number of statements on the i'th days before a Governing Council meeting and x_i^a as the number of statements on the i'th day after a GC meeting. We perform a one-sided test of the null hypothesis that the distributions of x_i^a and x_i^b are equal against the one-sided alternative that the distribution of x_i^a is displaced over that of x_i^b for $i = 1...6$. Table 7 displays the test results for different categories of statements. The third column presents the average difference between the pairs x^a and x^b, while the fourth column shows the Wilcoxon T+-statistic.

(Table 7 here)

Regarding the EB, $\bar{x_i^a} - \bar{x_i^b}$ is positive for all cases except interventions. For growth, inflation and the euro, the difference is statistically significant. Surprisingly, there is no significant difference between the number of statements on interest rates before and after GC meetings. Finally, for the NCB presidents, the only significant result emerges for M3, while for the Bundesbank officials, we find no significant results.

7 Has ECB communication changed over time?

Finally, we analyse how ECB communication has evolved over time. Have certain groups of central bankers become more prominent in ECB communication? Did the topics that were discussed change? In particular, is there evidence that the agreement of July 1999 to streamline communication has been successful? We answer these questions by computing the average number of statements per day for each half year in the sample period. Table 8 reports the results. Standard errors are reported in parentheses.

[12] See Marascuilo and McSweeney (1977) for a description of this test and a tabulation of critical values for the T+-statistic.

(Table 8 here)

It follows from table 8 that the average number of statements on monetary policy rose during the sample period. Consider, for example, the statements by the EB on interest rates. In the first half of 1999 the average number of statements per day was 0.06. During the first part of 2002 this figure had increased to 0.08. In the meantime, it was about 0.06 in all but one period (2000-II). The average number of statements of NCB presidents and the Bundesbank officials has also risen. The same conclusion holds for statements by the EB and the NCB presidents on growth and inflation. During the first half year of 1999 the average number of statements on growth for these groups were 0.06 and 0.02, respectively. The average number of statements on inflation for EB members and NCB presidents was 0.02 in 1999-I. The averages increased to levels between 0.15 and 0.25 in the first half of 2002.

Interestingly, there is no evidence that the NCB presidents have become less important in ECB communication. Compare, for example, statements on the interest rate. During all periods, the average number of statements by NCB presidents is equal to or larger than that of the EB. Except for statements on growth and inflation this conclusion holds for other categories of statements as well.

However, we do find evidence for a reduction of the number of statements on the external value of the euro. Clearly, there was more attention during the second half of 1999 and 2000 than in later periods. The same conclusion holds for interventions and the euro as a possible target. These observations taken together may be interpreted as evidence in favor of the success of the July 1999 agreement: central bankers made fewer statements on the euro. However, this figure may also reflect the more favorable development in the euro-dollar exchange rate in more recent years.

8 Conclusions

This paper has examined communication by European central bankers during the first years of EMU. We find that national central bank presidents and high-level Bundesbank policy makers made as least as many statements as members of the ECB Executive Board. There is no evidence that this trend has been reversed over the years. A situation in which information can emanate from many different sources is more likely to lead to confusing messages. Indeed, we find clear evidence that statements on interest rates, inflation and growth were contradictory. Although statements on the interest rate became more coherent in the course of time, disagreement on inflation and growth clearly increased over the years.

Finally, we provide evidence that different groups of central bankers followed different communication strategies surrounding ECB Governing Council meetings. The ECB Executive Board is the only group that tried to observe radio silence before GC meetings. For national central bank presidents and Bundesbank officials we find no evidence that they communicate less before GC meetings.

Several interesting avenues for future research remain. For example, how harmful have contradictions in central bank communication been? Is there evidence, for example, that a higher level of dispersion leads to more volatility in financial markets? We leave these issues to future work.

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Table 1: Categories of ECB statements

Category:	**Contains statements on:**
(1) Monetary policy	
Interest rates	ECB interest rates
M3	Growth and level of money supply
Economic growth	Real GDP growth in the euro area
Inflation	Inflation in the euro area
(*2) The euro*	
Future value of euro	Expectations on the external value of the euro
Intervention	The possibility of intervention
Euro as target?	The position of the euro in the ECB monetary policy strategy

Table 2: Executive Board statements

	Interest rates	**M3 growth**	**Economic growth**	**Inflation**	**Value of euro**	**Intervention**	**Euro as target?**	**Total**
Duisenberg	32	9	44	41	26	13	23	109
Noyer	21	9	31	21	26	10	20	72
Issing	13	10	48	55	24	2	19	94
Domingo Solans	10	2	11	12	3	2	5	30
Hämäläinen	8	2	8	9	3	2	5	22
Padoa Schioppa	9	0	15	13	11	1	3	33
Total	93	32	157	151	93	30	75	360

Note:

Due to multi-issue news reports, the entries under 'total' do not equal the totals of the other categories.

Table 3: NCB president statements

	Interest rates	**M3 growth**	**Economic growth**	**Inflation**	**Value of euro**	**Intervention**	**Euro as target?**	**Total**
Caruana (ES)	4	0	3	5	1	0	0	8
Constancio (PT)	5	0	8	8	3	1	4	16
De Sousa (PT)	1	0	1	2	0	0	0	3
Fazio (IT)	1	0	1	6	0	0	2	10
Liebscher (AUT)	11	4	24	25	7	4	18	59
Mersch(LUX)	3	2	4	3	1	0	0	9
O'Connel (IE)	1	0	1	0	1	0	0	2
Papademos (GR)	1	1	2	0	0	0	0	2
Quaden (BEL)	16	1	12	13	6	3	8	31
Rojo (ES)	2	0	0	0	0	1	0	2
Tietmeyer (DE)	7	2	3	7	14	0	9	28
Trichet (FR)	11	9	40	36	32	2	34	99
Vanhala (FI)	2	1	0	7	0	0	2	10
Wellink (NL)	0	1	2	5	1	1	4	6
Welteke (DE)	70	30	74	94	42	20	52	191
Total	135	51	175	216	108	32	133	476

Note:

Due to multi-issue news reports, the entries under 'total' do not equal the totals of the other categories.

ES: Caruana: until July 2000 / Rojo: July 2000 until end of sample

PT: De Sousa: until February 2000 / Constancio: February 2000 until end of sample

DE: Tietmeyer: until September 1999 / Welteke: September 1999 until end of sample

Table 4: Bundesbank policymakers' statements

	Interest rates	**M3 growth**	**Economic growth**	**Inflation**	**Value of euro**	**Intervention**	**Euro as target?**	**Total**
Direktorium								
Stark	4	1	7	3	4	0	5	15
Meister	12	4	6	6	7	1	1	18
Remsperger	2	1	3	5	0	0	0	8
Total	18	6	16	14	11	1	6	41
Landeszentralbanken								
Eggert	0	0	0	1	0	0	0	1
Heinke	3	2	1	3	0	0	0	4
Koebnick	0	1	0	0	1	0	0	2
Kotz	1	0	0	0	1	2	1	2
Krupp	0	0	0	2	0	1	0	3
Kuehbacher	14	2	2	6	2	2	3	16
Palm	0	0	0	0	2	0	0	2
Milow	1	0	1	0	0	0	0	1
Reckers	8	4	4	7	2	1	0	14
Zeitler	4	2	1	2	2	1	1	9
Total	31	11	9	21	10	7	5	54

Note:

Due to multi-issue news reports, the entries under 'total' do not equal the totals of the other categories.

Table 5: Dispersion at the group level

		ECB EB	**NCB Presidents**	**BuBa** a)	**All ECB officials**
Rates	Up	12.9	14.1	18.4	14.4
	0	83.9	82.2	71.4	80.9
	Down	3.2	3.7	10.2	4.7
M3 growth	Up	31.3	24.0	41.2	29.3
	0	37.5	42.0	29.4	38.4
	Down	31.3	34.0	29.4	32.3
Growth	Up	82.8	72.2	52.0	75.2
	0	7.0	12.5	16.0	10.3
	Down	10.2	15.3	32.0	14.5
Inflation	Up	23.8	24.9	28.6	24.6
	0	47.7	39.0	45.7	43.0
	Down	28.5	36.2	25.7	32.3
Euro	Rise	95.7	97.2	85.7	95.5
	0	4.3	2.8	0.0	3.1
	Fall	0.0	0.0	14.3	1.3
Intervention	Pos	23.3	37.5	25.0	29.6
	0	46.7	40.6	25.0	42.3
	Neg	30.0	21.9	50.0	28.2
Euro as target?	Pos	52.0	67.9	58.3	61.7
	0	14.7	11.2	16.7	12.6
	Neg	33.3	20.9	25.0	25.7

Note:

a) excluding the President

The entries in this table should be read as percentages of the total number of statements per category. The relative small number of observations in some categories may increase the influence of outliers on the reported results.

Table 6: Dispersion: results for selected individuals

		Duisenberg	**Noyer**	**Issing**	**Welteke**	**Trichet**
Rates	Up	15.6	14.3	15.4	10.0	9.1
	0	84.4	76.2	84.6	87.1	90.9
	Down	0.0	9.5	0.0	2.9	0.0
M3 growth	Up	22.2	22.2	50.0	23.3	22.2
	0	33.3	44.4	30.0	33.3	33.3
	Down	44.4	33.3	20.0	43.3	44.4
Growth	Up	84.1	93.5	72.9	66.2	92.5
	0	9.1	0.0	8.3	13.5	5.0
	Down	6.8	6.5	18.8	20.3	2.5
Inflation	Up	17.1	14.3	34.5	23.4	30.6
	0	48.8	42.9	41.8	41.5	36.1
	Down	34.1	42.9	23.6	35.1	33.3
Euro	Rise	100.0	96.2	100.0	97.6	96.9
	0	0.0	3.8	0.0	2.4	3.1
	Fall	0.0	0.0	0.0	0.0	0.0
Intervention	Pos	15.4	30.0	0.0	40.0	0.0
	0	46.2	50.0	50.0	40.0	100.0
	Neg	38.5	20.0	50.0	20.0	0.0
Euro as target?	Pos	17.4	87.0	47.4	67.3	94.1
	0	30.4	0.0	15.8	7.7	0.0
	Neg	52.2	13.0	36.8	25.0	5.9

Note:
The entries in this table should be read as percentages of the total number of statements per category. Please note that the relative small number of observations in some categories may increase the influence of outliers on the reported results.

Table 7: Testing for radio silence: Wilcoxon signed-rank tests

Group	**Topic**	$\bar{x_i^a} - \bar{x_i^b}$	**Wilcoxon T+**
Executive Board	Rates	2.3	16
	M3 growth	1.5	16.5
	Growth	8.3	20**
	Inflation	6	19.5**
	Euro	5.7	20**
	Intervention	-0.2	8
	Target	3	15
National central bank presidents	Rates	1.7	11
	M3 growth	3.3	19.5**
	Growth	2.7	14.5
	Inflation	3.3	16
	Euro	1.5	13
	Intervention	-1	4
	Target	0.8	12
Bundesbank	Rates	-2.3	4
	M3 growth	-0.8	6
	Growth	-1	4.5
	Inflation	-1.7	4.5
	Euro	0.7	14
	Intervention	0.3	13
	Target	-0.3	0

Note:

*The entries in the third column give the average difference between the respective number of statements on days after and before a GC meeting. The entries in the fourth column are the resulting T+ statistics from the Wilcoxon signed rank test. Since we have n = 6, the critical values for the appropriate one-sided test are 18 (10%), 19 (5%) and 21 (2.5%) respectively. */**/*** denote significance at the 10/5/2.5% level*

Table 8: Average number of statements per day

		1999-I	1999-II	2000-I	2000-II	2001-I	2001-II	2002-I
EB	*Rates*	0.06	0.08	0.06	0.04	0.10	0.11	0.08
		(0.25)	(0.29)	(0.26)	(0.20)	(0.30)	(0.34)	(0.27)
	M3 growth	0	0.06	0.01	0.02	0.05	0.02	0.03
		(0)	(0.26)	(0.07)	(0.13)	(0.22)	(0.15)	(0.17)
	Growth	0.06	0.12	0.13	0.14	0.17	0.12	0.18
		(0.23)	(0.37)	(0.36)	(0.37)	(0.43)	(0.34)	(0.46)
	Inflation	0.02	0.17	0.14	0.10	0.17	0.10	0.15
		(0.18)	(0.45)	(0.38)	(0.32)	(0.46)	(0.34)	(0.40)
	Euro	0.06	0.12	0.10	0.08	0.03	0.08	0.05
		(0.26)	(0.38)	(0.33)	(0.27)	(0.18)	(0.27)	(0.22)
	Intervention	0.01	0.04	0.05	0.04	0.01	0	0
		(0.11)	(0.25)	(0.23)	(0.23)	(0.10)	(0)	(0)
	Target	0.07	0.09	0.06	0.10	0.02	0.04	0.04
		(0.27)	(0.33)	(0.28)	(0.39)	(0.13)	(0.20)	(0.19)
NCB	*Rates*	0.08	0.08	0.12	0.04	0.15	0.16	0.14
		(0.27)	(0.29)	(0.37)	(0.20)	(0.42)	(0.41)	(0.37)
	M3 growth	0	0.04	0.03	0.04	0.09	0.04	0.04
		(0)	(0.23)	(0.16)	(0.23)	(0.31)	(0.19)	(0.19)
	Growth	0.02	0.10	0.09	0.11	0.19	0.29	0.23
		(0.13)	(0.33)	(0.34)	(0.36)	(0.47)	(0.63)	(0.53)
	Inflation	0.02	0.13	0.16	0.15	0.27	0.27	0.23
		(0.17)	(0.37)	(0.41)	(0.42)	(0.58)	(0.55)	(0.45)
	Euro	0.11	0.09	0.22	0.09	0.03	0.02	0.03
		(0.40)	(0.29)	(0.47)	(0.29)	(0.16)	(0.15)	(0.17)
	Intervention	0.01	0.01	0.06	0.08	0.02	0	0
		(0.08)	(0.10)	(0.28)	(0.27)	(0.15)	(0)	(0)
	Target	0.08	0.08	0.20	0.16	0.10	0.07	0.08
		(0.27)	(0.28)	(0.46)	(0.38)	(0.31)	(0.29)	(0.30)
BuBa	*Rates*	0.01	0.02	0.05	0.02	0.08	0.08	0.03
		(0.08)	(0.15)	(0.22)	(0.13)	(0.27)	(0.27)	(0.17)
	M3 growth	0	0.01	0.01	0.01	0.03	0.05	0
		(0)	(0.07)	(0.07)	(0.07)	(0.16)	(0.22)	(0)
	Growth	0	0.01	0.02	0.02	0.03	0.05	0.01
		(0)	(0.08)	(0.13)	(0.15)	(0.16)	(0.23)	(0.12)
	Inflation	0	0.01	0.03	0.02	0.08	0.05	0.01
		(0)	(0.10)	(0.16)	(0.13)	(0.28)	(0.22)	(0.00)
	Euro	0.01	0.03	0.04	0.02	0.01	0.01	0.01
		(0.08)	(0.18)	(0.19)	(0.15)	(0.07)	(0.07)	(0.09)
	Intervention	0	0	0.02	0.02	0	0	0.01
		(0)	(0)	(0.15)	(0.13)	(0)	(0)	(0.08)
	Target	0.01	0.02	0.02	0.01	0	0.01	0
		(0.08)	(0.15)	(0.15)	(0.10)	(0)	(0.07)	(0)

Note:

This table displays the average number of statements per day. Results are reported for three groups: Executive Board (EB), national central bank presidents (NCB) and the Bundesbank (BuBa). Standard deviations are reported in brackets.

Figure 1: Degree of contradiction in ECB interest rates statements

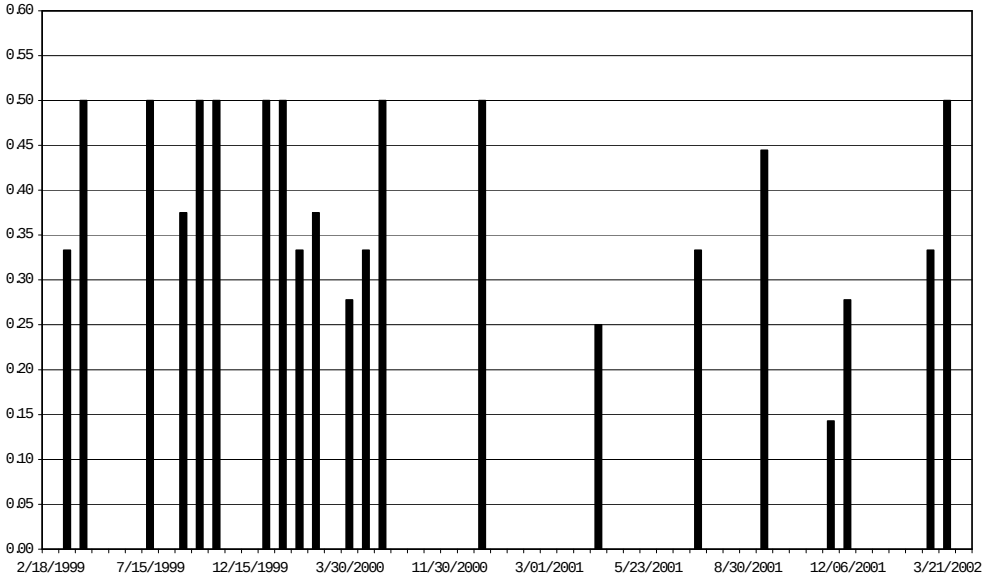

Figure 2: Degree of contradiction in ECB inflation statements

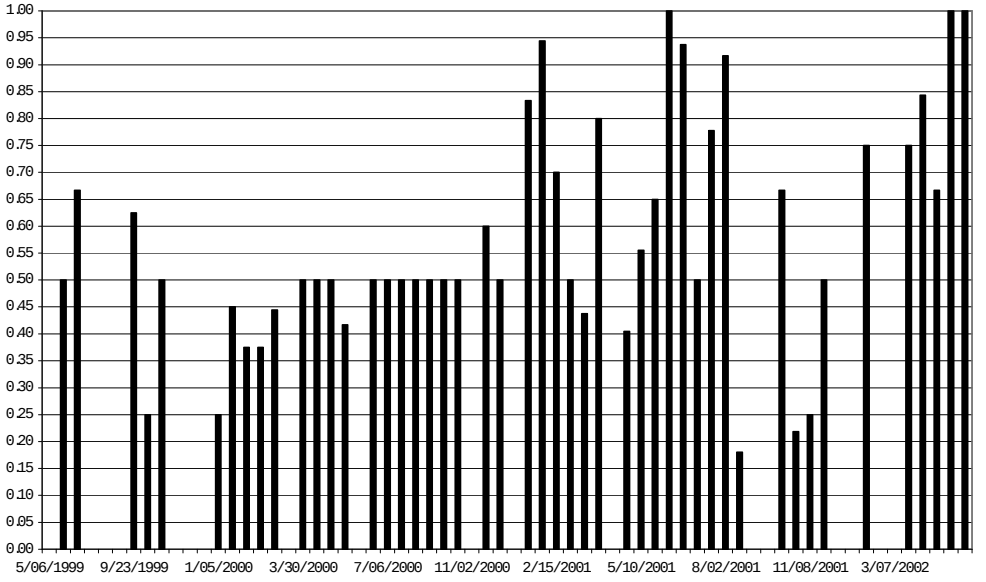

Figure 3: Number of ECB interest statements surrounding GC meetings