

**EXTERNAL EVALUATION OF
THE ECONOMIC RESEARCH ACTIVITIES OF
THE EUROPEAN CENTRAL BANK**

by

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1. INTRODUCTION

Five years after the birth of the European Central Bank (ECB) on 1 June 1998 its Executive Board decided to request an independent external evaluation of its economic research and invited the three authors of this report to act as evaluators. Such timing seems appropriate for a first assessment of the strengths and weaknesses of the research activities carried out by the various ECB business areas.

For the purpose of the evaluation research is defined as the set of activities leading to economic analysis which strives to be up to academic standards, i.e. up to the standard of leading-edge scientific journals. According to the Terms of Reference, the goal of economic research at the ECB is to provide a strong conceptual and empirical basis for policy-making and better communication of policy to the outside. The primary objective is to increase knowledge of the functioning of the euro area economy and, more specifically, to provide high-quality models, tools and analyses relevant to the conduct of monetary policy and the fulfilment of the other tasks and functions of the ECB. The secondary objectives include harnessing its value in creating a stimulating intellectual environment to attract and retain top professionals and, more generally, to maintain and develop the human capital of the staff.

We were asked to assess the focus and organisation of research, its scientific quality and value added, its relevance for the conduct of monetary policy and for the other tasks and functions of the ECB, and its influence within the academic community and in other policy-making institutions. The full Terms of Reference are in the Appendix.

We were assisted by the Directorate General Research in collecting information about research inputs and outputs and in arranging interviews with members of the Executive Board and ECB staff, including senior management. In addition, we solicited the views of a number of outsiders, mostly academics, that have taken an interest in the research activities of the ECB.

The structure of the report is as follows. Section 2 reviews the reasons for conducting research at central banks in general and at the ECB in particular. Section 3 examines the relevance of ECB research. Section 4 evaluates the quantity and scientific quality of this research. Section 5 appraises its external impact. Section 6 considers the organisation of research at the ECB, and Section 7 contains our overall assessment and main recommendations.

2. RESEARCH AT CENTRAL BANKS AND AT THE ECB

2.1. Central bank research

Central banks choose the stance of monetary policy by assessing the latest data on the direction of the economy and determining how much and how soon to react to these developments. Policy actions are benchmarked against knowledge of the range within which the relevant variables have moved in the past, their historical correlation, and the lags in policy transmission.

Research sheds light on the process by which policy is transmitted to the economy, and illuminates the likely impact of policy on money, credit, output, and inflation. Models for policy evaluation are best produced internally by staff economists familiar with the policy process, the relevant institutional knowledge, and the incentive to do the job reliably and thoroughly.

Research oriented economists working within a central bank are especially well suited to recognise the potential relevance of the latest academic developments for policy-making. To be an intelligent consumer you have to be a producer of research. Furthermore, communicating these developments to policy-makers is not always easy, and requires a close working relationship between researchers and policy-makers. Successful policy-making cannot rely only on external consultants.

Academic standards in central bank research are important, first and foremost, to provide a solid theoretical and empirical foundation for policy-making. Creative economists of the highest calibre working in a central bank can best apply the latest advances in the theory, estimation, and simulation of models of monetary policy. For such economists, competing in the world of academic research provides a natural market test of the quality of their models and methods.

Academic standards are also important for attracting, maintaining and further developing skilled human capital. Economists with leading-edge technical skills tend to be academically oriented. Central banks must provide such economists with the time and encouragement to produce and publish research in the top academic journals and to participate actively in seminars and conferences.

Academically oriented economists provide additional benefits to a central bank. First, such economists can model economic circumstances not ordinarily, if ever, encountered in reality, such as financial instability or deflation, and develop strategies for dealing with them. Second, they can stimulate and encourage external research on issues of interest to the central bank through publications, conferences, and consulting relationships. Third, they contribute to the credibility and reputation of the central bank by improving its communication with the public and other policy-making institutions. Last but not least, the insistence on and appreciation of high academic standards for research fosters a culture of creative and challenging thinking throughout the central bank.

Ultimately, academically oriented research within a central bank is valuable because it exploits a fundamental synergy between the bank's concern with the reality of economic policy and its need for analytical tools to help understand that reality. Internally conducted research is viable because a central bank can provide a stimulating, stable environment capable of sustaining a productive group of academically oriented economists.

It is important to stress that the only way to ensure academic standards is to require research staff to publish in scientific journals. Internal publications such as working papers, even when they are refereed, do not provide the appropriate quality test. Publications in academic journals provide an objective evaluation of

research output that can be used by management to assess and reward research staff and to assure that resources devoted to research are not wasted.

To be sure we are not advocating that central banks should engage in general research of an academic nature. That is for universities and research institutions. Research should be undertaken only if it is relevant to the conduct of monetary policy and to the other tasks of the central bank, either directly in terms of helping current policy decisions, or indirectly by building up human capital within a central bank that better enables it to respond to the demands of future policy-makers.

2.2. ECB research

Research has a particularly important role to play at the ECB because policy decisions must be made without the comfort of much of a historical benchmark. There is a premium on research to help understand how the euro area reacts to economic shocks and to monetary policy actions.

ECB staff had to judiciously aggregate and harmonise data from the euro area countries, and construct historical time series in order to estimate euro area macroeconomic models for evaluating current policy options. Moreover, they have to decide how to combine the different structural features of the euro area economies into models that capture the aggregate channels of monetary transmission. These tasks demand sophisticated modelling and estimation skills.

The lack of a history also puts a premium on the use of communication to establish credibility for price stability. The ECB has had little time to establish a track record for maintaining price stability. Conveying understanding creates confidence and credibility. Academic research is a valuable communication tool in this regard because it helps the ECB to understand and explain how the performance of the

euro area relates to structural features of its constituent economies and to monetary policy.

Another reason why the ECB must rely particularly heavily on academic research is that the unification of Europe's financial markets as a consequence of the adoption of the euro may alter the transmission mechanism of monetary policy. Correlations and models estimated with historical data may be unstable, and forecasts and simulations using these models might become unreliable. Researchers skilled in the latest theoretical models and econometric techniques are best positioned to detect changes in the structure of European markets and institutions and assess the implications of such changes for monetary policy.

2.3. ECB research units

Research output at the ECB is mainly concentrated in the Directorate General Research. DG Research is responsible for producing theoretical and empirical research relevant to the conduct of monetary policy and providing information on how this research may have a bearing on policy decisions. It is also responsible for building and maintaining econometric models for forecasting and policy simulation, and for interacting with other research centres and with the academic community in general.

The second most important producer of research at the ECB is the Directorate General Economics. DG Economics is responsible for preparing briefings and background materials for the monetary policy decisions of the Governing Council of the ECB. It is also responsible for monitoring, analysis and (in cooperation with DG Research) forecasting of, as well as studies on, euro area monetary, economic, financial, and fiscal developments and policies.

Economic research is also conducted in five other business areas with the following responsibilities. DG Operations prepares monetary policy and foreign exchange operations, coordinates those which are decentralised among the national central banks of the Eurosystem, and executes those which are centralised. The DG Payment Systems is responsible for all payment systems-related issues of the ECB, payment system policy, the Target system and the clearing and securities settlement systems policy. DG Statistics is responsible for developing, compiling, and disseminating the statistics needed to support the monetary policy and other functions of the Eurosystem. DG International and European Relations is responsible for the preparation of ECB and Eurosystem policy positions on the whole range of international issues that do not relate to the macroeconomic policies of the euro area. Finally, Directorate Financial Stability and Supervision prepares policy positions on financial stability issues in cooperation with other relevant business areas, and analyses structural developments in the banking and financial sector and their implications for prudential supervision and for financial stability.

3. THE RELEVANCE OF ECB RESEARCH

What is the impact of policy oriented research on the formulation, execution and communication of the monetary policy of the ECB? The direct influence on money market management and interest rate decisions is difficult to identify. Strategic, tactical and technical aspects overlap and elements of personal judgement are normally dominant. The impact of research is felt in a more indirect way. First, even day-to-day decisions on monetary policy are based on assumptions about the transmission channels, the strength of impulses and the time lags involved –factors that have been explored thoroughly by DG Research and DG Economics. Second, research is particularly helpful when the Governing Council discusses more fundamental or longer-term issues such as the monetary policy strategy or the risks and consequences of deflation –issues on which DG Research and DG Economics have prepared a large number of background papers. Third, research at the ECB has positive spillover effects in other institutions and on the way in which European monetary policy is perceived more generally. Research-based communication has helped to establish and strengthen the credibility of the ECB in Europe and elsewhere.

Academic research at the ECB has helped to provide the conceptual framework and the procedures used to translate relevant information into monetary policy. Research also helps to communicate an understanding of monetary policy to the public. The book *Monetary Policy in the Euro Area: Strategy and Decision-Making at the European Central Bank* (2001), written by ECB economists Otmar Issing, Vitor Gaspar, Ignazio Angeloni and Oreste Tristani, explains this framework comprehensively and effectively. The book is an excellent example of how academically oriented economists inside the ECB have harnessed external academic research to help design the strategy of monetary policy and explain it to the public.

Knowledge of the transmission mechanism is particularly important to gauge the sensitivity and lags in the impact of monetary policy actions on prices. The papers in the book *Monetary Policy Transmission in the Euro Area* (2003), edited by Ignazio Angeloni, Anil Kashyap and Benoit Mojon, address this issue. A key finding is that the euro area transmission mechanism is broadly similar to that in the US, except for a longer lag in the effect of policy on inflation. This research is an example of output from a Eurosystem Research Network in which participants from the national central banks were coordinated and led by economists at the ECB together with outside academics.

Recently, the ECB completed an internal review of its strategic framework. Ten technical studies, prepared by ECB research staff for the Governing Council's discussion, are collected in the book *Background Studies for the ECB's Evaluation of its Monetary Policy Strategy* (2003). The papers reconsider such issues as the definition of price stability, the optimal rate of inflation, and the role of money in monetary policy-making. The papers also address issues relating to the zero lower bound on nominal interest rates, inflation targets, and the impact of downward nominal wage rigidity.

One way to measure the relevance of research at the ECB is to check the subject matter of its working papers according to the classification system of the *Journal of Economic Literature*. According to this measure, macroeconomics and monetary economics is by far the dominant area of research. Roughly 50% of all working papers fall into this category. Next comes mathematical and quantitative methods, which is the concern of almost 20% of all working papers. International economics, financial economics, and microeconomics follow with around 10% each. Other areas such as public economics, economic development, industrial organisation, and labour economics are marginally represented.

Another way to review the relevance of academic research for monetary policy is to describe several of the most useful papers that have been produced by ECB research staff. The papers listed below were chosen from a sample that DG Research and DG Economics regarded as representative of their best research. They are particularly prominent examples of the relevance and policy orientation of research activities, but they are not an exhaustive list. With the same justification other work could have been mentioned too.

The papers from DG Research deal with macroeconometric modelling, monetary policy transmission, money demand estimation, and international finance.

- Frank Smets and Raf Wouters, “An Estimated Stochastic General Equilibrium Model for the Euro Area,” *Journal of the European Economic Association* (2003). This was the first of a series of papers estimating a sticky wage and price, dynamic stochastic general equilibrium model using Bayesian methods. It is the state of the art in small-scale models of monetary policy that combine Keynesian features such as sticky nominal prices and wages with neoclassical features such as intertemporal optimisation with rational expectations. The model is a useful tool for thinking about policy because it is solidly grounded in economic theory and it provides an empirically accurate representation of the euro area economy.
- Gabriel Fagan, Jerome Henry and Ricardo Mestre, “An Area-Wide Model (AWM) for the Euro Area,” ECB Working Paper No. 42 (2001). The AWM is extensively utilised for forecasting, simulating, and discussing monetary policy alternatives. The paper made available a data set with aggregate time series for the euro area that has been used extensively in applied academic research.
- Gunter Coenen and Volker Wieland, “The Zero-Interest-Rate Bound and the Role of the Exchange Rate for Monetary Policy in Japan,” *Journal of Monetary*

Economics (2003). This paper is an example of research that models a circumstance (zero interest rates) that has not yet been experienced in the euro area, but could pose a difficult problem for monetary policy. The paper provided the basis for two background studies for the above-mentioned review of the ECB's monetary policy strategy.

- Gunter Coenen and Juan Luis Vega, "The Demand for M3 in the Euro Area," *Journal of Applied Econometrics* (2001). This was the first paper released by the ECB on money demand in the euro area. The paper established some empirical regularities for M3 that have been referred to consistently in subsequent ECB publications to explain the role of money in the monetary policy strategy. The paper made available the relevant database that has been widely used by researchers.
- Carsten Detken and Philipp Hartmann, "The Euro and International Capital Markets," *International Finance* (2000). The paper was the first to analyse the role of the euro as an international financing and investment currency. The paper used an innovative methodology to document the development of international euro bonds, notes, and money market issuance, and discussed the consequences of and possible future developments in these markets. The analysis underlying the paper was the basis for the first annual ECB review of the international role of the euro. The annual ECB review continues to update the data first reported in the paper.

The papers from DG Economics deal with money demand estimation, inflation expectations, output gap measurement, and fiscal policies.

- Claus Brand and Nuno Cassola, "A Money Demand System for the Euro Area," *Applied Economics*, forthcoming. The paper estimates a structural cointegrating VAR for analysing the behaviour of M3 with long run relationships based on

economic theory that take into account monetary and financial developments for macroeconomic variables in the euro area. Generalised response profiles are used to investigate the dynamics of the money demand system without any further identifying assumptions. The paper has been used extensively for internal briefings on money demand.

- Efram Castelnuovo, Sergio Nicoletti-Altimari, and Diego Rodríguez-Palenzuela, “Definition of Price Stability, Range and Point Inflation Targets: the Anchoring of Long-term Inflation Expectations,” ECB Working Paper No. 273 (2003). The paper is the first to systematically conduct an international comparison of the stability of long-term inflation expectations. Using consensus forecasts data, the paper finds that there is no evidence that the specific features of announcements of inflation objectives matter for anchoring inflation expectations. The paper was prepared for the recent evaluation of the ECB’s monetary policy strategy.
- Alberto Musso, Tommaso Proietti, and Thomas Westermann, “A Production Function Model of the Euro Area Potential Output,” work in progress (2003). The paper proposes and assesses a model-based estimate of potential output and the output gap for the euro area. The approach integrates factors featuring an aggregate production function with an inflation equation and is formulated within a multivariate unobserved components statistical framework. The methodology has several advantages over purely structural or purely time-series based frameworks. The paper was used to determine the reference value for the growth of M3 in 2002 and 2003.
- Carine Bouthevillain, Philippine Cour-Thimann, Gerrit van den Dool, Pablo Hernández de Cos, Geert Langenus, Matthias Mohr, Sandro Momigliano, and Mika Tujula, “Cyclically Adjusted Budget Balances: An Alternative Approach,” ECB Working Paper No. 77 (2001). The paper develops a method for

computing cyclically adjusted budget (CAB) balances to support the monitoring and assessment of fiscal policies in the European Union. The paper has been presented at such places as the European Commission, the OECD, the UK Treasury, and has been discussed in the publications of the IMF, the OECD, and national central banks of the Eurosystem.

We conclude from our general review that research conducted at the ECB has been highly relevant for its primary tasks and functions. Naturally, in the early years of the Monetary Union most of the work focused on macroeconomics and monetary economics in support of the ECB's monetary policy responsibilities. However, as argued in Section 6 below, some broadening of the research coverage would now be desirable.

4. THE QUANTITY AND SCIENTIFIC QUALITY OF ECB RESEARCH

4.1. Quantity of research

There are several ways to measure the quantity of research produced at the ECB, but the most natural starting point is to count working papers and publications in scientific journals.

The working paper series aims at disseminating research by ECB staff, visiting scholars and participants in ECB conferences and workshops. The papers constitute work in progress that is circulated externally to stimulate discussion and critical comments before they are submitted for publication in academic journals and books.

The number of ECB working papers has followed an upward trend, with 73 papers appearing in 2001, 88 in 2002, and 97 in 2003, for an average of 86 per year. To separate the contributions of the different Directorates and that of outsiders we allocated the authorship of each paper proportionally to the number of co-authors. According to this accounting, 24% of the working papers published in the last three years were produced by DG Research, 20% by DG Economics, 4% by staff in other business areas, and 52% by outsiders (of which about 1/3 were co-authorships with ECB staff).

These results indicate that the greatest share of ECB research that translates into working papers is done by DG Research. However, the average number of working papers per year per member of staff in DG Research (excluding secretaries, research assistants and statisticians) is about 0.6, which does not appear to be very high, even after taking into account that most staff in its Econometric Modelling Division devote a significant part of their time to forecasting. This ratio is

even lower in DG Economics, which indicates that its research capabilities are mainly directed towards internal work, and not outside publications.

A second way to measure research output is to count publications in scientific journals. We follow the widespread practice of looking only at journals included in the *Journal of Citation Reports* (JCR) edited by the Institute for Scientific Information, and focus our analysis on publications in the years 2000 to 2003 by staff in DG Research and DG Economics.

Restricting attention to JCR journals leaves out a large number of publications of ECB staff, especially in DG Economics, such as those that appear as chapters in conference volumes and other books. We ignore publications in non-JCR journals or in books since their quality varies widely and is generally below that of publications in JCR journals. This view does not reflect a bias towards technical sophistication, but rather the fact that it is basically in JCR journals where new ideas are found.

Staff in DG Research and DG Economics published 21 papers in JCR journals in 2000, 20 in 2001, 22 in 2002, and 26 in 2003. As before, to measure separately the contribution of the different Directorates and that of outsiders we allocated the authorship of each paper proportionally to the number of co-authors. By this accounting, about a third of the JCR publications in these four years are produced by DG Research, DG Economics, and by outsiders, respectively. In numbers, this corresponds to 7.8 papers per year in DG Research, and 7.1 papers in DG Economics. These results are in line with those obtained for the measurement of research based on working papers.

4.2. Scientific quality of research

There are many ways to measure the scientific quality of the research. In this report we focus on an objective measure based on the ranking of the journals where the papers are published, and a subjective measure based on our own judgement and the views of selected academics.

Although many rankings of journals are currently available, most of them are based on citations. The use of citations as an objective measure of quality is justified by the fact that the work has been considered of sufficient quality to be accepted for publication in a peer-reviewed journal, and that it has been found relevant to someone else's work.

For each of the 40 JCR journals where DG Research and DG Economics staff published in the years 2000 to 2003 we computed the average over 1998 to 2002 of the JCR impact factors. These are obtained by dividing the number of citations in a given year of papers published in the previous two years by the number of papers published in the previous two years. The average impact factors for these 40 journals range from 3.924 for the *Quarterly Journal of Economics*, to 0.114 for *Applied Economics Letters*. For measuring the number of quality-adjusted publications we normalise by the average impact factor of the *European Economic Review (EER)*, which is 0.866.

Weighting by these impact factors JCR publications adjusted for the number of co-authors leads to the following results. First, the average output per year of DG Research is 8.1 *EER*-equivalent papers, while the average output per year of DG Economics is 3.6 *EER*-equivalent papers. Second, the average quality of the publications of DG Research is slightly higher than the *EER*, while that of the publications of DG Economics is about half of the *EER*. Third, the trend in quality-adjusted output is increasing in DG Research, while it is stable in DG Economics.

We checked the robustness of our findings by considering as an alternative to the JCR impact factors the weights used by the Research Department of the Federal Reserve Bank of New York. These weights range from 400 points (which are given to 8 top general and finance journals) to 25 points. Our qualitative results are basically unchanged.

To sum up, the quality of the publications of ECB staff in JCR journals is good, with standards significantly higher in DG Research than in DG Economics. However, the number of such publications is small relative to the size of the staff, especially once we take into account that some of this work was essentially completed by researchers before they joined the ECB.

We asked a selected sample of prominent economists, mostly academics that have taken an interest in the ECB, for their views on the quality of its research. About half of the 20 respondents expressed a very positive view, noting that research at the ECB compares favourably with other central banks, and that some ECB work has been truly path-breaking. About a third of the respondents were broadly but not uniformly positive, noting that average quality was good but of limited academic value and influence. The remaining respondents were fairly negative, noting that there were too many low quality papers and that there was too little emphasis on publication in academic journals.

These differences in the evaluation of quality by outsiders are related to their implicit benchmarks. If the standard of reference is the research done by other central banks, then the ECB is doing very well indeed, especially in comparison with some leading national central banks of the Eurosystem. But if the standard of reference is that of an academic department with a large number of PhD economists devoting most of their time to research, then the quantity and quality of research publications is below what it should be.

Our respondents believe that there is considerable potential for the ECB to increase the output of research published in high-level academic journals, and that economists at the ECB ought to be given more time and encouragement to produce and publish research. Also, they point out that although there is a very good group of young PhD economists, the ECB has not managed to attract senior research economists. There is a widespread view that the ECB should build up a group of internationally recognized researchers to lead and develop junior staff, to facilitate the use of research for policy-making, and to strengthen the links with the academic community.

We read many papers for our own assessment of quality, including the *Background Studies* for the evaluation of the monetary policy strategy, a sample of papers chosen at random from the population of all working papers with at least one ECB co-author, and the papers selected by DG Research and DG Economics as representative of their best research.

We found that the top quintile of the papers in our sample contains excellent innovative research, research in the next two quintiles is good but not outstanding, applying standard methodologies to issues of relevance to the ECB. The papers in the last two quintiles are of average quality, with rather mechanical application of techniques, and in a few cases somewhat disappointing results. Interestingly, we did not find a poor quality paper in our random sample, which suggests that the refereeing of working papers described in Section 6 below eliminates the lower tail of the quality distribution. Not surprisingly, the best working papers had been published subsequently in good academic journals.

Our reading of the best papers selected by DG Research and DG Economics confirms our other findings, namely that research that is eventually published in academic journals is of higher quality, and that this outcome is more frequent in

DG Research than in DG Economics. Finally, the *Background Studies* contain competent applications of standard techniques and good surveys of the literature, but we feel that the papers would have benefited from a thorough discussion with outside academics, although we recognise the time pressure under which the papers were written.

Summary and recommendations

Research that appears in the ECB working paper series is good in terms of quality, but small relative to the size of staff. More importantly, research published in leading academic journals should be increased. To improve incentives for the production of high quality research we propose the following recommendations.

- The ECB should increase the weight of research activities, and especially journal publications, in the staff annual appraisal exercises.
- The ECB should introduce a point system for weighting publications according to the reputation of the journal, and use the point score to reward excellence in research.

5. THE EXTERNAL IMPACT OF ECB RESEARCH

Research has had an important impact outside the ECB through a number of channels. One such channel is the working paper series. As noted in Section 4, the series disseminates research produced by ECB staff and visiting scholars as well as participants in ECB conferences and workshops. Since December 2001 more than 500,000 working papers have been downloaded from the ECB website, representing more than 25,000 downloads per month. It is estimated that each paper is downloaded on average over 100 times per month. Of course, the research of ECB staff is disseminated still further by working papers that are eventually published in academic journals as discussed in Section 4.

In some specific cases, research produced at the ECB has had a particularly big external impact. For instance, as mentioned in Section 3, aggregate euro area macroeconomic time series used extensively in applied research were made available initially in working papers. Likewise, ECB research staff have produced financial data on the euro money supply and the euro bond markets that are used by academics and financial market analysts. ECB researchers have played a leading role in advancing the methodology of small-scale macroeconomic models of monetary policy, and in estimating these on euro area data. Researchers have led the way in estimating models of euro area money demand. The area-wide model developed and maintained by ECB staff is used by external analysts including the European Parliament and the European Forecasting Network. ECB researchers have proposed and produced model-based estimates of potential output and the output gap in the euro area, and have developed in cooperation with staff from national central banks of the Eurosystem a method for computing cyclically adjusted budget balances to support the monitoring and assessment of fiscal policies in the European Union.

A second channel of outreach, closely related to the first, operates through visitors and consultants working with ECB staff. Such relationships are primarily a means of keeping the staff abreast of the latest developments in the academic world. But such contacts are equally valuable as a means of exposing academics to issues of concern to the ECB, to research done at the ECB, and to institutional knowledge at the ECB. Visiting and consulting relationships are a main channel by which outside academics are stimulated to do research of interest to the ECB.

External presentations constitute a third important channel by which ECB staff disseminate their research. ECB economists, primarily in DG Research, presented over 300 research papers at universities, central banks, and other institutions in the last five years. They served as discussants or panelists on more than 100 occasions. And they refereed over 100 journal articles.

A fourth channel through which ECB research makes an external impact is by providing leadership and direction for monetary and financial research within the Eurosystem. The Monetary Policy Committee –an advisory body composed of staff members of the ECB and the national central banks of the Eurosystem– has often discussed research papers presented by economists from DG Research and DG Economics. The research culture within and among the national central banks participating in the Monetary Union has been positively influenced by the ECB’s research activities.

The ECB uses its research capacity to encourage, coordinate, and lead research efforts of the national central banks of the Eurosystem, sometimes in conjunction with outside research institutions, through the following research networks.

- The *Euro Area Business Cycle Network* aims at exchanging knowledge and information on theoretical and practical issues relating to the euro area business cycle. The ECB, the national central banks of the Eurosystem, the

Bank of England, and the Centre for Economic Policy Research (CEPR) take part in this network.

- The *Research Network on Capital Markets and Financial Integration in Europe* is concerned with the advance in European financial integration, the structure of the European financial system and the financial relationships between Europe, the US and Japan. It is organised by the ECB and the Centre for Financial Studies at the University of Frankfurt.
- The *Inflation Persistence Network* is devoted to improving the understanding of the pattern and determinants of inflation persistence in Europe. The ECB and the national central banks of the Eurosystem participate in it.
- The *Monetary Transmission Network*, which has concluded its activities, examined the various channels of monetary policy transmission in the euro area. Its output appeared in the book mentioned in Section 3 above.

The fifth channel of external impact of ECB research is the organisation of conferences and workshops. The flagship events were the biennial ECB Central Banking Conferences *Why Price Stability?* (2000) and *The Transformation of the European Financial System* (2002), attended by a large number of participants, with invited papers presented by top academics from around the world. The ECB organised about 25 other research conferences and workshops jointly with national central banks or research institutions. Prominent examples are the conferences of the *International Research Forum on Monetary Policy* organised with the Federal Reserve Board and other institutions, and of the *International Wage Flexibility Project* organised with the Federal Reserve Bank of New York and other institutions. These and other conferences covered such topics as monetary policy operations, monetary policy transmission in the euro area, business cycles,

dynamic macroeconomics, risk measurement and systemic risk, payment systems, and labour market adjustment in Europe.

We asked our sample of prominent economists to give us their perspectives on the overall external impact of ECB research. Our survey confirms that the ECB has provided a significant stimulus to research, especially macroeconomic research, in Europe by hiring new PhD economists, by inviting visitors to the ECB, and by sponsoring excellent high-level conferences and smaller workshops. We also hear that the ECB should be congratulated for promoting the research networks and for its openness in engaging external researchers, including critics of its monetary policy strategy.

Our own view concurs with that of the outsiders. ECB research is not only highly visible at conferences and workshops, it also contributes significantly to the scientific debate on economic policy through the above-mentioned channels. Furthermore, ECB research has played a leading role within the Eurosystem. Given its place at the centre of a continental system of central banks, it is not surprising that the ECB has already had a major effect on academic discourse throughout Europe, but the impact goes beyond its role in monetary policy. In large part, the ECB has achieved this by establishing productive links with leading academics, relationships that should continue to benefit both sides in the future.

6. THE ORGANISATION OF ECB RESEARCH

6.1. Fundamental criteria

Like any other central bank, the ECB must address the following questions when organising its research activities.

- Should research focus on macroeconomics and monetary policy or should it cover a broader range of topics?
- Should research be driven by the interests of the researchers (bottom-up) or by the demands of the users (top-down)?
- Should researchers be integrated into the policy units or should they be grouped in a separate research unit?
- In the latter case, should the research unit be a service centre for the entire bank with equal access to it by all Board members, or should it be assigned to a specified Board member and have the normal reporting channels?

In our view, no single organisational model is suitable for all central banks. Each must strike a balance between somewhat conflicting objectives. In seeking this balance, central banks should be guided primarily by the tasks and functions they have to perform, but they should also be sure to define objectives clearly, provide the proper incentives, and allocate the necessary resources to get the job done.

In what follows we review how the ECB has addressed these questions, and we assess its organisational choices and suggest some areas for improvement.

a) Narrow versus broader approach

When it began operations, the ECB concentrated its research on those areas with the greatest need for information and policy advice. Econometric models had to be constructed and estimated to facilitate economic forecasting and conduct policy simulations. A monetary policy strategy had to be devised, money demand functions estimated and the monetary transmission mechanism examined. It was therefore appropriate to keep the range of research activities relatively narrow: priority was given to the design and implementation of monetary policy in the newly created Monetary Union.

However, now that the start-up phase is over, the question is whether its research activities should not be put on a broader basis. In fact, such a tendency is already clearly discernible. Although macroeconomics and monetary policy are still the main focus of research, the range of subjects covered has been extended. This is desirable because the ECB cannot afford to neglect research that is necessary for the successful pursuit of its other functions. Statements made by the ECB on the various areas of policy –and not just in the narrower field of monetary policy– must be supported by sound research.

In the light of this, there is probably scope for devoting more resources to other potential areas of research such as financial stability, international issues, and fiscal policy. The ECB should develop a research culture that –where possible and appropriate– serves the other business areas. The prime example here is DG Economics where advanced research is already being undertaken. However, further research could also be opened up elsewhere, ideally in cooperation with DG Research.

Even so, there are limits to the expansion of research activities. The size and quality of the research staff and the coverage of research areas are closely related.

Resource constraints mean that it will continue to be necessary to set priorities and keep the focus on the bank's primary tasks. Nevertheless, improved incentives and better coordination will probably enable the ECB to extend its research activities to more fields.

b) Bottom-up versus top-down approach

High-quality research must be produced by PhD economists. Creative researchers must be provided with a good deal of freedom and a stimulating working environment. However, there is the danger that, if researchers have too much independence, their desired projects might diverge from the needs of the central bank. As a kind of "university within the bank", the research unit could become an end in itself instead of supporting the policy decision-making process. In our view, the best way to deal with this potential problem is to hire economists with research interests close to those of the central bank.

The ECB tries to find a balance between supply-driven (or bottom-up) and demand-driven (or top-down) organisation of research. DG Research prepares a research programme which sets out the main topics for the coming year, and DG Economics defines its so-called analytical agenda in a similar manner. In both areas, individual researchers submit proposals for projects in which they have a particular interest and can provide the necessary expertise. Management then makes a decision on the proposals, bearing in mind that the plans have to meet the needs of the bank as far as possible. Although there is no formal process of consultation between the two areas, they keep each other informed.

Existing procedures could be developed further into a comprehensive system in order to utilise research capacity more efficiently for the bank as a whole. Specifically, all business areas in which research is conducted should agree once a year on a comprehensive research programme. The programme would be

submitted to the Executive Board, which would discuss it and, if necessary, decide on the priorities. The Board would also be regularly informed about the implementation of the research programme.

Such a procedure would ensure reasonable conformity between the research agenda and the policy agenda. Furthermore, consultation in the process of designing the comprehensive research programme would facilitate coordination and cooperation between the different business areas. Projects covering more than one area would create synergies and open up potential research topics that have hitherto remained untapped. The Board's active involvement would help to promote the bank's research culture, motivate researchers, and reinforce the policy-orientation of research.

c) Integrated versus separated approach

There are two polar models of organisation of central bank research: the researchers can be integrated in the different business areas, or they can be concentrated in a separate research unit.

The integrated research model ensures that researchers have a first-hand knowledge of the policy issues and makes both for more relevant research and for better policy work. Regular involvement in everyday business makes it more likely that research results will be delivered in a timely manner. The main argument against this model is that it requires managers that value research and are able to protect the research time of their staff. Otherwise, in the competition between urgent business and research, the latter may get sacrificed, researchers may get discouraged, and the quantity and quality of the research may deteriorate.

The separated research model concentrates research staff and ensures a critical mass that facilitates cross-fertilisation, the production of high-quality research, and

a better foundation for policy-making. A separate research unit is more likely to develop a culture that stimulates fresh thinking and challenges conventional views. That, in turn, helps central bankers to recognise and prepare for unusual contingencies. The main arguments against this model are that a separate research unit can become isolated and neglected by other areas of the bank as its research focuses on topics less relevant for policy. Even if that does not happen, researchers in a separate unit tend to become less responsive to the demands of policy-makers than researchers in an integrated unit.

The ECB has opted for a mixture of the two models, with research conducted both in DG Research and also in other business areas, especially in DG Economics. In principle, this mixture combines the advantages of both approaches. In practice, there seems to be a problem of coordination and cooperation, that the comprehensive research programme proposed above is meant to remedy. Not only DG Research but also the other business areas would be formally included in the research work. This would enhance the quality and the policy relevance of the research. The institutional knowledge of the operational areas could thus be combined in joint projects with the research skills of DG Research. This would also avoid unproductive duplication of work, and reduce conflict in areas of overlapping responsibility.

Demarcation between DG Research and DG Economics

As noted above, DG Research and DG Economics are the business areas in which most research is done. It is difficult to distinguish clearly between the tasks of these two areas for the purpose of allocating research responsibilities. Both areas deal with similar topics and emphasise the relevance of their work for policy-making.

DG Research is primarily concerned with medium and long-term projects closely related to academic work. DG Research takes part in the policy-making work

through its participation in forecasting and the drafting of non-research papers. Occasionally, it is directly involved in the policy briefing, for example, in the discussion on deflationary risks or in the evaluation of the monetary policy strategy. However, for the most part DG Research impacts policy indirectly by providing background material for policy debates.

By contrast, DG Economics is continuously involved in policy issues, especially through the regular production of briefing materials and the preparation of policy papers on the ECB's monetary policy strategy or fiscal policy issues. Analytical tools are also developed in DG Economics, but the work is generally more application-oriented and geared to the needs of the Executive Board. In many cases, the results of this work are published without attribution to authorship in the *Monthly Bulletin*. Due to the lesser time available for research, journal publications in DG Economics tend to be a by-product and for the most part the result of the staff's own initiative.

Despite the occasional tensions, DG Research and DG Economics appear to work harmoniously with each other. The initial rivalry appears to have been replaced by a more cooperative attitude –which may be due to the fact that both directorates report to the same Board member. Even so, there is room for improvement in the coordination of work between the two business areas.

d) Business unit with normal reporting lines versus service centre approach

DG Research is a standard business unit within the ECB, and therefore has the normal hierarchical structure. The Director General reports to a Board member who, in turn, presents matters concerning DG Research to the Board, when necessary. This form of organisation has obvious advantages. The decision-making structures and the representation on the Board are clearly determined and transparent. Regarding the practical side of the work, it is also beneficial that DG

Research and DG Economics report to the same Board member. Cooperation between the two areas, which represent by far the greatest amount of research activities at the ECB, is thereby facilitated.

However, this structure also has disadvantages. Research activities are concentrated in DG Research and DG Economics. Other business areas and Board members may want to initiate research projects but have no direct access to these resources, a situation which increases the risks that many parts of the bank might regard research as less relevant for them. Another point is that it might be more difficult to guarantee the necessary continuity of research when there is a change in the Board member responsible for it.

Despite the risks, we do not favour a change in the current arrangements. If DG Research were a service area for the whole of the bank, and one to which all Board members had equal access, research might easily be “watered down” as too many special requests or demands for non-research work would be “dumped” on the researchers. However, we also think that the dividing lines between the business areas allocated to the different Board members should not be too rigid. Cooperation, especially between DG Research and other areas suitable for research, should be strengthened. By extending the coverage and involving other business areas, a research culture could become more firmly established throughout the bank, with DG Research taking on a catalyst role and perhaps also a training function. Implementing the proposed comprehensive research programme with overall responsibility of the Executive Board for research activities should contribute to a better utilisation of research potential and a better appreciation of research in the bank as a whole.

Summary and recommendations

The ECB has developed a coherent research strategy within the context of the competing criteria outlined above. This is all the more remarkable given the fact that the ECB was unable to deploy a proven and generally accepted model for organising its research work, and had to find a strategy of its own.

After five years, however, we might well ask whether there is room for improvement in the organisation of research. Our recommendations involve no structural changes; they are designed to improve upon what has been achieved so far.

- The ECB should draw up a comprehensive annual research programme for all business areas in which research is conducted. This programme should be discussed by the Executive Board. Regular implementation reports, say once every six months, should keep the Board informed about progress made. Board involvement in oversight would spread research activities more evenly throughout the bank, ensure that they are consistent with the ECB's priorities, and make better use of the research potential outside DG Research and DG Economics.
- In the early years of the Monetary Union it was wise to concentrate research on macroeconomics and monetary economics to support the ECB's primary monetary policy responsibilities. In the future, research at the ECB should be extended to cover other areas such as financial stability, international issues, and fiscal policy.

6.2. Research staff

a) Size and growth of research staff

The number of staff in the research-related areas at the ECB rose rapidly during the first three years of the Monetary Union. Budgeted staff positions in DG Research increased from 30 at the end of 1998 to 47 at the end of 2000 and in DG Economics from 66 to 141. At the same time, total ECB staff increased from 576 to 1,031. The ratio of staff in DG Research and DG Economics to the bank's total staff remained more or less the same at 18%.

Employment has risen further since the end of 2000. As was to be expected after the initial recruitment period, however, the rate of increase has slowed. By October 2003 DG Research had increased its budgeted staff from 47 to 54 and DG Economics from 141 to 165. As the bank's total staff grew from 1,031 to 1,271 at the same time, the share of the two Directorates remained practically unchanged.

The number of staff in DG Research ensures that the ECB has the critical mass of researchers necessary to guarantee a productive research environment, even after taking into account that some people are involved in other tasks such as forecasting. DG Economics has three times more staff, but tasks such as briefings and internal work absorb the additional staff time so time available for research is limited. Outside these two Directorates some individuals do research, but their time for research is even more limited.

b) Selection of research staff

A careful selection process ensures the quality of the research staff. First and foremost, the ECB generally requires candidates to have a PhD degree. Candidates' research capabilities are evaluated on the basis of their academic

credentials, through interviews held in part by ECB staff at the US job market, and on the basis of an internal seminar.

We think that the ECB has succeeded in recruiting high-quality researchers. Naturally, a large share of their initial research is based on their PhD work. After this “inherited” output has been exhausted, the task is to maintain and further develop their human capital. This will be particularly difficult outside of DG Research where the urgency of the daily work has a tendency to absorb time intended for research. A well-developed system of internal and external training via specialised courses provides the means for the maintenance of human capital. Ultimately, however, the continuous practice of research is essential to maintain and sharpen research skills.

c) Incentive structure

The performance of each staff member is assessed in an appraisal exercise every year. This provides a basis for salary increases and potential bonuses. In DG Research, publications in academic journals are highly valued but do not automatically result in financial reward. In the other business areas published work tends to play only a minor role in the assessment.

Promotions follow an open application process. A penchant for research and a list of publications are important in DG Research but are less relevant for the choice of candidates in other areas.

We detected among the staff a certain degree of dissatisfaction with the incentive structure. Although the researchers generally find their work interesting, there are complaints about the shortage of time and insufficient appreciation of research, as well as the lack of advancement and perspective.

We believe that the incentive to do research and the job satisfaction of researchers could be improved by raising the profile of research throughout the bank. Research findings and publications should be given greater recognition by management. Staff should be encouraged to publish their work in academic journals, and the point system recommended in Section 4 should be used to reward higher quality publications. Staff particularly committed to research should be recognised in the annual appraisal exercise or through bonus payments.

It would be desirable to introduce an “expert career path” in DG Research to enable first-rate researchers to achieve pay and rank commensurate with management. This would help the ECB build up a group of internationally recognised senior researchers.

In addition, more time should be made available for research. Inevitably, briefings and operational tasks work must be given precedence outside DG Research, but research should not be a buffer that is regularly exhausted. If specific research potential is identified in a proposed research programme, the resources must also be provided for this. Management should recognise the opportunity cost of briefings and internal work in terms of lost time for research.

Finally, researchers in all business areas, even junior researchers, should have more opportunity to present their results to the bank’s senior management. In addition, the Executive Board should make time at its monthly seminars to hear directly from ECB research economists. To enhance their visibility in the academic world, researchers should have personal homepages on the ECB website.

These proposals for the recognition and encouragement of research can be implemented easily, without much of a burden on management. We think that they will yield significant benefits in terms of motivation of researchers and quality of both research and non-research work throughout the ECB.

d) Mobility

ECB staff is relatively young. This is mainly advantageous at the moment because they have a high level of human capital. Over the longer term, however, this age structure has costs. First, it might become difficult over time to maintain the human capital. Second, as already mentioned, opportunities for promotion are limited by the fact that senior management is also quite young.

One way to address these problems is to recruit more senior researchers in the non-management track. This would also facilitate the mentoring and development of junior staff and move the age distribution of researchers closer to what might be expected in the steady state.

Another way to deal with the problem is to increase the mobility of staff, so researchers could find alternative career paths that are more suitable to them. The ECB has recently introduced a special mobility scheme on a trial basis. Participation is not compulsory but is encouraged with incentives that recognize mobility in the annual appraisal exercise or in promotion decisions. According to this scheme, up to 20% of the staff could change their work unit each year.

We consider the mobility scheme as a potentially useful instrument for the management of human capital. However, it should be implemented with care. Any non-voluntary transfer of research staff may have a demoralising effect and lead to a loss of expertise. Mobility should primarily be offered as an opportunity for development. Transferring staff mechanically –regardless of comparative advantages– might easily change a desirable positive effect into a negative one.

d) Research support

The ECB employs relatively few research assistants (known as research analysts). In DG Research there are at present only 4 assistants, a ratio of researchers to assistants of about 10. In addition, researchers are also assisted by 3 economist statisticians who manage databases and IT-related projects.

This raises the question as to whether researchers could not be relieved more extensively from routine work in order to increase their efficiency. We think that research could be produced more efficiently with more intensive use of assistants. Ideally, research assistants should be PhD students, or perhaps MSc graduates of top programmes, familiar with the latest analytical tools and techniques and hired on a temporary basis (no more than 2 years). Obviously, they would also be a natural reservoir of potential recruits for the ECB.

Research that aims for publication in high-quality academic journals frequently requires the support of the latest IT hardware and software. It appears to us that the needs of research staff are not always given the necessary priority, and that the current procedures for the provision and upgrading of software applications are too cumbersome. In our view, the special nature of the IT requirements of research staff should be recognised, and more flexible support in hardware (laptops) and non-standard software should be provided.

Summary and recommendations

The ECB has on its staff a large body of well qualified researchers. However, not enough time is allocated for research, there is insufficient recognition of research, and there is a general lack of advancement prospects for researchers in the ECB, especially in business areas other than DG Research. These concerns need to be addressed by ECB management. We recommend the following measures to

improve the motivation and job satisfaction of researchers, and to ensure the maintenance and growth of research capital in the ECB.

- The ECB should ensure that staff in all business areas that are suitable for research are allocated sufficient time to do research that is relevant to their area. Management should recognise the opportunity cost of briefings and internal work in terms of lost time for research. Investment in research skills will be repaid in the form of better policy work in the future.
- The ECB should create an expert career path in DG Research, so staff can be promoted for excellence in research without assuming managerial responsibilities.
- The ECB should facilitate and encourage staff to present their research to the Executive Board and senior management.
- The ECB should support the posting of personal homepages for research staff on the website.
- The ECB should increase the number of research assistants and satisfy the special IT requirements of research staff by providing more flexible support in hardware (laptops) and non-standard software.

6.3. Research environment

a) External researchers

The research environment is enhanced by drawing on external researchers. The ECB organises two special visitors programmes and also has a significant number of external consultants.

- The *Research Visitors Programme* is designed to make use of the experience of experts working in advanced fields of research. The visitors are given the opportunity to gain an insight into how ECB policy is devised and implemented. The main objective is to achieve an interaction between the visitors and the staff in DG Research and in other interested business areas. The visitors are expected to give internal seminars on their field of research and, on the initiative of the business areas concerned, to take part in meetings, seminars or workshops.
- The *Graduate Research Programme* provides young, promising economists with the opportunity to familiarise themselves with the research activities of the ECB. During their visit they are expected to present a research paper at an internal seminar and possibly publish it in the working paper series. Economists participating in the programme are graduate students working on their PhD theses.
- In contrast with the above-mentioned open application programmes, *consultants* are deployed on an individual case by case basis. When a specific expertise is required for a fairly major project or for a new research initiative, the business area concerned may be authorised to engage the services of a consultant.

External researchers enable ECB staff to upgrade their knowledge of the latest developments in the various fields of interest and to learn how research is conducted and presented for publication in academic journals. In some cases, relationships with external researchers develop into fruitful collaborations

However, it seems that the interaction sought between ECB staff and research visitors does not always occur to the extent desired, while the interaction with

consultants is generally very intense. Moreover, consultants are usually more senior academics than research visitors, a feature that is especially desirable given the relative youth of ECB staff. We conclude that the ECB would improve the allocation of its research resources by transferring funds from the Research Visitors Programme to the hiring of more consultants.

b) Conferences, seminars and research networks

As mentioned in Section 5, the ECB organises a broad range of research conferences and workshops, either alone or together with the national central banks of the Eurosystem and selected research centres. As a result, the ECB has raised its research profile and has become esteemed as a competent partner in academic circles.

Seminars are regularly held internally to present and discuss the research of the staff and invited speakers. More informal lunchtime seminars are also organised jointly with the Centre for Financial Studies at the University of Frankfurt and the Bundesbank. By fostering internal debate as well as interaction with academics, these seminars constitute a key element of the research environment at the ECB. Since it appears that the seminars are not always well attended, it would be desirable for management of DG Research and DG Economics to signal their importance by attending more seminars themselves.

Interaction with national central banks and selected research institutions is also facilitated by the research networks described in Section 5. The networks coordinate work on specific projects and organise workshops and conferences to exchange ideas and present their findings.

Summary and recommendation

In a short period of time, the ECB has created a productive research environment in which a critical mass of researchers interacts with academics as well as with research staff of the national central banks. Our only recommendation in this area is the following.

- Increase the budget for consultants, possibly by reducing the Research Visitors Programme.

6.4. Time line of research activities

a) Research programme

At present, a research programme and an analytical agenda are drawn up in DG Research and DG Economics, respectively. Executive Board participation is not involved, although the research programs are discussed with the Board member to whom both of these business units report.

As already mentioned, we recommend that the research programme be extended to all business areas that are suitable for research. An ECB Research Coordination Committee (RCC), for which DG Research does the secretarial work, already exists but has been fairly inactive recently. In our view, the RCC should be reactivated and used to promote a research culture in business areas other than DG Research and to improve cooperation between different business areas on research matters. The research programme should be presented to and discussed by the Executive Board.

b) Supervision of individual projects

Researchers in DG Research and DG Economics propose specific projects for inclusion in the research programme and analytical agenda, which are then discussed and approved by management. This procedure could be extended to the whole bank.

Staff in DG Research are given ample time and freedom to pursue their research projects; staff in DG Economics generally have considerably less time for research. In both areas, however, there is continuous interaction between staff and management, so progress on research projects is closely monitored within each business area. However, research can benefit from more technical guidance than management is currently providing. In this regard, we think that junior researchers in particular would benefit greatly from more intensive mentoring by senior staff or outside academics working as project consultants. The latter would be particularly helpful in instructing junior staff on how to produce publishable research.

c) Evaluation of research

As a rule, research is published initially in the ECB working paper series. The decision to accept a submission for publication is made by an Editorial Board, which consists of 5 members of DG Research and 8 members of other business areas. Each paper is allocated to a member of the Editorial Board who acts as a supervisor and who, in turn, asks for the assessment of an internal referee. An external referee is sometimes involved in the case of a highly specialised or technical paper. The publication decision is based on a report from the referee, the introductory statement of the supervisor and the comments of a second reader who is a member of the Editorial Board.

This system is cumbersome. The workload on research staff that serve as internal referees is substantial. In some cases it is difficult to maintain anonymity, which compromises the objectivity of the evaluation. An obvious alternative would be to increase the use of external referees, although this could delay publication of working papers. On balance, however, the benefits of using external reviewers probably out-weigh the costs, and we encourage the ECB to further extend the current plan to increase the number of external academic referees. It should also be possible to reduce the referee workload by specifying relatively modest standards that working papers must meet, or by accepting other evidence of quality in place of a referee report.

d) Dissemination of research findings

ECB research is disseminated via the working paper series and subsequent publication in books and academic journals, and via the participation of research staff in conferences and workshops. As mentioned in Section 5 above, the ECB has become an active player in the academic debate in many of the research areas in which it participates.

However, it might also be advisable to make the research findings available to a wider public. One possibility would be to publish suitably revised versions of research papers in the *Monthly Bulletin*, possibly under the name of the author of the paper. A newsletter, which regularly reports research activities in a non-technical manner, could improve the dissemination of research both inside and outside the bank, and enhance the visibility and motivation of individual researchers.

Summary and recommendations

Research activities are thoroughly organised. Nevertheless, we recommend the following improvements based on the existing procedures.

- The ECB Research Coordination Committee should be reactivated and made responsible of preparing the comprehensive research programme proposed above.
- The supervision of individual research projects of junior staff should be strengthened by involving internal and, more importantly, external advisors.
- The procedure for evaluating working papers should be simplified in order to reduce the workload of internal referees.
- The research findings should be made accessible to a wider public in a non-technical form such as a newsletter.

7. OVERALL ASSESSMENT AND MAIN RECOMMENDATIONS

Our overall assessment of ECB research is quite positive. In the short time since its creation, the ECB has managed to build up significant research capabilities, not only in DG Research but also in other business areas. This shows in the hiring of PhD economists, the production of a large number of working papers, the publication of research in leading journals, and the participation of ECB staff in many academic conferences and workshops. The ECB has fostered a close interaction with academics by organising a Research Visitors Programme and hiring first-rate academics as consultants. Moreover, it has promoted the collaboration and exchange of views between academics and research economists at the national central banks of the Eurosystem by setting up several research networks. Finally, some research produced at the bank has been very influential. These remarkable achievements were unexpected five years ago.

However, we also think that the ECB is not exploiting its research resources to their full potential. There should be more emphasis on quality. Moreover, the human capital of the research staff is in danger of depreciating in the medium run. Furthermore, we believe that there is room to improve both the incentive to do research and the organisation of research at the ECB.

We group our main concerns together with the corresponding recommendations under five headings: research incentives, management of human capital, coverage and coordination of research, research support, and communication and dissemination. We provide a short justification for each recommendation. We wish to emphasise that these are only our main recommendations. Other suggestions for improving research at the ECB are found in the body of our report.

Research incentives

- 1) The ECB must back its commitment to excellence in economic analysis by providing economists with sufficient time and appropriate incentives to do research. Time planned for research should not be sacrificed to other tasks, even in business areas with current policy or operational responsibilities.

Recommendation

Strengthen incentives to do research and respect the time allocated to it when accommodating the demands for current policy analysis. Specifically:

- *Allocate staff sufficient time to do research that is relevant to their area (outside DG Research).*
 - *Increase the weight of research activities and especially journal publications in annual appraisal exercises.*
 - *Facilitate and encourage staff to present their research results to the Executive Board and senior management.*
- 2) The advantages that accrue to the ECB are primarily from academic research up to the highest standards. Working papers are of less value than research output that is placed in the top general or field journals. ECB staff should increase research with the potential for publication in the leading journals.

Recommendation

Strengthen incentives for high quality research in DG Research and DG Economics, and reduce the emphasis on working papers. Specifically:

- *Introduce a point system for valuing publications in academic journals that puts a high premium on the top journals.*
- *Devote less time to internal refereeing of working papers by increasing the use of external referees or by other means.*

Management of human capital

3) Given that research staff is relatively young, the tools for the long-run management of human capital in DG Research are particularly important. The maintenance and growth of research capital must be a top priority. The mobility scheme recently introduced may be very useful in this respect, but it should be carefully implemented. The final aim should be clear: the ECB should build up a group of internationally recognised senior researchers that can lead and develop junior staff, provide high-quality advice for policy-making, and establish a high profile for ECB research world wide.

Recommendation

Strengthen tools for the long-run management of human capital in DG Research through the following measures:

- *Create an expert career path in DG Research, so staff can be promoted for excellence in research without assuming managerial responsibilities.*

- *Use the mobility scheme to provide alternative career paths, while assuring staff that mobility will be voluntary.*
- 4) The Research Visitors Programme often fails to generate fruitful interactions between staff and visitors, while there is a strong demand to involve consultants directly in specific research projects.

Recommendation

Increase the budget for consultants, possibly by reducing the Research Visitors Programme.

Coverage and coordination of research

- 5) In the early years of the Monetary Union, it was natural to focus research almost exclusively on macroeconomics and monetary policy. More attention should be given in the future to other topics that are relevant to the tasks and functions of the ECB.

Recommendation

Devote more resources to research on financial stability, international issues, and fiscal policy that have received little coverage to date, while retaining the primary focus on macroeconomics and monetary policy.

- 6) The extension of research to more topics and business areas requires increased coordination and cooperation of research staff. Addressing some issues from different perspectives is valuable, but research resources must be allocated efficiently, and unproductive duplication of work should be avoided.

Recommendation

Draw up a comprehensive annual research programme for all business areas in which research is produced, and arrange for the programme to be discussed by the Executive Board. Reactivate the Research Coordination Committee for this purpose.

Research support

- 7) Researchers should concentrate on the development of new ideas, and not be distracted by routine work. Research assistants should be made available in adequate numbers.

Recommendation

Hire more research assistants on a temporary basis. Young MSc graduates or PhD students are ideal for these positions because they are familiar with the latest analytical tools and techniques and are highly motivated to spend some time at the ECB.

- 8) Research up to the highest academic standards frequently requires the support of specialized IT hardware and software. IT needs must be provided for in a timely manner to enable ECB researchers to compete effectively in the production and publication of original research. The special needs of research staff need to be accommodated more efficiently.

Recommendation

Recognise the special nature of the IT requirements of research staff. Increase the resources allocated to them in terms of hardware (laptops), and increase flexibility in providing and supporting non-standard software.

Communication and dissemination

- 9) Research output should be marketed more deliberately both inside and outside the bank. The ECB has done an adequate job of disseminating its research in the academic world, but visibility to policy makers and the general public could be improved. A concerted effort to publicise research findings would help management to appreciate the potential value of research, increase the incentives to produce it, and enhance the external reputation of the bank.

Recommendation

Set up a communication channel to disseminate research results to a wider public in a non-technical form such as a newsletter.

To conclude, we should point out that ECB management is aware of many of our concerns and in some cases is already moving in line with our recommendations. We encourage management to continue along this road. At the same time, we acknowledge that we have looked at the issues only from the point of view of research. Further analysis might be necessary to take account of wider repercussions of our recommendations, but this is outside the scope of our mandate.

Appendix

TERMS OF REFERENCE

The Executive Board of the European Central Bank has decided to request an independent external evaluation of the economic research activities conducted at the ECB. The evaluation will be undertaken by three independent external experts and will review the economic research activities carried out by the various ECB business areas¹.

For the purpose of these Terms of Reference research is defined as the set of activities leading to economic analysis which strives to be up to academic standards, i.e. up to the standard of leading-edge scientific journals. Non-research activities carried out by ECB business areas (such as briefing, answers to ad-hoc questions, other analytical work for internal purposes, forecasting or speech writing) are hence not included in this review.

1. Goals of economic research at the ECB

The goal of economic research at the European Central Bank is to provide a strong conceptual and empirical basis for policy-making and better communication of policy to the outside. Top-quality research is particularly relevant to ensure that the ECB is well equipped to cope with the unprecedented challenges associated with

¹ At the ECB, the Directorate General Research is the business unit functionally responsible, *inter alia*, for “conducting theoretical and empirical research relevant to the conduct of monetary policy and providing information on how the result of this research may have a bearing on policy decisions ... and for interaction with other research centres and with the academic community.” However, economic research is also conducted to a greater or lesser extent in other ECB business areas, including: DG-Economics, DG-International, DG-Operations, DG-Payment Systems, DG-Statistics and D-Financial Stability.

the conduct of a single monetary policy for a set of sovereign countries. This is a historically new task, for which good and innovative thinking is indispensable.

Against this background, the primary objective of economic research at the ECB is to increase knowledge of the functioning of the euro area economy and, more specifically, to provide high-quality models, tools and analyses relevant to the conduct of monetary policy and the fulfilment of the other tasks and functions of the ECB. Economic research at the ECB is characterised by its policy orientation, being in many cases applied research.

Other objectives of research at the ECB include its use as a human resource management tool (to attract top professionals or to offer expert training) and to contribute to the reputation of the ECB.

2. Objectives of the evaluation

The evaluators will aim at assessing the extent to which economic research conducted at the ECB contributes effectively to the achievement of the objectives stated above. In this context, the evaluators are requested to consider:

- i) the focus and organisation of economic research conducted at the ECB;
- ii) its scientific quality and value added;
- iii) its relevance for the conduct of monetary policy and to the other tasks and functions of the ECB; and
- iv) its influence within the academic community and in other policy-making institutions.

3. Conditions

Profs. M. Goodfriend, R. König and R. Repullo have agreed to conduct the evaluation and to submit a joint report to the Executive Board of the ECB. In preparing their report, the evaluators will be assisted by the Directorate General Research.

The evaluators shall conduct their work freely and objectively and shall render impartial judgement and make recommendations to the best of their professional abilities. The following conditions apply:

- a The evaluators will begin work in October 2003; completion of the evaluation report is expected for end- 2003. The evaluators will keep the Director General Research informed of the progress of the work.
- b The evaluators shall have access to information in possession of the ECB as needed for carrying out the evaluation. The Director General Research shall make all necessary arrangements to facilitate and assist the procurement by the evaluators of relevant information in possession of the ECB. In particular, the evaluators will be provided with a list of specific research activities which, in line with the above definition, participating business areas deem appropriate to be covered by the evaluation.
- c The evaluators may, if they wish so, interview ECB Executive Board members as well as the ECB management and staff. The Director General Research will make arrangements to assist with any logistical or liaison support in this respect. The evaluators are also free to request information from sources outside the ECB as deemed appropriate.

- d The evaluators shall maintain secrecy on all matters coming to their knowledge in the course of the exercise and shall not at any time use information or material not available to the general public for the purpose of furthering a private interest or the interest of any other person or entity. They will act with appropriate propriety and discretion and in particular shall refrain from making any public statement concerning their duties without the prior approval of the ECB. They will be bound by these obligations after the end of the evaluation.

- e The ECB reserves the exclusive right to publish the report. The Director General Research will ensure that the different ECB business areas shall have the opportunity to respond to relevant parts of the evaluation report in draft form, as well as in final form. The evaluators are free to take account of, or ignore, any comments on the draft evaluation report. Comments on the final evaluation report shall be considered part of the official record. If the Executive Board decides to make public the final evaluation report, it may also decide to make public the comments thereon, including the conclusions of the Executive Board consideration of the report.