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THE FEDERAL DESIGN OF A CENTRAL BANK IN A MONETARY UNION: THE CASE OF THE EUROPEAN SYSTEM OF CENTRAL BANKS

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ABSTRACT

In this paper we analyse the ESCB as a federal central bank system. First, the degree of decentralization of the ESCB will be briefly compared with its predecessor, the Deutsche Bundesbank, and its counterweight in the US, the Federal Reserve System. Moreover, the development during the period 1990–99 of the total, economics and research staffing of the ECB and the national central banks in the EU will be investigated and also the staff ratios of the national central banks in 1999. Furthermore, the research activities of the central banks in the European Union over the period 1990–99 will be analysed both in terms of input (economics and research staff) and output (quality-weighted number of articles in scientific journals). The share of economics research staff in total staff of the national central banks varies between 0.02 and 0.17. The ECB has the highest ratio between economists and researchers and other staff. A ranking of research performance based on the quality-weighted number of scientific articles per economics and research employee reveals that the Bank of Finland has the best research performance of European central banks, followed by De Nederlandsche Bank, the Banco de Portugal and the Oesterreichische Nationalbank. There is only a weak relationship between the research performance and the share of research staff. The conclusion 'small is beautiful' also seems to hold for the economics and research departments of the European central banks. Copyright © 2003 John Wiley & Sons, Ltd.

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1. THE EUROPEAN SYSTEM OF CENTRAL BANKS: A FEDERAL CENTRAL BANK SYSTEM

The European System of Central Banks (ESCB) consists of the European Central Bank (ECB) in Frankfurt-am-Main and the national central banks of the 15 member states of the European Union (EU). The basic task of the ESCB is to determine and implement the monetary policy in the Eurozone, to perform money market operations and currency market transactions (including foreign exchange intervention), to hold and manage official currency reserves of the Eurozone participating countries, and to promote an efficient and prompt working of the (European) flow of payments. These are all areas in which the Eurozone national central banks have had to hand over their monopoly to the ESCB from January 1, 1999 onwards. Such a transfer of the national policy sovereignty has been unique till now in the history of European integration. The ECB and the participating national central banks are denoted as the *Eurosystem*. The Eurosystem is governed by two decision-making official bodies, the *Governing Council* and the *Executive Board*.¹ The Governing Council is the most important decision-making official body of the federal central bank system and consists of the management of the ECB, the Executive Board, and the Governors and Presidents of the national central banks of the countries within the Eurozone. The Governing Council is responsible for the determination of the euro-wide monetary policy, whereas the Executive Board is qualified to implement this monetary policy in accordance with the decisions and

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guidelines determined by the Governing Council. Furthermore, the Executive Board gives instructions to the national central banks in carrying out the execution of the euro-wide monetary policy, in particular money market management. The Executive Board of the ECB consists of the President, the Vice-President and four other members. The European Council appoints the members of the Executive Board for a term of (at most) eight years and the sitting members cannot be reappointed. The impossibility of reappointment is intended to guarantee their personal independence. With regard to the monetary policy decision-making both the members of the Executive Board and the remaining members of the Governing Council are supposed not to act as representatives of the national interest, but in a completely independent capacity. The Executive Board comes together at least 10 times a year and meets in practice every two weeks. This happens most of the time in Frankfurt-am-Main, but not always. By the tradition of the Bundesbank the Governing Council wants on occasion to meet at a national central bank to underline the European nature of the system.

Recently, the Governing Council of the ESCB decided to reduce the frequency of monetary policy decisions in principle from every two weeks to every month. President Duisenberg stated in that respect the following (see ECB, 2001, p. 3): 'Finally, I would like to inform you that the Governing Council has decided that, as from today, it will—as a rule—assess the stance of the ECB's monetary policy only at its first meeting of the month. Accordingly, interest rate decisions will normally be taken during that meeting. At the second meeting of the month, the Governing Council will deal for the most part with issues related to other tasks and responsibilities of the ECB and the Eurosystem. After the second meeting of the month, a press release on the ECB's monetary policy decisions will no longer be issued. Obviously, if warranted by the circumstances, the Governing Council can still decide to change the key ECB interest rates at any time, regardless of previously scheduled meetings (as was recently demonstrated by the decision to lower interest rates on 17 September 2001).' This reduction of the frequency of monetary policy decision-making as a rule is good news because a lower frequency mitigates uncertainty regarding the European money market interest rate, and, thereby, its volatility.

2. THE EUROPEAN SYSTEM OF CENTRAL BANKS: THE DEGREE OF DECENTRALIZATION

The ESCB follows the decentralization principle. This means that the ECB makes, as much as possible and suitable, an appeal to the national central banks as her operational arms for the implementation of monetary policy transactions. The national central banks should follow in a uniform way the instructions and guidelines of the ECB, in such a way that this decentralized approach does not undermine the smooth functioning of the Eurosystem. Some critics, for example *The Economist*, think that the decentralization of the ESCB is an unfortunate design flaw of the designers of the central bank system.² According to them the structure of the ESCB is more decentralized than other federal organized central bank systems, like the German Bundesbank and the US Federal Reserve System. Within the ESCB national central banks have more power than the regional banks in other federal systems. In the first place the system has a decentralized *voting system*, in which at this moment 12 of the 18 votes in the Governing Council are with the national central banks. This is a relatively high number in comparison with presently the nine votes of the German regional *Landeszentralbanken* within the (at most) 17 members constituting *Zentralbankrat*, the official body of the Bundesbank that determined monetary policy in Germany till January 1, 1999.³ This number of national votes is also relatively high in comparison with the five Presidents (four Presidents on a rotating basis and the President of the Federal Reserve Bank of New York) of the regional Federal Reserve Banks with voting power within the 12 members of the *Federal Open Market Committee*, which is responsible for the open market policy in the United States. The *Board of Governors* has a comfortable majority of seven votes in this important decision-making body.⁴ Although the Governing Council of the ESCB is considered to determine a 'one-size-fits-all' policy in view of the whole Eurozone, there is always the danger that the national central bankers in the Governing Council will be influenced by the economic, financial and monetary circumstances in their own country. Such a national orientated voting behaviour will certainly weaken the credibility and effectiveness of the Eurosystem's monetary policy.⁵

Table 1. The degree of decentralization of the federal central bank systems

Total system versus centre and ratio centre/total system	Total number of employees of the federal central bank system and centre	Number of employees of economic and research departments of total system and centre
Federal Reserve System	25,000	830
<i>Board of Governors</i>	1,700	374
<i>Ratio Board/Total</i>	6.8%	45%
Deutsche Bundesbank	15,881	223
<i>Directorate</i>	2,579	72
<i>Ratio Directorate/Total</i>	16%	32%
ESCB (ECB & NCBs)	47,942	1,628
<i>ECB</i>	732	134
<i>Ratio ECB/ESCB</i>	1.5%	8.2%

Note: The Federal Reserve System employees are based on 1996 data (partly estimated), Deutsche Bundesbank employees are based on 1998 data and ESCB employees are based on 1999 data.

Some other critics, mainly from the large euro countries, think that the smaller euro countries are more than proportionally represented in the Governing Council of the ESCB. The central bankers of the eight smaller countries — Austria, Belgium, Finland, Greece, Ireland, Luxembourg, the Netherlands and Portugal — have with 10 (eight national central bankers plus two members in the Executive Board) of the 18 votes a majority in the Governing Council. This majority forms a sharp contrast with the two votes for Germany (one national central banker and one Executive Board member), whereas the German GDP is about twice the combined GDP of these eight smaller countries together.⁶ Nevertheless, the designers of the ESCB have, also on the instigation of the German government of that time, deliberately chosen for the principle of 'one (wo)man, one vote' to underline the collective responsibility of the Governing Council. The system of collective decision-making within the ESCB compensates for possible power broking by large countries like France and Germany.⁷

The voting power is obviously to the advantage of the national central banks, but the ESCB is also decentralized in other ways.⁸ In this respect one might think of the relative size of both the total staff and the staff of the economics and research department of the ECB in Frankfurt-am-Main compared with the total, economics and research staff of the participating national central banks. Next to this the size of the total ECB staff (based on 1999 data) is also still much smaller than the size of the directorates of other federal central bank systems, namely the Board of Governors of the Federal Reserve System in Washington, DC and the Directorate (*Direktorium*) of the Deutsche Bundesbank in Frankfurt-am-Main. As is commonly known, the Bundesbank was perceived as the role model for the design of the ESCB. The relative sizes of the total staff and the economics and research staff of the ESCB (ECB and the national central banks) and the staffing of the Federal Reserve System (Board of Governors and Federal Reserve Banks) and the Deutsche Bundesbank (Directorate and Landeszentralbanken) are reproduced in Table 1. From Table 1 it is quite evident that the trimming down of both the total staffing (almost 16,000 employees) and the economics and research staffing (more than 200 employees) of the whole Bundesbank, in particular at the regional Landeszentralbanken, is just a matter of time. The same applies for the *Banque de France* with its 17,000 employees (estimation), total of mostly due to the large number of employees at its regional *Agences*.

3. THE TOTAL, ECONOMICS AND RESEARCH STAFF OF THE EUROPEAN CENTRAL BANK AND THE NATIONAL CENTRAL BANKS IN THE EUROPEAN UNION

Despite the very recent expansions of its staff, the ECB in Frankfurt-am-Main is both in terms of its total staff and its economics and research staff still quite modest when compared with a federal central bank

system like the Federal Reserve. It is clear that the ECB recruits especially employees for its economics department. This has not only to do with the fact that the ECB delegates operational tasks to the participating national central banks, but also with the explicit task of the ECB to collect euro-wide statistical data and to conduct a euro-wide analysis of economic, financial and monetary developments. In Figure 1 the development of the number of employees of the ECB is shown. The ECB was established in June 1998. In 1999 the total staff consisted of 732 people, of which 96 belonged to the economics staff and 39 to the research staff.⁹

Finally, the huge number of employees working on the national central banks within the ESCB, in total almost 48,000 employees (based on 1999 data), is striking. The US Federal Reserve System performs similar tasks with almost half the personnel, namely 25,000 employees (based on 1996 data). It is evident that some trimming down of the national central banks, especially the *Deutsche Bundesbank* with its almost 16,000 employees (based on 1998 data) and the *Banque de France* with roughly 17,000 employees (estimation) is unavoidable. Figure 2 shows the number of staff of the Directorate (*Direktorium*) of the German Bundesbank in Frankfurt-am-Main during the period 1991–99 (data were not available for 1990). In total there were 2606 employees working at the Directorate in 1999.

But Southern-European central banks, like the *Banca d'Italia* with totally more than 8700 employees and the *Banco de España* with almost 3200 employees, could also use some streamlining. As shown in Figures 3 and 4, the total number of employees has been relatively constant during the period 1990–99. This holds too for the economics (and research) staff of these central banks.

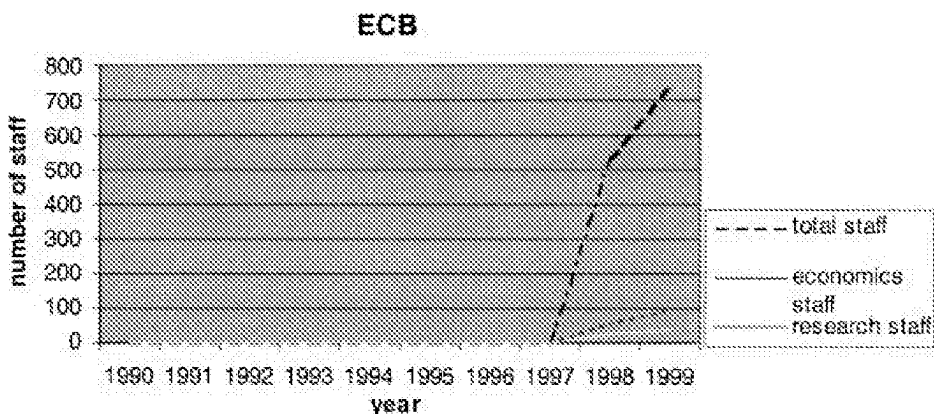


Figure 1. Total, economics and research staff of the European Central Bank.

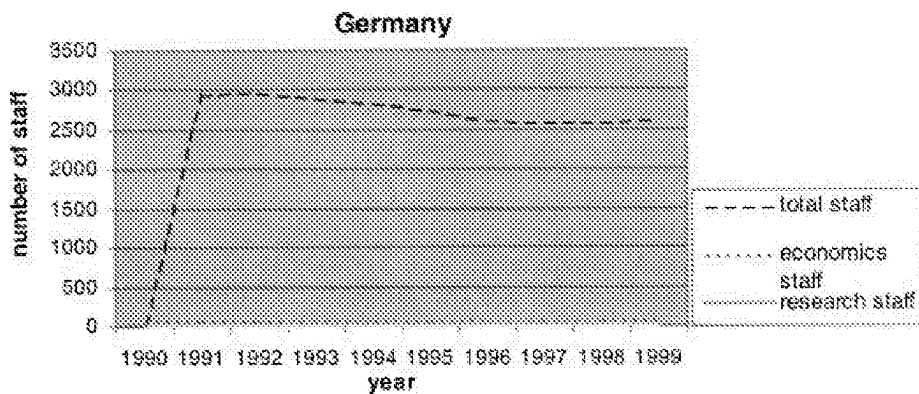


Figure 2. Total economics and research staff of the Deutsche Bundesbank (Directorate).



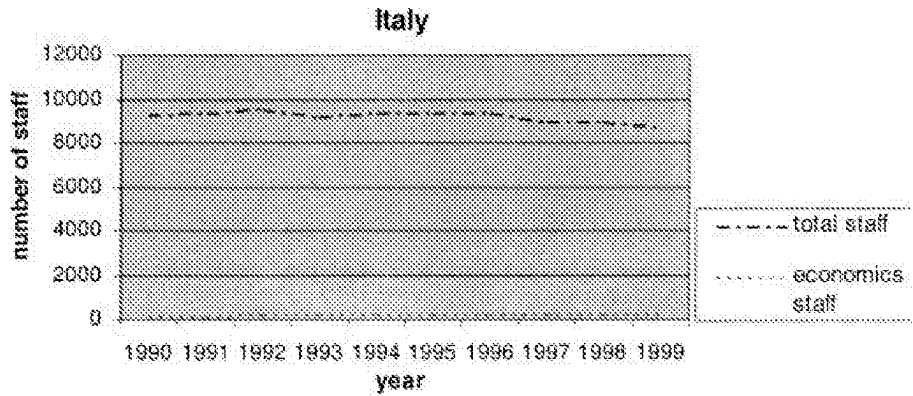


Figure 3. Total and economics staff of the Banca d'Italia.

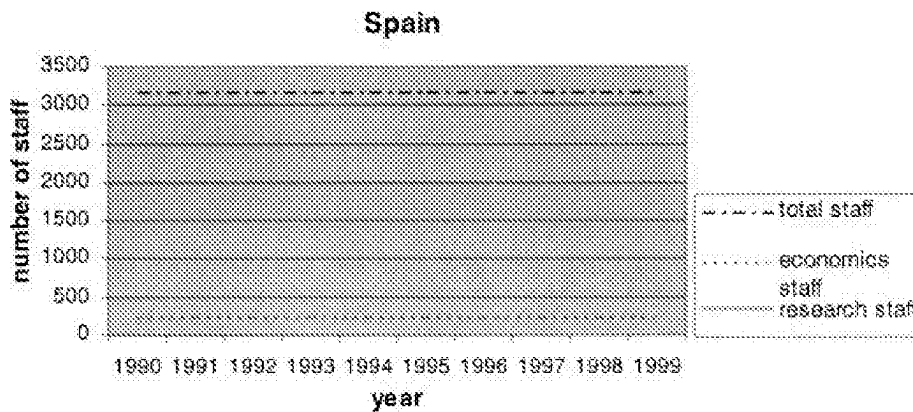


Figure 4. Total, economics and research staff of the Banco de España.

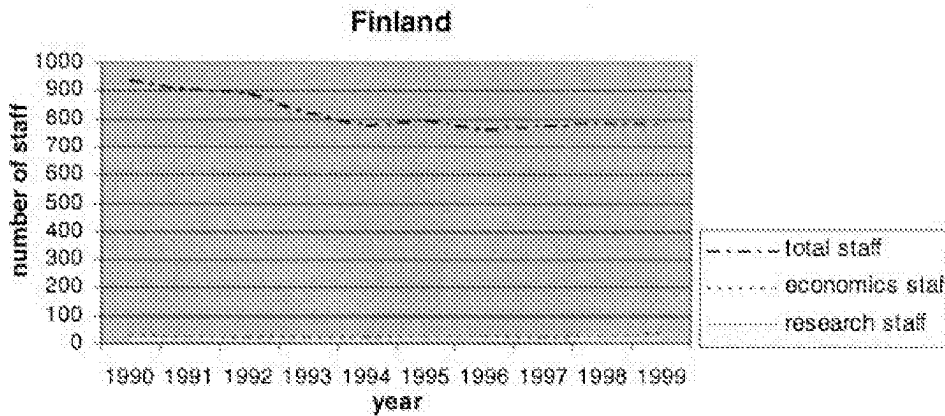


Figure 5. Total, economics and research staff of the Bank of Finland.

They could follow the example of their Scandinavian sisters, like the Finnish and Swedish central banks with respectively 785 and 466 employees in total. These numbers are given in Figures 5 and 6. In Sweden the total staff is strongly decreasing. In both Sweden and Denmark the proportion of the economics and research staff is increasing.



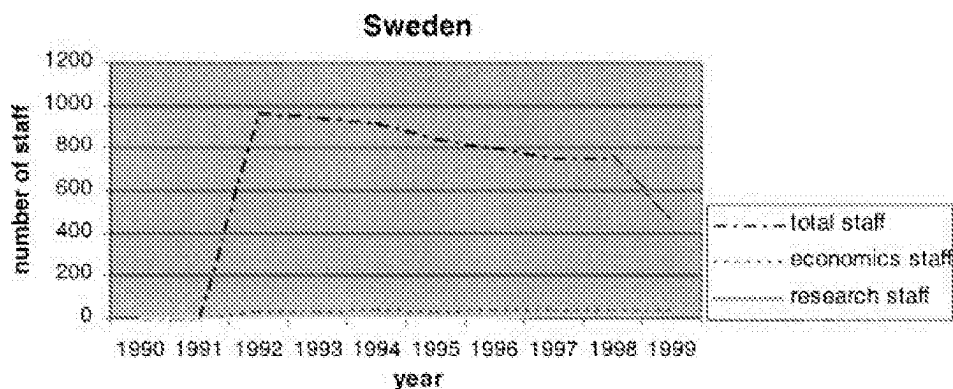


Figure 6. Total, economics and research staff of Sveriges Riksbank.

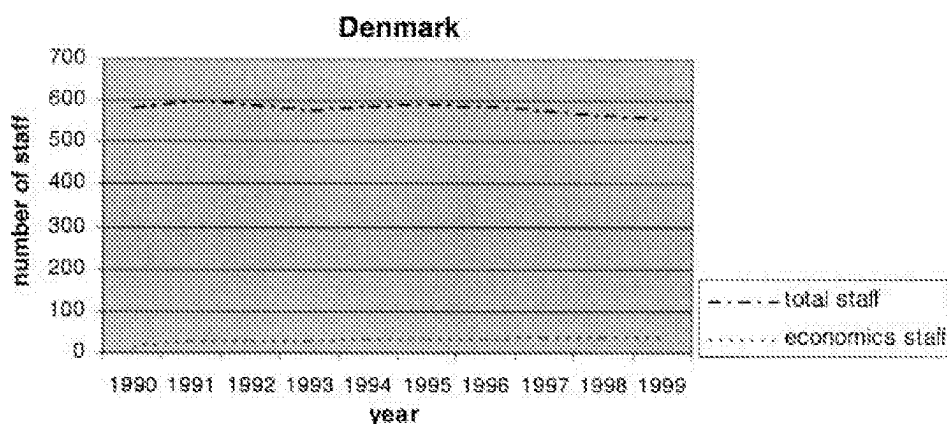


Figure 7. Total and economics staff of Danmarks Nationalbank.

Denmark has totally 556 employees as is shown in Figure 7. During the period 1990–99 one may observe for most central banks a gradual decrease of the total number of employees, while the number of employees at the economics department (and, if it exists, the research department) remains rather stable or sometimes even increases slightly.

For Sweden only data for the period 1992–99 were supplied. It is quite remarkable that the total staffing of *Sveriges Riksbank* has become even smaller than that of the Bank of Finland (*Suomen Pankki*) and *Danmarks Nationalbank*, despite the fact that the Swedish population is roughly the same as the Finnish and Danish population together.

In Portugal both the number of total staff and the number of economics staff decreased in the period 1990–99, as shown in Figure 8. In 1999 the total staff of the *Banco de Portugal* was 1826 and its economics staff 82 persons.

The Irish central bank has no research staff and its economics staff consisted of 27 people in 1999. Figure 9 gives the total number of staff, which has decreased from 651 in 1990 to 578 in 1995 and risen afterwards to 668 in 1999.

The next countries that will be discussed are the three Benelux countries (Belgium, the Netherlands and Luxembourg). The number of employees working at the (very recently established) Central Bank of Luxembourg has grown in the past few years, as one can see in Figure 10. The total staff consists of only 152 people, which makes the Luxembourg central bank the smallest in the EU. Its very new economics

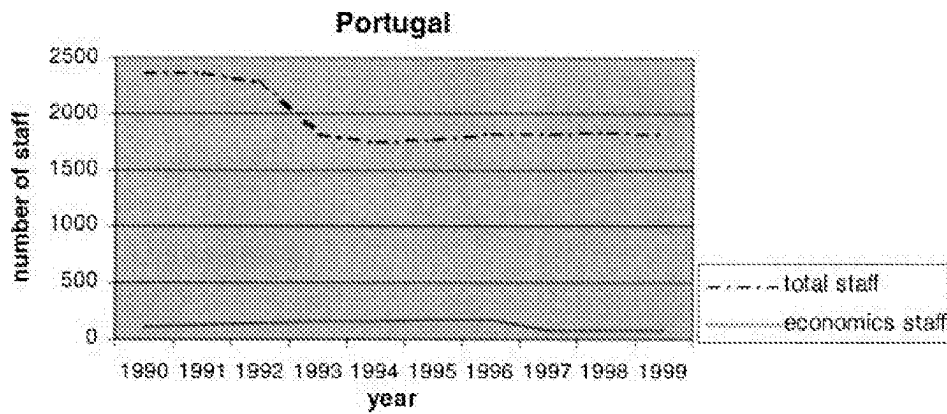


Figure 8. Total and economics staff of the Banco de Portugal.

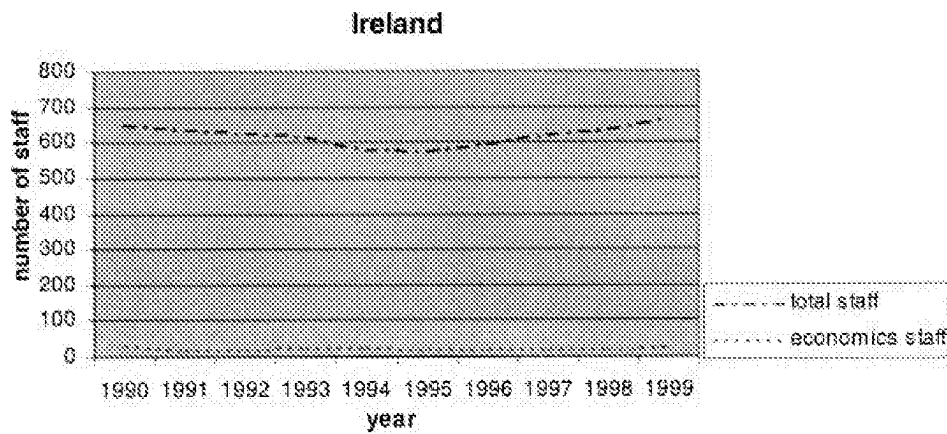


Figure 9. Total and economics staff of the Central Bank of Ireland.

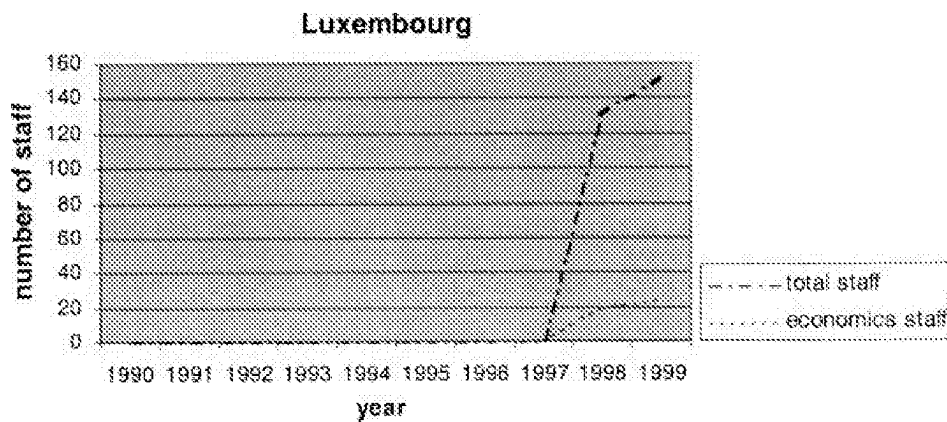


Figure 10. Total and economics staff of the Banque Centrale du Luxembourg.

department has 24 employees and there is, of course, no separate research department. The National Bank of Belgium has also no research department. The total staff of the Belgian central bank has decreased from 2917 employees in 1990 to 2449 in 1999. This is shown in Figure 11.



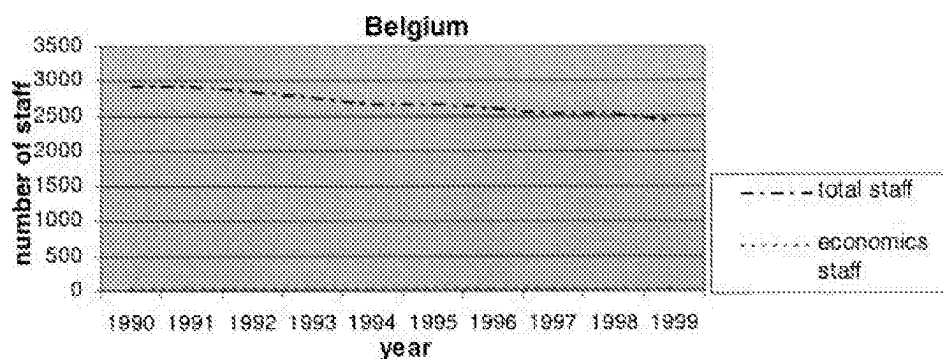


Figure 11. Total and economics staff of the National Bank of Belgium.

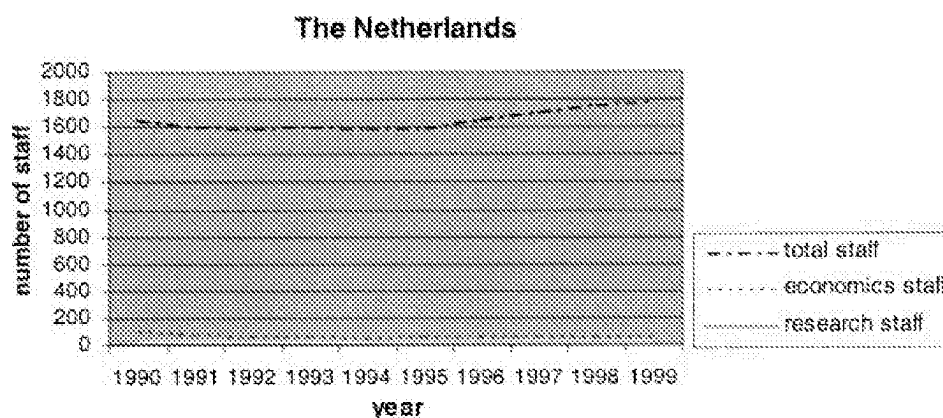


Figure 12. Total, economics and research staff of De Nederlandsche Bank.

In the Netherlands the total staff of the central bank increased from 1660 employees in 1990 to 1748 in 1999. The economics staff decreased and the research staff increased, which can be seen in Figure 12. It should be mentioned that De Nederlandsche Bank is one of the few national central banks (next to the Central Bank of Ireland) with an increasing number of total employees. Since 1995 its total staffing increased by 192 within four years.

As reproduced in Figure 13, one may observe that Greece's total number of employees did not change much during the period 1990–99. The Bank of Greece has, like a lot of smaller EU member states, no research department. Its total staffing was 3216 persons and its economics staff consisted of 131 persons in 1999. This implies that the total number of employees of the Bank of Greece is even larger than that of the Bank of Spain, while the Greek population is almost a quarter of the Spanish population.

The total staffing of the Oesterreichische Nationalbank has decreased by 268 employees from 1223 persons in 1990 to 955 persons in 1999. The Central Bank of Austria has established, next to its economics department, a separate research department, only since 1995, as shown in Figure 14. The number of economics and research staff was respectively 52 and 6 persons in 1999. Very recently, the Oesterreichische Nationalbank reduced its total staffing by the outsourcing of its printing works.¹⁰

The Bank of England has experienced a strong decrease of its total staff from 5140 employees in 1990 to 2663 employees in 1999, but its economics staff has risen. The Bank of England is one of the few larger central banks with no separate research department. This is a deliberate policy of the Bank of England in order to mix research and conjunctural activities in one overall department. The largest economics area within the Bank of England is monetary analysis, with 184 staff of which 83 were economists or econometricians in 1999. These developments are shown in Figure 15.

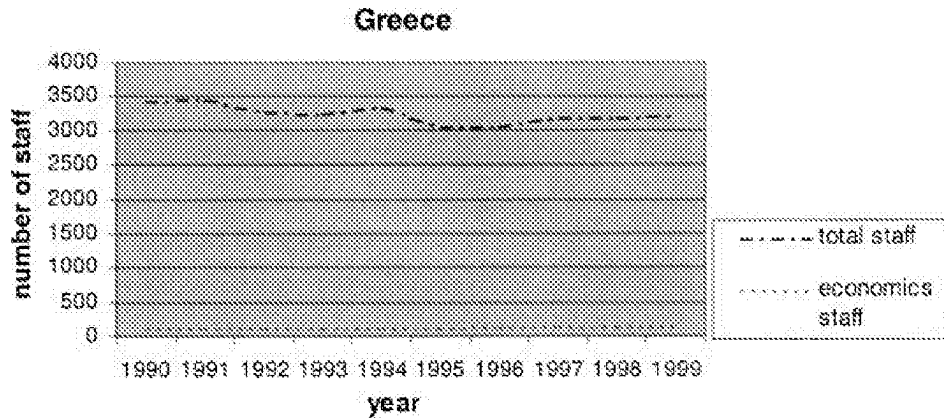


Figure 13. Total and economics staff of the Bank of Greece.

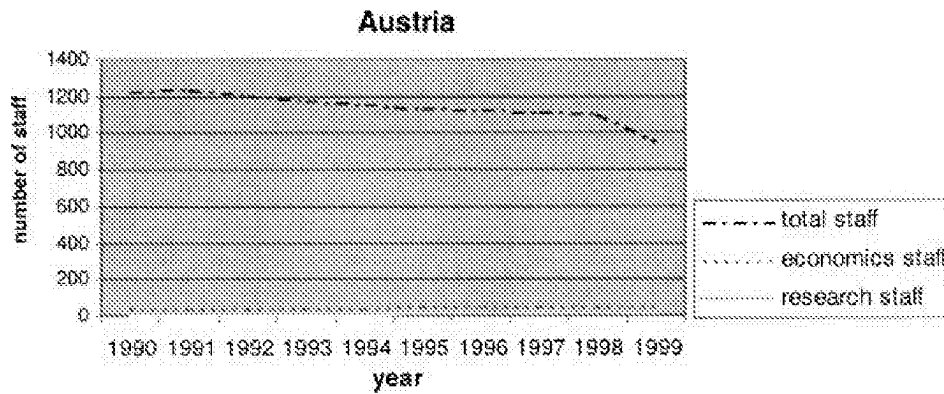


Figure 14. Total, economics and research staff of the Oesterreichische Nationalbank.

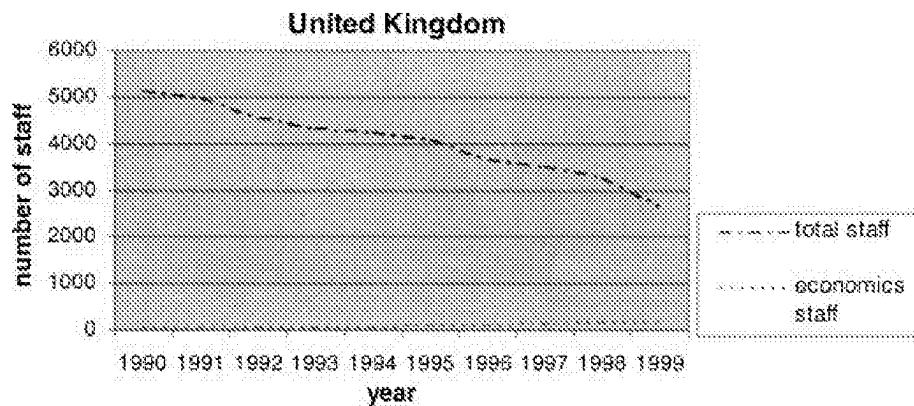


Figure 15. Total and economics staff of the Bank of England.

In Table 2 the most recent ratios (for 1999) of total staff/population, economic staff/population and research staff/population for the national central banks in the EU are given. These staff ratios show large differences both in terms of total staffing and in economic (and research) staffing for central banks



Table 2. The staff ratios of the national central banks in the European Union

	Total staff CB/population	Economic staff CB/population	Research staff CB/population
Belgium	2.50E-04	5.00E-06	0
Germany	3.10E-05	8.65E-07	1.10E-07
Greece	3.02E-04	1.25E-05	0
Spain	8.10E-05	6.09E-06	3.30E-07
France	NA	NA	NA
Ireland	1.69E-04	7.11E-06	0
Italy	1.56E-04	3.96E-06	0
Luxembourg	0	5.56E-05	0
The Netherlands	1.09E-04	3.99E-06	1.77E-06
Austria	1.43E-04	6.42E-06	7.41E-07
Portugal	1.82E-04	8.20E-06	0
Finland	1.51E-04	7.12E-06	3.65E-06
United Kingdom	6.00E-05	3.09E-06	0
Sweden	8.50E-05	5.06E-06	7.87E-07
Denmark	1.10E-04	6.98E-06	0

Source: The ratios are based on the results of the mentioned questionnaire and the World Bank data on population (1999).

performing similar functions as the operational arms of the ESCB.¹¹ The ECB performs different, strategic functions as the Directorate of the ESCB and is, consequently, excluded from this table.

It is clear from Table 2 that especially the central banks of Greece and Belgium have a huge total staff in relation to their population size. The opposite is true for Luxembourg, Germany, the United Kingdom and Sweden. Luxembourg has the highest ratio of economic staff related to population size, while Germany has the lowest. The research staff divided by the population size is the greatest in Finland. In eight of the 15 countries the research staff is zero. These countries are respectively Belgium, Greece, Ireland, Italy, Luxembourg, Portugal, the United Kingdom and Denmark. In these countries the economic staff of the central banks are also conducting research activities and mixing research and conjunctural work.¹² Therefore, it is quite essential to relate the research output of the ECB and the national central banks to the sum of the economic staff and, if existent, the research staff of that central bank.

4. THE RELEVANCE OF RESEARCH ACTIVITIES OF CENTRAL BANKS AND OTHER INSTITUTIONS

Central banks have a number of functions, ranging from formulation and supervision of monetary policy to supervision of financial institutions. A good research department may be instrumental for performing these functions by assisting in formulating monetary policy. Good research is, however, a factor of its own for the reputation and credibility of central banks. Although good research is important, the quantity and quality research of central banks and international financial organizations has not been investigated.

An external committee evaluated the research activities of the International Monetary Fund (IMF) and concluded that, although the Fund produces some excellent research products, there was substantial room for improvement in the overall quality of the Fund's research (see IMF, 2000). Furthermore, the mix of research and the link between some of the Fund's research were not optimal. These conclusions were based on an in-depth evaluation of research output of the various departments of the Fund.

Like the IMF, most central banks engage in research activities. There are good reasons why they should. For one thing, central bank governing councils require information and interpretations of economic situations on which to base their policy decisions. This type of research is mainly policy analysis. However,

other types of research can also be helpful—or even essential—for a central bank. As the external examiners of the IMF put it: ‘Any organisation that relies on old ways of doing things in a changing world will eventually cease to be relevant. There is much still to learn in the field of economic policymaking, and [a central bank] must continue to learn and update its thinking’ (IMF, 2000, p. 16). This does not imply that a central bank should try to produce all the research that is relevant for its needs. Certain areas of research are better left to academia. Still, there are many good reasons why in-house research is essential for a central bank (see also IMF, 2000): (1) staff interested in doing research need to be given the opportunity to conduct research so that a central bank can hire and retain the best economic minds; (2) research is more easily drawn into the process of policymaking when the same people that do research are also involved in the policymaking process of the central bank; (3) staff can gain an in-depth intuition from conducting their own research that can be called upon to help in the policy design process; (4) successful in-house research can independently help enhance the credibility and reputation of the central bank.¹³

From the perspective of a regional central bank in a decentralized system of central banks—like the European System of Central Banks—there are additional considerations (see Goodfriend, 1999; Angeloni, 1999).¹⁴ The diversification of research within a system of central banks brings a variety of analytical perspectives to policy deliberations that are invaluable in an increasingly complex economy.¹⁵ Moreover, a system of regional banks harnesses competitive forces to encourage innovative thinking within the central bank.

The remainder of this paper will provide an evaluation of the quantity and quality of the research activities of the central banks of the member countries of the EU. Quality of research has various dimensions. Research at the central bank can be considered of high quality when it proves to be useful in developing and executing policies of the central bank. This aspect of quality is difficult for outsiders to analyse. Instead, we focus on another indicator for research quality, i.e. whether the research papers have been published in refereed professional journals. In this paper we report the outcomes of an investigation based on the frequency of publications in international economics journals. The results are based on a survey of European central banks in which various questions related to research were asked.

Section 5 briefly outlines the survey and shows the evolution of the relative size of the research departments for the central banks for which this information is available. In Section 6 we report on research output in the form of absolute and relative numbers of publications in scientific international economic journals.¹⁶

5. THE RELATIVE SIZE OF ECONOMICS AND RESEARCH STAFF OF THE ECB AND NATIONAL CENTRAL BANKS IN THE EUROPEAN UNION

All EU central banks were sent a questionnaire in which we asked questions such as: What is the total number of staff employed by the central bank over the period 1990–99? How many staff are working in the economics and research departments over the period 1990–99? In which scientific journals did your staff publish papers over 1990–99? Many, but not all central banks, were willing and able to answer these questions. The answers to this questionnaire form the input for this and the following section.

Table 3 shows the size of respectively the total staff, the economics and research staff, and the ratio between both for the ECB and the national central banks in the EU. The data refer to the average for 1990–99 or for the period for which data are available. Staff in the economics and research departments are counted together. A few conclusions can be drawn. First, the absolute size of the European central banks varies considerably (see also Vaubel, 1997). Second, the central banks show considerable divergence in terms of the relative size of the economics and research departments. The ECB has, by far, the highest ratio between the economic and research staff and the total staff. This is, of course, a consequence of the fact that the ECB plays a key role in formulating monetary policy, while national central banks in principle only have operational responsibilities, like conducting money market management and foreign exchange

Table 3. The total staff and the economics and research staff, 1990–1999 (averages)

Central bank of:	Total staff	Economics and research staff	Ratio
Austria	1243	50	0.041
Belgium	2695	49	0.018
Denmark	582	33	0.057
Finland	826	45	0.055
France	NA	NA	NA
Germany	2761	69	0.025
Greece	3240	118	0.038
Ireland	621	23	0.037
Italy	9229	212	0.023
Luxembourg	141	22	0.156
Netherlands	1655	95	0.057
Portugal	1966	129	0.067
Spain	3175	253	0.080
Sweden	807	42	0.056
UK	4050	116	0.031
ECB	633	110	0.172

Note: Data for Luxembourg and the ECB refer to 1998–99, data for Sweden refer to 1992–99. For Portugal the data until 1996 include statistics staff.

Source: Eijffinger *et al.* (2002).

interventions, and research activities to feed their Governor or President in the Governing Council. Some national central banks have other responsibilities too, such as supervision of the financial system. Of the national central banks, the central banks of Spain and Portugal have the highest ratio between economics and research staff and total staff, followed by the central banks of Denmark, the Netherlands, Sweden and Finland. The central banks of Belgium, Germany and Italy have the lowest ratio.

From Figures 1 to 15 we have seen that some central banks increased the relative size of their economics and research staff considerably (notably Sweden and the UK), while others show a more modest increase (Austria, Denmark, Finland, Germany and Greece). Portugal shows a decrease in the relative number of economics staff, which is, however, due to the fact that the figures for 1990 up to 1996 include statistics staff. The Netherlands shows a small but steady decline, while in Belgium, Ireland and Italy the relative size of the economics staff engaged in research remained more or less constant. The figures for the Spanish central bank suggest that both the economics and research staff and the total staff remained the same during the 1990s.

6. THE RESEARCH OUTPUT OF EUROPEAN CENTRAL BANKS

In this section we look at the research output of the European central banks for the period 1990–99. As pointed out in the introduction, we measure quality by counting the number of scientific journal publications per employee. Measuring output per employee seems natural as the size of the various central banks differs a lot. As there exist considerable quality differences between scientific journals, we apply a weighting scheme. We ranked the selected international journals into three classes: top journal, very good journal and good journal (see Appendix B in Eijffinger *et al.*, for further details).¹⁷ A top publication delivers three points, a very good publication two points and a good publication one point. We calculated the research output per employee by multiplying the number of journal articles by the respective scores for the journal (either 3, 2 or 1) and dividing the resulting sum by the number of employees. The resulting research output per employee is shown in Table 4.

From Table 4 it becomes clear that the Bank of Finland (*Suomen Pankki*) has the best research performance of European central banks, closely followed by the Dutch central bank. The Finnish central

Table 4. The weighted journal publications per employee of European central banks (including the ECB) for the period 1990–1999

Central bank of:	Total number of journal publications	Quality-weighted number of articles	Quality-weighted number of articles per economics and research staff
Austria	14	17	0.34
Belgium	7	9	0.19
Denmark	3	5	0.15
Finland	20	35	0.78
France	NA	NA	NA
Germany	NA	NA	NA
Greece	NA	NA	NA
Ireland	3	4	0.17
Italy	7	19	0.09
Luxembourg	NA	NA	NA
Netherlands	49	68	0.72
Portugal	31	50	0.39
Spain	29	51	0.20
Sweden	5	12	0.24
UK	8	14	0.08
ECB (1994–99)	29	50	0.45
ECB (1998–99)	13	23	0.21

Notes: Figures for UK and Sweden refer to 1998–99. Figures for the ECB refer to 1994–99 or 1998–99. In the first case the publications of the ECB research staff during 1994–97 (during their previous professional life) were also counted.

Source: Eijffinger *et al.* (2002).

bank has a very active research department with a relatively small staff, which not only publishes in international (top) journals but also on a regular basis organizes high level conferences with international research networks such as the National Bureau of Economic Research (NBER) and the Centre of Economic Policy Research (CEPR). Apparently it pays off to have a clear strategy with respect to research. The second place goes to De Nederlandsche Bank. This primarily reflects the strong performance of its research department. This part of the bank has a strong tradition in applied econometric research and macroeconomic modelling. The third place is occupied by the Banco de Portugal, while the fourth place is for the Oesterreichische Nationalbank, which has built a niche with its research focus on Central and Eastern European countries. The fifth place is for the Swedish central bank, while the sixth place goes to the ECB in Frankfurt. However, when we also take the output over the period 1995–98 into account, the ECB occupies the third place, before the Austrian and Portuguese central banks. This is a remarkable achievement. It is clear that the ECB invests a lot in attracting internationally reputed academics, especially for its Directorate-General Research but also for its Directorate-General Economics.

Is there a relationship between the relative priority that a central bank gives to research (i.e. the input) and the quality of research as measured by scientific publications (i.e. the output)? Table 5 shows the rankings of the various central banks for which we have information on both input (relative size of the economics and research department) and output (quality-weighted number of publications per employee). It follows that there is only a weak relationship between input in terms of relative size of economics and research staff and output in terms of international scientific publications.¹⁸ Apparently, if you do not have as a central bank the argument of strength, you need to have the strength of argument. In other words, other factors than the relative size of the economics and research departments determine the quality of the research output of central banks. It is quite remarkable that central banks of small countries (in terms of inhabitants) have such a relatively good research performance.¹⁹ Possibly, there is an incentive for them to increase their weight in the decision-making process through a reputation of high-quality research. An alternative factor that comes to mind is these central banks' general attitude towards openness and, hence, interaction with the national and international academic world.

Table 5. Rankings of relative size and quality-weighted research output ratios

Central bank of:	Ranking relative size of economics and research departments (input)	Ranking quality-weighted number of articles per economics and research staff (output)
Austria	8	4
Belgium	12	8
Denmark	5	10
Finland	7	1
Ireland	9	9
Italy	11	11
Netherlands	4	2
Portugal	3	3
Spain	2	7
Sweden	6	5
UK	10	12
ECB (1998–99)	1	6

Source: Eijffinger et al. (2002).

7. CONCLUSIONS

In this paper we have analysed the ESCB as a federal central bank system. First, the degree of decentralization of the ESCB has been briefly compared with its predecessor, the Deutsche Bundesbank, and its counterweight in the US, the Federal Reserve System. Moreover, the development during the period 1990–99 of the total, economics and research staffing of the ECB and the national central banks in the EU is investigated and also the staff ratios of the national central banks in 1999. Furthermore, the research activities of the central banks in the European Union over the period 1990–99 are analysed both in terms of input (economics and research staff) and output (quality-weighted number of articles in scientific journals). The share of economics research staff in total staff of the national central banks varies between 0.02 and 0.17. The ECB has the highest ratio between economists and researchers and other staff. A ranking of research performance based on the quality-weighted number of scientific articles per economics and research employee reveals that the Bank of Finland has the best research performance of European central banks, followed by De Nederlandsche Bank, the Banco de Portugal and the Oesterreichische Nationalbank. There is only a weak relationship between the research performance and the share of research staff. The conclusion 'small is beautiful' also seems to hold for the economics and research departments of the European central banks. Again, if you do not have as a small national central bank the argument of strength, you need to have the strength of argument.

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NOTES

1. In addition there is a General Council that consists of the Executive Board and the Governors and Presidents of all the 15 EU countries. When all the EU member states participate in the euro, then the ESCB and the Eurosystem, respectively the General Council and the Governing Council, will converge. See also Eijffinger and De Haan (2000).

2. See: *The Economist*, Euro Towers or Fawty Towers?, 31 October 1998.
3. Very recently, the Deutsche Bundestag (parliament) has proposed a complete reorganization of the Zentralbankrat of the Bundesbank to totally eight members of which the President, Vice-President and two other members will be appointed by the Federal Government and four members on recommendation of the Bundesrat (senate) after consulting the Federal Government. See: Kissler and Preuschoff (2002).
4. For a description of the development of the political and institutional independence of the Federal Reserve System, see Akhtar and Howe (1991). These authors demonstrate that the Federal Reserve System had in the 1930s a more decentralized monetary policy decision-making, which was responsible for its weakened position as monetary policymaker. The experience of the 1930s resulted in a more centralized decision-making process within the Federal Reserve System.
5. According to De Haan *et al.* (2002), the decision-making process of the ESCB is too decentralized in case of diverging economies and preferences. For the euro area countries they find that, despite convergence, important differences in terms of economic performance and preferences remain. As all national central banks have one vote within the Governing Council, there is a risk that national considerations may prevail over euro-wide considerations.
6. The GDP per vote in the Governing Council of the ECB differs from 14 billion euro for Luxembourg to 933 billion euro for Germany. The Netherlands with the ECB President and the President of De Nederlandsche Bank has a favourable position with a GDP of 160 billion euro per vote (based on OECD data from 1997).
7. See Hochreiter (2000) about the *de jure* empowerment of small EU countries (e.g. Austria and the Netherlands), which have pegged to the Deutsche mark before January 1, 1999.
8. For a detailed, yet not entirely objective argumentation, see Angeloni (1999).
9. However, it should be mentioned that the ECB is expanding pretty fast in terms of total staffing and economics and research staffing. The most recent data (based on the beginning of 2002) are 149 employees at the Directorate-General Economics and 50 employees at the Directorate-General Research (including secretaries, research analysts and economist statisticians).
10. Therefore, the total staffing of the Austrian National Bank continued to decrease further in 2000 (954 employees) and 2001 (943 employees).
11. It should be mentioned that some national central banks, like De Nederlandsche Bank, are also responsible for banking supervision, which function adds to their total staffing.
12. For most central banks the reason to combine research and conjunctural activities is related to their relatively small size. For some central banks, such as the Bank of England, it is a matter of policy not to have a separate research department.
13. Until the 1960s the research activities within the US Federal Reserve System (Board of Governors and regional Federal Reserve Banks) were poor. In the 1960s the Federal Reserve Bank of St. Louis started to develop research activities (e.g. the *St. Louis equation*) by hiring young, bright economists. Soon after, the Board of Governors and other Federal Reserve Banks also felt the need to develop research activities to influence FOMC policymaking. I am grateful to Jürgen von Hagen for making this point.
14. For a detailed comparison of the ESCB with the Federal Reserve System, see Fase and Vanthoor (2000).
15. As Goodfriend (1999) points out, within the US Federal Reserve System research departments of reserve banks often develop a specialization. A reserve bank president may encourage research of one type or another; or a particular economist may make a department strong in a particular sort of research. A bank may also exploit a feature of its regional economy or its operational responsibilities to develop a research advantage.
16. These sections are heavily based on Eijffinger *et al.* (2002).
17. Of course, not all international journals can be considered to be top, very good or good journals. These other journals are mostly national-oriented journals or journals that are not refereed according to an objective refereeing process. The list of the Association of Cooperating Dutch Universities (VSNU), which is used for measuring research output and allocating research funds among and within Dutch universities, is used as a basis for selecting top (A), very good (B) and good (C) journals.
18. This outcome seems in line with the theory of bureaucracy that predicts larger bureaucratic structures will be less effective per person in producing output. See Niskanen (1971).
19. After we had finished our research we also received information on the scientific publications of the Swiss central bank, the Schweizerische Nationalbank, which confirms this conclusion.

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