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Do ECB Council Decisions represent always a Real Euro Consensus?

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ABSTRACT

Since January 1999, according to the law, the common monetary policy for all the Economic and Monetary Union (EMU) Member States should be decided by simple majority in the Governing Council (GC) of the European Central Bank (ECB), regarding the Euro area aggregate conditions. Notwithstanding, no formal vote has been taken until today and a consensus solution has been the officially announced practical rule, hiding different points of view fuelled by national divergences that might exist within Euro area.
Assuming that EMU national central bankers take into account national perspectives from their home countries when they vote interest rate decisions in the GC, we try to find whether there have been favourable conditions for the emergence of voting coalitions among them. In order to accomplish that purpose, for every month since January 1999 until August 2003, we applied cluster analysis techniques to national stances before GC meetings, which we describe using three variables. We found high stability in the identified cluster structure, particularly since August 2001, favouring the emergence of alliances between national interests. In spite of that, it is likely that the strong strategic position enjoyed by the Executive Board of the ECB has been sufficient to *a priori* defeat any coalitions of opposing proposals on the monetary policy for the Euro-area, situation that will change with EMU enlargement.

Keywords: Monetary Policy, European Central Bank, Desired Interest Rate, Cluster Analysis.

JEL Codes: C80, E40, E52

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1 – INTRODUCTION

Since January 1999, the common monetary policy for all the Economic and Monetary Union (EMU) Member States is decided by the Governing Council (GC) of the European Central Bank (ECB), which comprises the six members of the Executive Board (EB) of the ECB and the national central bank governors of the (currently) twelve EMU Member States.

According to the Statutes of the European System of Central Banks (ESCB) and of the ECB, monetary policy decisions should be taken by vote considering only the aggregated Euro area conditions, and regarding the principle 'one person, one vote'. Notwithstanding, believing in ECB official announcements, no formal vote has been taken until today and a consensus solution has been the officially announced practical decision rule, hiding national divergences and possible discussions that might exist, although not publicly expressed because the meeting minutes are not provided.

In this paper, we assume that each national central banker does not forget the conditions of his own country when he takes part of the dialogue in GC meetings, despite enjoying independence from national political authorities. In particular, we assume that each national central banker's *a priori* stance at each GC meeting depends on three cross-country heterogeneous variables: desired (ideal) interest rates, inflation aversion, and unemployment rate[1]. In this context, we try to find whether GC decisions reflected solutions of truthful consensus or simply the outcome of an informal voting process that explicitly did not take place due to its likely results. We carry out this main purpose in four steps. The first one is to analyse in what extent there are reasons to think about different national interests in EMU. Secondly, considering a month-by-month analysis, during the first four years and eight months of activity of the ECB, we try to identify groups of countries with similar interests, applying cluster analysis statistical methods. In third place, we examine whether those differences and similarities have been stable or not. By other words, we intend to answer the question whether national central bankers have shared similar stances always with the same colleagues or not at GC meetings. That stability is important as we want to know whether there have been favourable conditions for the formation of alliances (or coalitions) between national

[1] Below, we explain why we have chosen these variables.

central bankers, determined to affect monetary policy decisions. Finally, being identified any stable structure in national differences, we plan to investigate whether that could have affected EMU monetary policy decisions.

This paper is organized into four sections, and two appendices, besides references section. The next section reviews the literature, describes three sources of heterogeneities between EMU Member States, and explains how those sources are taken into account by national central bankers in the GC meetings. In the third section, we present the empirical work, defining each used variable, providing and discussing the results of the cluster analysis. The fourth section concludes.

2 – DIVERGENT NATIONAL INTERESTS IN THE EMU

2.1 – Economic sources of heterogeneities in the EMU

The decision to have a single currency and a common monetary policy in the EMU led to the creation of the ESCB and the ECB, which is the monetary policymaker for the Euro-area. According to the ESCB and ECB Statutes, EMU monetary policy should consider the Euro-area-wide economic conditions, and not each particular national situation. However, at present, we observe twelve national realities and find some divergent aspects that easily might challenge the idea of Issing that monetary policy "must fit all" [2]. This context may motivate the emergence of conflicts of interest about monetary policy decisions, hard to uncover because the ECB does not reveal the minutes of its GC meetings.

The Statutes lay down the principle that each national central bank governor has to be independent from national governments and from other public authorities. In spite of it, one cannot put apart the national-bias hypothesis according to which each national central bank governor is relatively sensitive to realities of his own country of origin, especially when he feels a relevant divergence between national conditions (and the subsequent reasonable monetary policy for his or her country of origin) and Euro-area-wide conditions[3]. Dornbusch, et al. (1998) considered reasonable to assume that

[2] "Since monetary policy is indivisible, one size must fit all" (Issing, 2001, p. 450).

[3] On the ground of their nomination process, we do not assume that the six officials of the ECB's Executive Board consider national interests; they rather regard the Euro-area-wide concerns.

national central bank governors might respond to national conditions and worries[4]. Berger and De Haan (2002) and De Haan, et al. (2002) argued that it is possible that those national worries dominate European motives[5].

Heinemann and Hüfner (2002) found that, between 1999 and the end of 2001, the members of the ECB's GC considered the national divergences relatively to the Euro-wide conditions in their monetary policy decisions. In a similar framework, but applied to the U.S. Federal Reserve System, Gildea (1992) and Knott (1986), focusing on the Federal Open Market Committee (FOMC) meetings where the votes had been no unanimous between 1960 and 1987, showed that Federal Reserve Bank presidents voted as regional delegates, as their preferences tended to reflect the regional, industrial and commercial interests.

In the same context, Meade and Sheets (2002) concluded that the votes of the members of the FOMC, from 1978 to 2000, revealed a regional bias – it seems that their monetary policy decisions took into account the development of regional unemployment levels. In the same work, these two authors argued that, between 1999 and 2001, the monetary policy decisions of the ECB's GC were not inconsistent with their regional bias hypothesis[6].

The European Union (EU) (and the EMU) is not a natural union of States. It results from an effort to join different political, social and economic traditions, realities and practices. In the EMU, at least three important differences between Member States might imply divergent national desired or ideal monetary policies. In the first place, having experienced dissimilar historical evolutions, Member States show different economic policy preferences, which would imply diverse economic policy measures. In this context, even though price stability had been accepted as the primary objective of monetary policy, several differences remain between the countries, e.g., regarding social aversion to inflation (see, e.g., Lippi and Swank, 1999; Hayo, 1998; and Scheve, 2004).

Secondly, the existence of asymmetries in the transmission mechanisms of monetary policy implies that the same policy should have heterogeneous effects across Member

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[4] It seems that Alesina and Grilli (1991) suggested the same thing when they said that in the ECB organization scheme, each country would have the opportunity to participate and influence the policy choice through its own central bank governor.

[5] For a study about the effects of the persistence of national perspectives on the GC, see Grüner (1999).

[6] In the ECB case, Meade and Sheets (2002) performed an experiment inspired in their empirical results for the FOMC. They found that, in nearly every occasion of monetary policy change, the majority of GC members voted for a change in policy that can be justified in terms of the differential between their national inflation rate and the Euro-area average.

States. According to some authors (e.g., Clausen, 2001, and Clements et al., 2001), the EMU would lessen those asymmetries. Notwithstanding, this question is of utmost importance, justifying the large number of recent research works on the subject[7]. Generally, those studies only consider the three or four most important EMU countries, and apply econometric techniques to pre-EMU data. In spite of not presenting identical conclusions, they reveal some noteworthy cross-country heterogeneity in what respects to monetary policy transmission mechanisms.

Finally, the state of the economy is not the same across all the EMU countries[8]. In this context, Björkstén and Syrjänen (1999) showed that, despite the European Union (EU) had converged economically between 1992 and 1997, since then structural and cyclical divergences were identified, emphasizing the importance of fiscal policy (though legally limited by the Growth and Stability Pact). On the contrary, Artis, et al. (1999) argued that coordination of the business cycles had increased across most of the EU countries[9]. In agreement with them, Agresti and Mojon (2001) found coincident business cycles in most of the European countries (except for the cases of Finland, Greece and Portugal). Nevertheless and unfortunately, they also found differences between the Euro-area as a whole and each Member state regarding some variables that affect the relationship between the inflation and the output.

2.2 – Individual *a priori* stance in the meetings of the Governing Council

In the preceding section, we summarize some sources of economic divergences across EMU Member States that might justify different stances by national central bank governors, even though not officially, when they meet to decide monetary policy. As mentioned above, we assume that each national central bank governor is sensitive to his own country's interests, taking into account regional economic developments and preferences of national society, even though he cannot receive instructions from the

[7] At countries level: Barran, et al. (1996), Britton and Whitley (1997), Ramaswamy and Sloek (1997), Dornbusch, et al. (1998), Ehrmann (1998), Peersman and Smets (1999), Gros and Hefeker (2000), Guiso, et al. (2000), Agresti and Mojon (2001), Clements, et al. (2001), Mihov (2001), van Els, et al. (2001), Mojon and Peersman (2001), Angeloni, et al. (2002), Ciccarelli and Rebucci (2002), Clausen and Hayo (2002), Gros and Hefeker (2002), and Peersman (2002). At regional level: Arnold (1999). Finally, the ECB, in its own interest, organized a Conference on the transmission of monetary policy in the Euro Area, in December 2001.

[8] The website "Euro Area Business Cycle Network" (€ABCN) provides updated information about the business cycles in the Euroland (cf. http://www.eabcn.org).

[9] Using a sample of nine EU countries (Austria, Belgium, France, Germany, Italy, Netherlands, Portugal, Spain and UK), and the USA, they presented evidence suggesting a common business cycle in Europe.

Government of his country[10]. In particular, we consider that before a GC meeting, each national central bank governor builds his own *a priori* stance about the best monetary policy decision, which for him, should consist in what is better for his country[11].

At the GC meeting, the *a priori* stance of a national central bank governor can change, when he takes notice of the *a priori* stances of the other GC national members[12]. The probability of change of his mind depends on the distance between his stance and the others'[13]. When all the national central bankers behave in this way, they could be building alliances or coalitions of interests. If interests are relatively dissimilar, the abovementioned probability will be small, and the conditions to build alliances will be weak. On the other hand, if we observe high and stable similarity between positions, which empirically means the identification of some stability in the structure of each cluster of countries, we will be observing favourable conditions for the emergence of coalitions. Notwithstanding, we are aware that the presence of similar positions is not *per se* a sufficient condition for the formation of alliances. In order to be formed, coalitions must also be likely winning coalitions; if this is not the case, members do not have incentives to accept taking part of a (loose) coalition.

In the next sections, we present the variables that were taken into account to describe the *a priori* position of each national central banker in GC meetings, and the results of the performed cluster analysis.

3 – EMPIRICAL EVIDENCE

To accomplish our purposes, we focused our analysis on the twelve countries whose national central bankers hold a seat at the ECB's GC meetings. In order to have a picture of each country every month, since January 1999 until August 2003 (56 months), which would had had influenced the *a priori* stance of each national central

[10] In reality, in this assumption, it is only necessary to consider that national central bankers are influenced by their countries' conditions to a greater extent than the Executive Board members.

[11] Mangano (1999) postulating the *a priori* formation of voting coalitions and using standard measures of voting power, tried to quantify the relative influence of individual members of EMU on monetary policy decisions.

[12] This our assumption of dynamic change of individual stances at ECB breaks with traditional spatial coalition formation theories, and accompanies 'Dynamic Spatial Coalition Formation Theory' (see, e.g., de Ridder and van Deemen, 2004).

[13] In the empirical work presented in this paper, this distance was measured by the (squared) Euclidean distance between the position of a national central banker (defined by the values of three attributes explained below) and each others' positions (see section 3).

bank governor before the GC meetings, we took into account three variables: national desired interest rate, unemployment rate, and inflation aversion of the society. While the first two change month by month, the latter is constant across our sample, as it represents something more structural in national motivations.

Artis and Zhang (1998 and 2002), using the same statistical methods but different variables from ours, tried to find whether, in the light of traditional theory of optimal currency areas criteria, the prospective (in 1998) EMU appeared to be a homogeneous group of countries. They found three groups in EMU: a core group revolving around Germany, which comprises Austria, Belgium, France and Netherlands, and two peripheral groups – a "Northern group" containing the Scandinavian countries together with the UK and Ireland, and a "Southern group" containing Greece, Italy, Portugal and Spain.

3.1 – Variables

3.1.1 – DESIRED INTEREST RATES

In this paper, the first considered variable is the "desired interest rate" for each country, which consists in the ideal monetary policymaker's response to output gap and inflation. We take for granted that, before the GC meeting each national central bank governor computes the current desired interest rate (i_t^*) for his own country, following a very simple smoothing version of Taylor (1993) rule like equation (1) [14]:

$$i_t^* = \rho \cdot i_{t-1}^* + (1-\rho) \cdot i_{TAYLOR} \qquad (1)$$

where

$$i_{TAYLOR} = r^* + \pi_t + \alpha \cdot (\pi_t - \pi^*) + \beta \cdot x_t \qquad (2)$$

According to Taylor (1993), one of the inputs to central bank decision-making consists in an interest rate (i_{TAYLOR}), computed as a reaction to deviations of contemporaneous inflation rate (π_t) from an inflation target (π^*), and to output gap (x_t) (deviation of

[14] Despite some criticisms pointed to the Taylor rule (e.g., Svensson, 2003), we use it in this paper in order not to make monetary policy or to extract prospective conclusions, but only with the purpose to compute which should have been the most suitable interest rate for each EMU Member State and for the whole Euro-area (11/12 countries). We have chosen this rule because, according to the literature, simpler rules are more robust than other more complex ones, across a variety of models (Taylor, 1999; Eleftheriou, 2003). Moreover, "Taylor rule captures reasonable well what central banks desire" (De Grauwe, 2003a, p. 113).

real output from its long-run potential level), given the equilibrium long-term real interest rate (r^*) (neutral real interest rate).

We state that the desired interest rate (i_t^*), in month *t*, corresponds to a smoothing description of the Taylor type desired interest rate (equation 2). We consider a smoothing parameter (ρ), in order to include explicitly the idea of optimal monetary policy inertia, to reduce the effects of some data uncertainty (Orphanides, 1998), and to allow a learning process by the monetary policymaker.

Some authors (e.g., Gerdesmeier and Roffia, 2003) argue that we should incorporate a kind of forward-looking behaviour of the policymaker in the rule. However, we do not take into account that suggestion and we rely on Taylor (1999)'s arguments, according to which forward-looking rules depend on current and lagged data, reason to say that inflation forecasts rules are not more forward-looking than rules that explicitly react to current and/or lagged variables.

Following equation (1), we computed desired interest rates, from January 1999 until August 2003, for Euro-area and all the twelve EMU Member States.

We set the weights to inflation and to output gap with the same values as in the original work of Taylor (1993), respectively, $\alpha = 0.5$ and $\beta = 0.5$ [15]. Following some results from the literature[16], we assumed $\rho = 0.9$, $r^* = 2\%$ and $\pi^* = 2\%$ (which coincides with the current inflation value reference of the ECB). These values are equal for all the countries, which mean identical preferences[17].

The output gap (at month *t*) is defined as: $x_t = (real\ GDP_t\ /\ potential\ GDP_t) - 1$. Because real GDP monthly data is not statistically available, we used monthly OECD seasonally adjusted industrial production for all the countries[18]. In order to compute the potential output, we applied the Hodrick-Prescott (1997) filter to that industrial

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[15] Recent research has revealed that these parameters have such estimated values (Alesina, et al., 2001).

[16] Estimated values for the smoothing coefficient revealed that in the case of quarterly data, $0.60 \leq \rho \leq 0.80$, while for monthly data, $\rho = 0.90$.

[17] Even assuming that national governors share similar preferences about inflation and output stabilization, sole the different economic conditions that characterize their countries may be sufficient to lead them to defend different stances on monetary policy in the GC meetings.

[18] As an alternative for the use of the monthly industrial production data, recognizing that monetary policymakers ought to focus on overall GDP and not only in industrial production, we tried to compute monthly real GDP applying a linear interpolation method to seasonally adjusted quarterly real GDP data, following Eleftheriou (2003). Apart an higher smoothing of the values, we did not find better results with this transformed data than with the original monthly seasonally adjusted index of industrial production. Therefore, we rely in the latter data.

production data (January 1980 – August 2003)[19]. The inflation rate in month *t* is defined as: $\pi_t = (HICP_t / HICP_{t-12}) - 1$.

The computed desired interest rates are in Appendix 1. In the Figure 1.1, we also represent the behaviour of the ECB's main refinancing rate[20]. It is worth to mention the outlier performance of two countries – Ireland especially from the third quarter of 2000 onwards, and Greece, before join the EMU group (January 2001). If we exclude both countries from the analysis, we will find a close behaviour of desired interest rates, roughly describing a fluctuations tunnel. However, within that tunnel, important differences remained between the countries.

We may register that, since the first quarter of 2001 and regarding only their desired interest rates, Netherlands, Portugal, Greece, Ireland, and less evidently, Spain, tend to diverge from the other countries and from what has been the ECB's decided interest rate[21].

3.1.2 – UNEMPLOYMENT RATE

In this exercise, we assume that the unemployment rate of each country has a role to play in the definition of the *a priori* stance of each national central banker before the GC meetings, especially due to two reasons. In the first place, it is different across EMU countries, being used as a differentiation variable between them. In second place and more importantly, it represents one of the most important concerns of European citizens. According to Eurobarometer, a European public opinion survey report, the problem of unemployment is at the top of the list of the most cited European Union priorities. During the period of our sample, when asked to mention the most important problems faced by their countries, around 42% of the polled European citizens answered "unemployment", with crime in second place. And nine out of ten of them

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[19] The results are available from the author on request. We performed HP filter, using EVIEWS software (version 3.1), with a smoothing parameter $\lambda = 14400$ for monthly data, as suggested by Hodrick and Prescott (1997). Nevertheless, it is worth noting the careful that should be put in the estimation of the output gap (e.g., Kozicki, 1999 and Smets, 1998).

[20] Before June 8th 2000, it was called "*rate on main refinancing operations*". In that date, as a response to the high overbidding that had developed in the context of the *fixed rate tender procedure*, the ECB's GC decided that, onwards, the main financing operations would be conducted as *variable rate tenders*, applying the multiples rate auction procedure. From that date, the GC in its meetings takes decisions on the "*minimum bid rate*" for the main refinancing operations.

[21] As can be seen in Figure 1.1 (Appendix 1), while the Euro-area desired interest rate (as well as the rate decided by the GC) were increasing (until the first quarter of 2001), all of the nationally desired rates moved together. Onwards, some of them begun to diverge.

reported that fighting unemployment should be a European Union priority[22]. Across countries, the fear of rising unemployment and the desire to control it increases with experiences of relatively high unemployment rates.

3.1.3 – INFLATION AVERSION OF THE SOCIETY

The two already described variables change month by month as both illustrate the behaviour of each national economy in each month. The third considered variable – inflation aversion of the society – does not change during our sample. We use this variable with two aims. In first place, when computing the desired interest rates, we assumed equal preferences across all the countries, which is far from reality. Therefore, we consider inflation aversion as a correction in direction of reality. Secondly, we assume that when building his *a priori* stance before GC meetings, each central banker is influenced by his own aversion to inflation, which should reflect the average aversion of his country's society[23].

Several studies have shown cross-country differences in inflation aversion, which is part of the economic culture of a country that stores its historical experience (Hayo, 1998). Germany is the most often-cited example in the literature for its high level of society's inflation aversion, where the people's attitudes reflect high inflation episodes experiences. In fact, as Scheve (2004, p. 5) suggests, "if the proportion of individuals more exposed to the costs of inflation (unemployment) is greater in one country than another, then average inflation aversion in that country can be expected to be higher (lower)".

While not directly measured, researchers have tried essentially three alternative procedures to find relevant information about the aversion to inflation. The first one is to collect directly information in database results of public opinion polls (e.g., Eurobarometer)[24]. The second one consists in the estimation of proxies of inflation aversion as weights in loss functions[25]. The third approach consists in measuring the sensitivity of government popularity to inflation performance[26].

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[22] See Eurobarometer Reports (numbers 51-60).

[23] Alternatively, we could think about the inflation aversion as a proxy to the conservativeness of each national society and, ultimately, of the central banker, as he or she is chosen among national citizens.

[24] See, e.g., Hayo (1998), Scheve (2004), and Di Tella, et. al. (2001).

[25] See, e.g., Lippi and Swank (1999) and Collins and Giavazzi (1993).

[26] Hibbs, et al. (1982).

In this paper, we use the Scheve (2004, p. 15)'s results as a proxy to inflation aversion of each country. Using outputs from Eurobarometers and from the International Social Survey Program (ISSP), Scheve estimated the mean national differences of nineteen countries relative to the United Kingdom, regarding the priority level assigned to inflation by population of each country of the European Union, after having controlled for economic performances in each country[27].

3.2 – Cluster Analysis Results

In order to identify groups of countries whose national central bankers are expected to reveal similar *a priori* positions before GC meetings, we used cluster analysis techniques[28] for eleven EMU Member States from January 1999 until December 2000, and for all the twelve members, Greece already included, from January 2001 onwards.

Cluster analysis encompasses a number of different classification techniques that combine subjects or objects into groups or clusters taking into account their characteristics. Cluster analysis allows the definition of groups such that characteristics in each cluster are similar to each other; and that the characteristics of one group should be different from the characteristics of other groups or clusters[29].

From the above description of the three variables that we used in the cluster analysis, we observe that "desired interest rates" and "unemployment rate" are always monthly variable; the third variable – "social inflation aversion" – has equal values across all the 56 months. Therefore, changes in the composition of identified groups strongly depend on the two first variables.

In the implementation of cluster analysis, we began with a standardization of the data in order to reduce bad effects in the definition of clusters that could be caused by different measurement units[30]. In the exploratory phase, for each month, we tried to find the reasonable number of identifiable clusters, using several hierarchical methods (*single linkage*, *complete linkage*, *unweighted-pair group centroid* and *Ward's method*) to ensure that the results are robust. Finally, we applied the *k-means* non-hierarchical method. We present the results in the Appendix 2 (Table 2.1).

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[27] See Table 1.3, and included explanations.

[28] We implemented cluster analysis in STATISTICA software (version 5.5), and confirmed the robustness of founded classifications using the SPSS software (11.50).

[29] See Sharma (1996) for details about cluster analysis and other applied multivariate techniques.

[30] The standardization of the data consists in transform each X variable into Z, such that: $Z = (X - \mu) / \sigma$, in order to have the three variables equally weighted.

The cluster analysis revealed some interesting points.

During the 56 analysed months we did not find always the same cluster structure: both the number of clusters and their internal structure show some variability across the period. However, regarding the stability of identified groups of national interests, we can split the period into two sub-periods: the first, from January 1999 until July 2001, and the second, from August 2001 until May 2003.

The first sub-period showed some small periods (two to five months) of relatively stability, though broken by some variation in the composition of each cluster. In this first sub-period, the two less unstable clusters were formed by Austria and Luxembourg and by Belgium, Finland and France.

The second sub-period was characterised by an higher stability in the composition of the identified groups of national interests. During those continuous 22 months, only broken one time (November 2001), we identified always the same four clusters: ({Austria, Luxembourg}; {Belgium, Finland, France, Italy}; {Greece, Spain}; {Netherlands, Ireland}) and two isolated countries: Germany and Portugal. In this second sub-period, we observed that while Germany is relatively distant from identified clusters, Portuguese national interests are more close to the interests of two clusters formed by Netherlands and Ireland, and by Austria and Luxembourg, than to other clusters'. This result is a little strange when we take into account the literature that generally classifies Portugal in the Southern periphery of EMU (e.g. Artis and Zhang, 1998 and 2002).

Besides that possible division into two different sub-periods, observing the cluster dynamics across all the 56 months, three remarks are noteworthy. The first remark is about the existence of isolated national interests. We observed that Germany was always an isolated country; it never joined any group of countries. In spite of it, Germany was less distant from the cluster formed by Austria and Luxembourg than from other clusters, especially during the second mentioned sub-period. Portugal was the second more frequently isolated country (44 months).

The second observation is about some sets of countries that showed particular closeness in their national positions. Austria and Luxembourg formed almost always the same group of national interests. They belonged to the same cluster in 41 out of 56 months: from January 1999 until September 1999; from November 2000 until April 2001; and from July 2001 until August 2003. Another group with very similar interests during all the two abovementioned sub-periods was formed by Belgium and France, which

frequently joined another very stable two countries cluster comprised by Finland and Italy (particularly from July 2001 onwards).

Finally, the third remark is about Spain. Across all the analysed months, this country showed a very interesting behaviour. We identified a cluster comprised of this country and Greece, every month, after the latter had adhered EMU. Before that date, Spain when joining a cluster it was almost always with Italy.

3.3 – Discussion of the results

From data, we identified monthly differences between EMU Member States.

From cluster analysis, assuming that the interests of each Member State are defined by its desired interest rate, its unemployment rate and inflation aversion of its society, we found two different sub-periods regarding the stability of identified groups of national interests. In the first sub-period, characterised by very small periods of stability in the composition of identified clusters, alliances of national interests would have been difficult to emerge in the GC. On the contrary, the second sub-period higher stability in the identified clusters would have created favourable conditions for the emergence of those stable coalitions or alliances.

Focusing our attention in the second sub-period, we have to answer two final related questions: First, has the clearly identified stability within the second sub-period had effects on monetary policy decisions in the GC meetings? Second, have monetary policy decisions expressed truthful consensus solutions?

Within actual GC's voting rules and current dimension of EMU and GC, a winning proposal on monetary policy decisions needs nine votes. In this framework, it is relatively easy for the EB members to find support for any proposal on interest rates and to defeat any opposing coalition of national interests, as they enjoy of a very good strategic position (Aksoy, et al. 2002). The approval of EB members' joint proposal only requires three additional votes. In other words, its defeat requires an opposing coalition of at least ten national central bankers, which is very unlikely despite the identified stability in cluster analysis. Focusing our attention on all the meetings of the abovementioned second sub-period, we see that, in all occasions of interest rates changes[31], EB members had no problem to find support for their proposal, at least

[31] In 2001: August, 31st; September 18th; November 9th. In 2002: December 6th. In 2003: March 7th; June 6th.

regarding the signal of the change of interest rates. Therefore, our answer to the first question is that it seems that identified stability in cluster analysis had no obvious effects on monetary policy decisions. However, it does not mean that GC decisions are expressions of truthful consensus such as it is publicly announced by ECB. It is rather the outcome of a voting process that informally takes place at GC meetings and where no winning opposing coalition has ground to emerge.

As long as the voting rule and the dimension of the GC remain in the same format, we do not expect any difficulties to EB. Problems will appear with EMU enlargement to twenty-five Member States. On February 3rd 2003, the GC of the ECB unanimously approved a recommendation on an adjustment of voting modalities in the GC, "in order to ensure that the Governing Council will be able to take decisions in a timely and efficient manner even after a future large-scale enlargement of the euro area" (ECB, 2003, p. 73). According to that adjustment of voting rules, it should be adopted a rotating mechanism with a two class voting scheme in an intermediate stage and three class voting with the complete enlargement.

In the final stage of enlargement, the GC would be comprised of twenty-one members: six members of the EB, plus some national central bankers classified into three groups, according to a country ranking. This ranking is built considering, in first place, the share of a Member State in the aggregate Gross Domestic Product of EMU, and secondly, the size of a Member State's financial sector. The literature has written about this reform, but there remains a gap in that discussion. Besides other very important comments and critiques, it is noteworthy to recall ideas from this paper and ask whether the suggested aggregation of countries into those referred three classes is compatible with the natural aggregation of preferences that naturally central bankers do and that we can observe through cluster analysis.

Today, it is necessary to analyse and study whether in the future GC meetings, after enlargement takes place, it will be possible or not that coalitions of similar interests emerge and affect the monetary policy decisions[32]. This is a theme for our in progress research.

[32] "Proposals for reform of the GC's voting structure should consider in detail the ramifications of national biases on European monetary policy and potential voting structures that act to minimize these biases." (Meade and Sheets, 2002, p. 21).

4 – CONCLUSIONS

Since January 1999, the monetary policy for the Euro-area is decided by the Governing Council (GC) of the European Central Bank (ECB). According to the Statutes of the European System of Central Banks (ESCB) and the ECB, decisions on interest rates should merely take into account the Euro-area-wide conditions, disregarding all the national conditions even though these require other kind of monetary policy decisions. Notwithstanding, in this paper, we took the view that each national central bank governor that hold seat at the GC's meetings regards the economic and social conditions of his own country, when he takes part of those meetings.

In this paper, we tried to analyse the divergences and convergences of interests of all the twelve EMU Member States. With that purpose in mind, we analysed the monthly relative position of each country, from January 1999 until August 2003, considering three variables. The first was the desired interest rates by each EMU Member State, which we computed based on a smoothing version of the Taylor rule. The second variable was the inflation aversion of the society, using the estimated results of Scheve (2004). The third variable was the unemployment rate of each EMU Member State.

We applied multivariate statistical cluster analysis techniques in order to find homogeneous (or similar) groups of countries, month-by-month, using those three mentioned variables. We found that the 56 months could be divided into two distinct sub-periods: the first, from January 1999 until July 2001; and the second, from August 2001 until the end of our sample. In this second sub-period, we found stable structure of national interests and a smaller number of groups of countries, circumstances that suggest the presence of favourable conditions for the emergence of coalitions or alliances among national central bankers from countries with similar positions about what should had been the best monetary policy decisions.

We also tried to find whether that stable structure of interest had influenced the monetary policy decisions of the ECB's GC. Our answer is no, because the Executive Board's members have an extraordinary strategic power in the GC voting process. Therefore, even though there have been conditions for the emergence of alliances between similar countries, they have not existed or if they have existed, it had been apparently without success or they have had no reason for fight for changing the Executive Board's proposal on the direction of interest rates. Hence, monetary policy decisions by the GC do not express consensus solutions; rather they are the outcome of

an informal voting process where no winning opposing coalition has ground to emerge. Notwithstanding, the question of the formation of coalitions will be important when additional countries enter in the EMU.

The analysis that we have done entails several limitations. Improvements in the variables defining each central banker stance would likely produce better definitions of the groups of countries. In first place, we computed desired interest rates for each EMU Member State, assuming equal monetary policy transmission mechanisms and preferences. It would be worthwhile to estimate Taylor rules for all the countries, in order to compute desired interest rate that more closely reflect the true desires of the EMU Member States. In second place, we considered that national central bankers, when building their individual *a priori* stance in the GC meetings, have had immediate access to economic data (output gap, inflation rate and unemployment rate), which should not correspond to reality as there is some lag until data be available. Finally, further research will consist in extending this analysis incorporating United Kingdom, Sweden, Denmark and all the new European Union Members that will enter to the EMU group as well, and compare the results with the enlargement adjustment process suggested by the ECB in May 2003, trying to see if the ECB solution for its "large number problem" is feasible according to the dynamics of the likely coalition forming.

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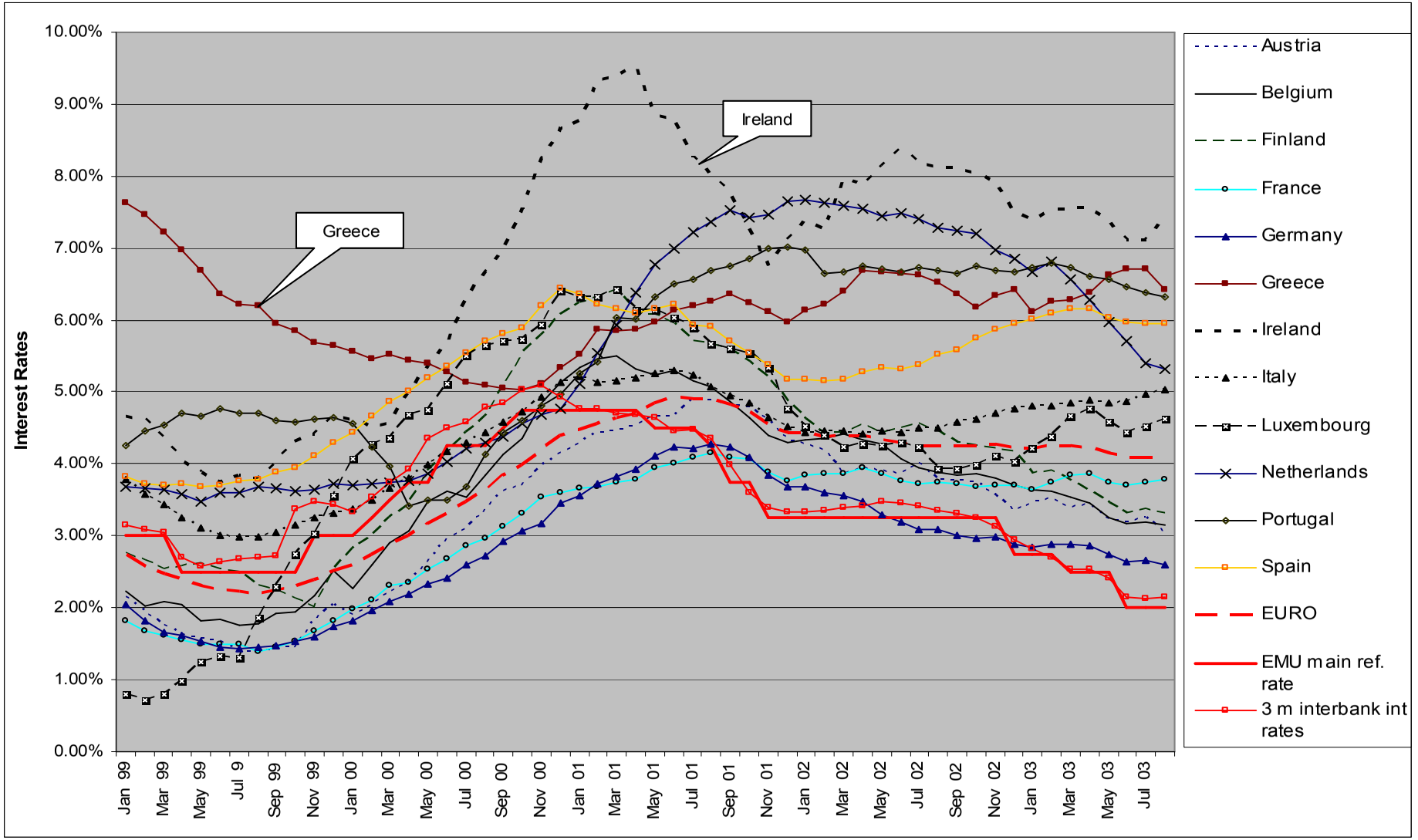
APPENDIX 1 – VARIABLES

Table 1.1 – Monthly Desired Interest Rates

		Austria	Belgium	Finland	France	Germany	Greece	Ireland	Italy	Luxem.	Netherl.	Portugal	Spain
1999	Jan	2.14%	2.24%	2.76%	1.81%	2.05%	7.63%	4.66%	3.78%	0.80%	3.67%	4.25%	3.83%
	Feb	1.94%	2.03%	2.67%	1.68%	1.82%	7.47%	4.61%	3.58%	0.71%	3.66%	4.45%	3.72%
	Mar	1.76%	2.09%	2.54%	1.61%	1.66%	7.22%	4.36%	3.43%	0.80%	3.65%	4.55%	3.69%
	May	1.64%	2.05%	2.58%	1.56%	1.62%	6.98%	4.06%	3.25%	0.99%	3.57%	4.71%	3.73%
	Apr	1.58%	1.81%	2.62%	1.50%	1.53%	6.68%	3.88%	3.10%	1.25%	3.47%	4.66%	3.69%
	Jun	1.53%	1.84%	2.53%	1.50%	1.45%	6.37%	3.73%	3.00%	1.34%	3.61%	4.76%	3.70%
	Jul	1.39%	1.76%	2.49%	1.49%	1.43%	6.22%	3.85%	2.99%	1.30%	3.61%	4.70%	3.76%
	Aug	1.38%	1.78%	2.31%	1.39%	1.46%	6.20%	3.79%	3.00%	1.86%	3.69%	4.71%	3.79%
	Sep	1.44%	1.93%	2.25%	1.44%	1.46%	5.96%	4.01%	3.05%	2.30%	3.66%	4.61%	3.89%
	Oct	1.45%	1.95%	2.14%	1.52%	1.54%	5.84%	4.32%	3.14%	2.74%	3.62%	4.58%	3.94%
	Nov	1.83%	2.17%	2.00%	1.68%	1.59%	5.68%	4.42%	3.25%	3.02%	3.64%	4.62%	4.11%
	Dec	2.05%	2.51%	2.54%	1.81%	1.73%	5.64%	4.69%	3.31%	3.55%	3.73%	4.64%	4.30%
2000	Jan	1.90%	2.28%	2.82%	1.98%	1.82%	5.57%	4.62%	3.38%	4.07%	3.71%	4.57%	4.44%
	Feb	2.04%	2.59%	2.98%	2.11%	1.96%	5.45%	4.53%	3.49%	4.27%	3.72%	4.23%	4.67%
	Mar	2.24%	2.90%	3.25%	2.30%	2.08%	5.52%	4.59%	3.66%	4.35%	3.75%	3.97%	4.87%
	May	2.36%	3.07%	3.43%	2.36%	2.19%	5.44%	5.01%	3.81%	4.68%	3.76%	3.41%	5.01%
	Apr	2.64%	3.48%	3.91%	2.54%	2.33%	5.40%	5.36%	3.99%	4.74%	3.87%	3.49%	5.20%
	Jun	2.96%	3.62%	4.15%	2.67%	2.41%	5.27%	5.69%	4.17%	5.11%	4.03%	3.50%	5.37%
	Jul	3.11%	3.53%	4.45%	2.86%	2.60%	5.14%	6.33%	4.30%	5.51%	4.21%	3.69%	5.53%
	Aug	3.38%	3.84%	4.67%	2.97%	2.72%	5.10%	6.67%	4.45%	5.65%	4.29%	4.13%	5.70%
	Sep	3.62%	4.13%	5.07%	3.12%	2.92%	5.05%	6.97%	4.58%	5.71%	4.37%	4.43%	5.82%
	Oct	3.71%	4.35%	5.52%	3.32%	3.07%	5.03%	7.55%	4.73%	5.73%	4.55%	4.61%	5.88%
	Nov	3.97%	4.85%	5.79%	3.53%	3.18%	5.12%	8.25%	4.92%	5.94%	4.68%	4.80%	6.19%
	Dec	4.15%	5.12%	6.07%	3.61%	3.45%	5.34%	8.66%	5.14%	6.39%	4.76%	4.97%	6.44%
2001	Jan	4.29%	5.33%	6.24%	3.66%	3.56%	5.52%	8.77%	5.22%	6.32%	5.12%	5.26%	6.35%
	Feb	4.44%	5.46%	6.33%	3.69%	3.73%	5.87%	9.32%	5.13%	6.33%	5.55%	5.42%	6.22%
	Mar	4.46%	5.50%	6.42%	3.74%	3.82%	5.85%	9.41%	5.15%	6.42%	5.93%	6.04%	6.15%
	May	4.54%	5.31%	6.09%	3.77%	3.92%	5.87%	9.53%	5.19%	6.14%	6.38%	6.01%	6.09%
	Apr	4.66%	5.23%	6.07%	3.94%	4.11%	5.97%	8.86%	5.27%	6.13%	6.77%	6.31%	6.16%
	Jun	4.67%	5.29%	5.94%	4.01%	4.23%	6.13%	8.80%	5.30%	6.03%	7.00%	6.50%	6.21%
	Jul	4.92%	5.15%	5.71%	4.09%	4.21%	6.20%	8.26%	5.23%	5.89%	7.21%	6.56%	5.94%
	Aug	4.89%	5.07%	5.67%	4.16%	4.28%	6.26%	8.02%	5.08%	5.66%	7.36%	6.68%	5.90%
	Sep	4.82%	4.87%	5.59%	4.10%	4.24%	6.35%	7.75%	4.94%	5.61%	7.53%	6.75%	5.70%
	Oct	4.78%	4.64%	5.41%	4.07%	4.08%	6.24%	7.29%	4.84%	5.54%	7.42%	6.84%	5.53%
	Nov	4.59%	4.39%	5.19%	3.89%	3.84%	6.11%	6.75%	4.65%	5.34%	7.46%	6.99%	5.37%
	Dec	4.33%	4.30%	4.86%	3.75%	3.68%	5.98%	7.11%	4.53%	4.76%	7.64%	7.01%	5.18%
2002	Jan	4.27%	4.34%	4.63%	3.83%	3.68%	6.14%	7.39%	4.43%	4.53%	7.67%	6.97%	5.16%
	Feb	4.18%	4.36%	4.42%	3.86%	3.59%	6.22%	7.27%	4.45%	4.40%	7.62%	6.65%	5.16%
	Mar	3.86%	4.41%	4.43%	3.87%	3.57%	6.41%	7.98%	4.46%	4.23%	7.58%	6.68%	5.17%
	May	3.95%	4.33%	4.53%	3.94%	3.49%	6.68%	7.87%	4.41%	4.27%	7.55%	6.75%	5.27%
	Apr	3.91%	4.27%	4.44%	3.86%	3.30%	6.66%	8.13%	4.45%	4.25%	7.45%	6.71%	5.34%
	Jun	3.87%	4.08%	4.49%	3.77%	3.19%	6.64%	8.39%	4.44%	4.29%	7.48%	6.67%	5.33%
	Jul	4.01%	3.94%	4.55%	3.72%	3.08%	6.63%	8.19%	4.49%	4.24%	7.40%	6.73%	5.38%
	Aug	3.78%	3.88%	4.46%	3.75%	3.08%	6.53%	8.11%	4.50%	3.93%	7.28%	6.69%	5.53%
	Sep	3.75%	3.85%	4.29%	3.73%	3.01%	6.36%	8.11%	4.58%	3.92%	7.24%	6.65%	5.58%
	Oct	3.74%	3.86%	4.24%	3.69%	2.97%	6.17%	8.03%	4.62%	3.99%	7.20%	6.75%	5.75%
	Nov	3.56%	3.80%	4.22%	3.70%	2.99%	6.33%	7.92%	4.69%	4.12%	6.98%	6.69%	5.86%
	Dec	3.36%	3.70%	4.17%	3.71%	2.88%	6.42%	7.48%	4.77%	4.03%	6.84%	6.67%	5.95%
2003	Jan	3.46%	3.63%	3.86%	3.63%	2.85%	6.11%	7.40%	4.80%	4.21%	6.66%	6.73%	6.01%
	Feb	3.51%	3.61%	3.90%	3.75%	2.89%	6.25%	7.53%	4.80%	4.38%	6.80%	6.78%	6.10%
	Mar	3.40%	3.54%	3.77%	3.84%	2.89%	6.29%	7.57%	4.84%	4.66%	6.57%	6.72%	6.15%
	May	3.43%	3.46%	3.61%	3.86%	2.86%	6.38%	7.56%	4.89%	4.77%	6.28%	6.61%	6.15%
	Apr	3.23%	3.25%	3.45%	3.73%	2.74%	6.63%	7.35%	4.86%	4.59%	5.98%	6.57%	6.03%
	Jun	3.18%	3.16%	3.32%	3.71%	2.64%	6.71%	7.12%	4.86%	4.43%	5.71%	6.46%	5.97%
	Jul	3.25%	3.18%	3.37%	3.75%	2.67%	6.72%	7.12%	4.96%	4.53%	5.41%	6.39%	5.94%
	Aug	3.05%	3.15%	3.32%	3.78%	2.59%	6.42%	7.42%	5.03%	4.63%	5.32%	6.33%	5.94%

Own computations based on equations (1) and (2).

Figure 1.1 – Short-term Desired Interest Rates



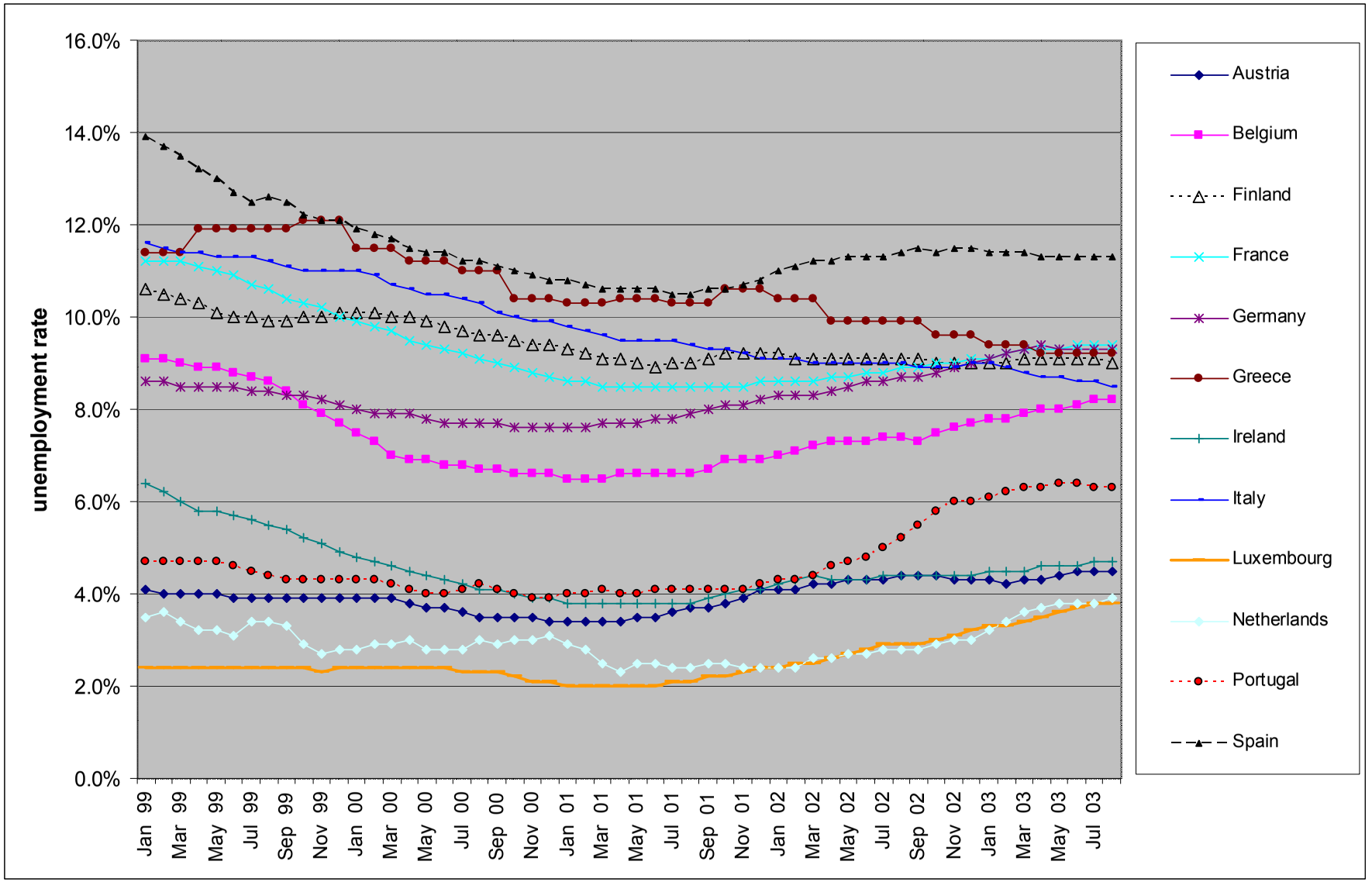
Own computations based on equations (1) and (2).

Table 1.2 – Unemployment Rates

		Austria	Belgium	Finland	France	Germany	Greece	Ireland	Italy	Luxem.	Netherl.	Portugal	Spain
1999	Jan	4.1%	9.1%	10.6%	11.2%	8.6%	11.4%	6.4%	11.6%	2.4%	3.5%	4.7%	13.9%
	Feb	4.0%	9.1%	10.5%	11.2%	8.6%	11.4%	6.2%	11.5%	2.4%	3.6%	4.7%	13.7%
	Mar	4.0%	9.0%	10.4%	11.2%	8.5%	11.4%	6.0%	11.4%	2.4%	3.4%	4.7%	13.5%
	May	4.0%	8.9%	10.3%	11.1%	8.5%	11.9%	5.8%	11.4%	2.4%	3.2%	4.7%	13.2%
	Apr	4.0%	8.9%	10.1%	11.0%	8.5%	11.9%	5.8%	11.3%	2.4%	3.2%	4.7%	13.0%
	Jun	3.9%	8.8%	10.0%	10.9%	8.5%	11.9%	5.7%	11.3%	2.4%	3.1%	4.6%	12.7%
	Jul	3.9%	8.7%	10.0%	10.7%	8.4%	11.9%	5.6%	11.3%	2.4%	3.4%	4.5%	12.5%
	Aug	3.9%	8.6%	9.9%	10.6%	8.4%	11.9%	5.5%	11.2%	2.4%	3.4%	4.4%	12.6%
	Sep	3.9%	8.4%	9.9%	10.4%	8.3%	11.9%	5.4%	11.1%	2.4%	3.3%	4.3%	12.5%
	Oct	3.9%	8.1%	10.0%	10.3%	8.3%	12.1%	5.2%	11.0%	2.4%	2.9%	4.3%	12.2%
	Nov	3.9%	7.9%	10.0%	10.2%	8.2%	12.1%	5.1%	11.0%	2.3%	2.7%	4.3%	12.1%
	Dec	3.9%	7.7%	10.1%	10.0%	8.1%	12.1%	4.9%	11.0%	2.4%	2.8%	4.3%	12.1%
2000	Jan	3.9%	7.5%	10.1%	9.9%	8.0%	11.5%	4.8%	11.0%	2.4%	2.8%	4.3%	11.9%
	Feb	3.9%	7.3%	10.1%	9.8%	7.9%	11.5%	4.7%	10.9%	2.4%	2.9%	4.3%	11.8%
	Mar	3.9%	7.0%	10.0%	9.7%	7.9%	11.5%	4.6%	10.7%	2.4%	2.9%	4.2%	11.7%
	May	3.8%	6.9%	10.0%	9.5%	7.9%	11.2%	4.5%	10.6%	2.4%	3.0%	4.1%	11.5%
	Apr	3.7%	6.9%	9.9%	9.4%	7.8%	11.2%	4.4%	10.5%	2.4%	2.8%	4.0%	11.4%
	Jun	3.7%	6.8%	9.8%	9.3%	7.7%	11.2%	4.3%	10.5%	2.4%	2.8%	4.0%	11.4%
	Jul	3.6%	6.8%	9.7%	9.2%	7.7%	11.0%	4.2%	10.4%	2.3%	2.8%	4.1%	11.2%
	Aug	3.5%	6.7%	9.6%	9.1%	7.7%	11.0%	4.1%	10.3%	2.3%	3.0%	4.2%	11.2%
	Sep	3.5%	6.7%	9.6%	9.0%	7.7%	11.0%	4.1%	10.1%	2.3%	2.9%	4.1%	11.1%
	Oct	3.5%	6.6%	9.5%	8.9%	7.6%	10.4%	4.0%	10.0%	2.2%	3.0%	4.0%	11.0%
	Nov	3.5%	6.6%	9.4%	8.8%	7.6%	10.4%	3.9%	9.9%	2.1%	3.0%	3.9%	10.9%
	Dec	3.4%	6.6%	9.4%	8.7%	7.6%	10.4%	3.9%	9.9%	2.1%	3.1%	3.9%	10.8%
2001	Jan	3.4%	6.5%	9.3%	8.6%	7.6%	10.3%	3.8%	9.8%	2.0%	2.9%	4.0%	10.8%
	Feb	3.4%	6.5%	9.2%	8.6%	7.6%	10.3%	3.8%	9.7%	2.0%	2.8%	4.0%	10.7%
	Mar	3.4%	6.5%	9.1%	8.5%	7.7%	10.3%	3.8%	9.6%	2.0%	2.5%	4.1%	10.6%
	May	3.4%	6.6%	9.1%	8.5%	7.7%	10.4%	3.8%	9.5%	2.0%	2.3%	4.0%	10.6%
	Apr	3.5%	6.6%	9.0%	8.5%	7.7%	10.4%	3.8%	9.5%	2.0%	2.5%	4.0%	10.6%
	Jun	3.5%	6.6%	8.9%	8.5%	7.8%	10.4%	3.8%	9.5%	2.0%	2.5%	4.1%	10.6%
	Jul	3.6%	6.6%	9.0%	8.5%	7.8%	10.3%	3.8%	9.5%	2.1%	2.4%	4.1%	10.5%
	Aug	3.7%	6.6%	9.0%	8.5%	7.9%	10.3%	3.8%	9.4%	2.1%	2.4%	4.1%	10.5%
	Sep	3.7%	6.7%	9.1%	8.5%	8.0%	10.3%	3.9%	9.3%	2.2%	2.5%	4.1%	10.6%
	Oct	3.8%	6.9%	9.2%	8.5%	8.1%	10.6%	4.0%	9.3%	2.2%	2.5%	4.1%	10.6%
	Nov	3.9%	6.9%	9.2%	8.5%	8.1%	10.6%	4.1%	9.2%	2.3%	2.4%	4.1%	10.7%
	Dec	4.1%	6.9%	9.2%	8.6%	8.2%	10.6%	4.1%	9.1%	2.4%	2.4%	4.2%	10.8%
2002	Jan	4.1%	7.0%	9.2%	8.6%	8.3%	10.4%	4.2%	9.1%	2.4%	2.4%	4.3%	11.0%
	Feb	4.1%	7.1%	9.1%	8.6%	8.3%	10.4%	4.3%	9.1%	2.5%	2.4%	4.3%	11.1%
	Mar	4.2%	7.2%	9.1%	8.6%	8.3%	10.4%	4.4%	9.0%	2.5%	2.6%	4.4%	11.2%
	May	4.2%	7.3%	9.1%	8.7%	8.4%	9.9%	4.3%	9.0%	2.6%	2.6%	4.6%	11.2%
	Apr	4.3%	7.3%	9.1%	8.7%	8.5%	9.9%	4.3%	9.0%	2.7%	2.7%	4.7%	11.3%
	Jun	4.3%	7.3%	9.1%	8.8%	8.6%	9.9%	4.3%	9.0%	2.8%	2.7%	4.8%	11.3%
	Jul	4.3%	7.4%	9.1%	8.8%	8.6%	9.9%	4.4%	9.0%	2.9%	2.8%	5.0%	11.3%
	Aug	4.4%	7.4%	9.1%	8.9%	8.7%	9.9%	4.4%	9.0%	2.9%	2.8%	5.2%	11.4%
	Sep	4.4%	7.3%	9.1%	8.9%	8.7%	9.9%	4.4%	8.9%	2.9%	2.8%	5.5%	11.5%
	Oct	4.4%	7.5%	9.0%	9.0%	8.8%	9.6%	4.4%	8.9%	3.0%	2.9%	5.8%	11.4%
	Nov	4.3%	7.6%	9.0%	9.0%	8.9%	9.6%	4.4%	8.9%	3.1%	3.0%	6.0%	11.5%
	Dec	4.3%	7.7%	9.0%	9.1%	9.0%	9.6%	4.4%	9.0%	3.2%	3.0%	6.0%	11.5%
2003	Jan	4.3%	7.8%	9.0%	9.1%	9.1%	9.4%	4.5%	9.0%	3.3%	3.2%	6.1%	11.4%
	Feb	4.2%	7.8%	9.0%	9.2%	9.2%	9.4%	4.5%	8.9%	3.3%	3.4%	6.2%	11.4%
	Mar	4.3%	7.9%	9.1%	9.3%	9.3%	9.4%	4.5%	8.8%	3.4%	3.6%	6.3%	11.4%
	May	4.3%	8.0%	9.1%	9.3%	9.4%	9.2%	4.6%	8.7%	3.5%	3.7%	6.3%	11.3%
	Apr	4.4%	8.0%	9.1%	9.3%	9.3%	9.2%	4.6%	8.7%	3.6%	3.8%	6.4%	11.3%
	Jun	4.5%	8.1%	9.1%	9.4%	9.3%	9.2%	4.6%	8.6%	3.7%	3.8%	6.4%	11.3%
	Jul	4.5%	8.2%	9.1%	9.4%	9.3%	9.2%	4.7%	8.6%	3.8%	3.8%	6.3%	11.3%
	Aug	4.5%	8.2%	9.0%	9.4%	9.3%	9.2%	4.7%	8.5%	3.8%	3.9%	6.3%	11.3%

Source: OECD Main Economic Indicators, standardised unemployment rate s.a.

Figure 1.2 – Unemployment Rates



Source: OECD Main Economic Indicators, standardised unemployment rate s.a.

Table 1.3 – Inflation Aversion of the Society

Country	Inflation aversion proxy	Country	Inflation aversion proxy
Austria	- 0.318	Ireland	- 0.136
Belgium	- 0.291	Italy	- 0.497
Finland	- 0.570	Luxembourg	- 0.291 ([33])
France	- 0.424	Netherlands	- 0.439
Germany	0.296	Portugal	- 0.757
Greece	- 0.252	Spain	- 0.185

Source: Scheve (2004, p. 15)

Asking whether macroeconomic priorities of citizens differ across countries, and trying to find what accounts for that variation, Scheve (2004) used data from five cross-national surveys (Eurobarometer and International Social Survey Program) that included respondents in twenty advanced economies. In particular, he used data from the responses to survey questions of the following type: *What do you think your government should give greater priority to, curbing inflation or reducing unemployment?* Recognizing that those responses would depend on the economic context in which the question was asked, Scheve (2004) controlled for that economic context. The values of the above Table 1.3 are logit regressions coefficient estimates for each country dummy variable. Since in the Scheve (2004)'s analysis the baseline country respondent is from the United Kingdom (UK), the abovementioned estimates indicate mean national differences from the UK. We took into account these coefficient estimates as a proxy to inflation aversion in our exercise, keeping the values constant during our sample.

[33] In the case of Luxembourg, for which Scheve (2004) does not provide any value, we assumed the same value as Belgium, as they formed an Economic Union until 1998.

APPENDIX 2 – CLUSTER ANALYSIS RESULTS

Table 2.1 – Cluster Analysis (Month-by-Month)

CLUSTER ANALYSIS: 11/12 EMU Countries; 3 variables: monthly desired interest rates; unemployment rate; inflation aversion of the society; 56 months.

	1999											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Austria	A	A	A	A	A	A	A	A	A	A	A	A
Belgium	B	B	B	B	B	B	B	B	B	B	A	B
Finland	B	B	B	B	B	B	B	B	B	B	A	B
France	B	B	B	B	B	B	B	B	B	B	A	B
Germany	C	C	C	C	C	C	C	C	C	C	B	C
Greece												
Ireland	D	D	D	D	D	D	D	D	D	D	C	D
Italy	E	E	E	E	B	B	B	B	B	E	D	B
Luxembourg	A	A	A	A	A	A	A	A	A	D	C	D
Netherlands	F	F	D	D	D	D	D	D	D	D	C	D
Portugal	F	F	D	F	E	E	E	E	E	F	E	E
Spain	E	E	E	E	F	F	F	F	F	E	D	F
clusters with more than one country	2A	2A	2A	2A	2A	2A	2A	2A	2A	3B	4A	4B
	3B	3B	3B	3B	4B	4B	4B	4B	4B	3D	3C	3D
	2E	2E	3D	2D	2D	2D	2D	2D	2D	2E	2D	
	2F	2F	2E	2E								

	2000											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Austria	A	A	A	A	A	A	A	A	A	A	A	A
Belgium	B	A	A	B	A	B	B	B	B	B	B	B
Finland	C	B	B	C	B	C	C	C	C	C	C	C
France	B	A	A	B	A	B	B	B	B	B	B	B
Germany	D	C	C	D	C	D	D	D	D	D	D	D
Greece												
Ireland	E	D	D	E	D	E	E	E	E	E	E	E
Italy	C	B	B	C	B	C	C	C	C	C	C	C
Luxembourg	E	D	D	E	D	E	E	E	E	E	A	A
Netherlands	E	D	D	F	D	A	A	A	A	A	A	A
Portugal	E	E	E	F	E	A	A	A	A	A	F	F
Spain	F	F	F	G	F	F	F	F	F	F	C	C
clusters with more than one country	2B	3A	3A	2B	3A	3A	3A	3A	3A	3A	3A	3A
	2C	2B	2B	2C	2B	2B	2B	2B	2B	2B	2B	2B
	4E	3D	3D	2E	3D	2C	2C	2C	2C	2C	3C	3C
				2F		2E	2E	2E	2E	2E		

	2001											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Austria	A	A	A	A	A	A	A	A	A	A	A	A
Belgium	A	A	A	A	A	A	B	B	B	B	B	B
Finland	B	B	B	B	B	B	B	B	B	B	B	B
France	C	B	C	C	B	A	B	B	B	B	B	B
Germany	D	C	D	D	C	C	C	C	C	C	C	C
Greece	B	D	E	E	D	B	D	D	D	D	D	D
Ireland	E	E	F	F	E	D	E	E	E	E	A	E
Italy	B	B	B	B	B	B	B	B	B	B	B	B
Luxembourg	A	A	A	A	F	E	A	A	A	A	A	A
Netherlands	A	A	A	A	F	E	F	E	E	E	E	E
Portugal	F	F	G	G	G	F	F	F	F	F	E	F
Spain	B	D	E	E	D	B	D	D	D	D	D	D
clusters with more than one country	4A	4A	4A	4A	2A	3A	2A	2A	2A	2A	3A	2A
	4B	3B	2B	2B	3B	4B	4B	4B	4B	4B	4B	4B
		2D	2E	2E	2D	2E	2D	2D	2D	2D	2D	2D
					2F		2F	2E	2E	2E	2E	2E

	2002											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Austria	A	A	A	A	A	A	A	A	A	A	A	A
Belgium	B	B	B	B	B	B	B	B	B	B	B	B
Finland	B	B	B	B	B	B	B	B	B	B	B	B
France	B	B	B	B	B	B	B	B	B	B	B	B
Germany	C	C	C	C	C	C	C	C	C	C	C	C
Greece	D	D	D	D	D	D	D	D	D	D	D	D
Ireland	E	E	E	E	E	E	E	E	E	E	E	E
Italy	B	B	B	B	B	B	B	B	B	B	B	B
Luxembourg	A	A	A	A	A	A	A	A	A	A	A	A
Netherlands	E	E	E	E	E	E	E	E	E	E	E	E
Portugal	F	F	F	F	F	F	F	F	F	F	F	F
Spain	D	D	D	D	D	D	D	D	D	D	D	D
clusters with more than one country	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A
	4B	4B	4B	4B	4B	4B	4B	4B	4B	4B	4B	4B
	2D	2D	2D	2D	2D	2D	2D	2D	2D	2D	2D	2D
	2E	2E	2E	2E	2E	2E	2E	2E	2E	2E	2E	2E

	2003							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Austria	A	A	A	A	A	A	A	A
Belgium	B	B	B	B	B	B	B	B
Finland	B	B	B	B	B	B	B	B
France	B	B	B	B	B	B	B	B
Germany	C	C	C	C	C	C	C	C
Greece	D	D	D	D	D	D	D	D
Ireland	E	E	E	E	E	E	E	E
Italy	B	B	B	B	B	B	B	B
Luxembourg	A	A	A	A	A	A	A	A
Netherlands	E	E	E	E	E	A	A	A
Portugal	F	F	F	F	F	F	F	F
Spain	D	D	D	D	D	D	D	D
clusters with more than one country	2A	2A	2A	2A	2A	3A	3A	3A
	4B	4B	4B	4B	4B	4B	4B	4B
	2D	2D	2D	2D	2D	2D	2D	2D
	2E	2E	2E	2E	2E			

Legend

- For each month, a coloured cell represents an element of an identified cluster with more than one country.
- For each month, a set of cells of the same colour and with the same letter represents a cluster with more than one country.
- Clusters with more than one country:
  "4A" means that the cluster named A contains 4 countries.

Table 2.2 – Cluster Analysis (Month-by-Month)

Month	Clusters with more than one country	One country clusters	Month	Clusters with more than one country	One country clusters
Jan 1999	{Austria, Luxembourg} {Belgium, Finland, France} {Italy, Spain} {Netherlands, Portugal}	{Germany} {Ireland}	Jan 2000	{Belgium, France} {Finland, Italy} {Netherlands, Ireland, Luxembourg, Portugal}	{Germany} {Spain} {Austria}
Feb 1999	{Austria, Luxembourg} {Belgium, Finland, France} {Italy, Spain} {Netherlands, Portugal}	{Germany} {Ireland}	Feb 2000	{ Belgium, France, Austria} {Finland, Italy} {Netherlands, Ireland, Luxembourg}	{Germany} {Portugal} {Spain}
Mar 1999	{Austria,Luxembourg} {Belgium, Finland, France} {Italy, Spain} {Netherlands, Portugal, Ireland}	{Germany}	Mar 2000	{Belgium, France, Austria} {Finland, Italy} {Netherlands, Ireland, Luxembourg}	{Germany} {Portugal} {Spain}
Apr 1999	{Austria, Luxembourg} {Belgium, Finland, France} {Italy, Spain} {Netherlands, Ireland}	{Germany} {Portugal}	Apr 2000	{Belgium, France} {Finland, Italy} {Ireland, Luxembourg} {Netherlands, Portugal}	{Germany} {Austria} {Spain}
May 1999	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Netherlands, Ireland}	{Germany} {Portugal} {Spain}	May 2000	{Austria, Belgium, France} {Finland, Italy} {Netherlands, Ireland, Luxembourg}	{Germany} {Portugal} {Spain}
Jun 1999	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Netherlands, Ireland}	{Germany} {Portugal} {Spain}	Jun 2000	{Austria, Netherlands, Portugal} {Belgium, France} {Finland, Italy} {Ireland, Luxembourg}	{Germany} {Spain}
Jul 1999	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Netherlands, Ireland}	{Germany} {Portugal} {Spain}	Jul 2000	{Austria, Netherlands, Portugal} {Belgium, France} {Finland, Italy} {Ireland, Luxembourg}	{Germany} {Spain}
Aug 1999	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Netherlands, Ireland}	{Germany} {Portugal} {Spain}	Aug 2000	{Austria, Netherlands, Portugal} {Belgium, France} {Finland, Italy} {Ireland, Luxembourg}	{Germany} {Spain}
Sep 1999	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Netherlands, Ireland}	{Germany} {Portugal} {Spain}	Sep 2000	{Austria, Netherlands, Portugal} {Belgium, France} {Finland, Italy} {Ireland, Luxembourg}	{Germany} {Spain}
Oct 1999	{Belgium, Finland, France} {Italy, Spain} {Netherlands, Ireland, Luxembourg}	{Germany} {Portugal} {Austria}	Oct 2000	{Austria, Netherlands, Portugal} {Belgium, France} {Finland, Italy} {Ireland, Luxembourg}	{Germany} {Spain}
Nov 1999	{Belgium, Finland, France, Austria} {Netherlands, Ireland, Luxembourg} {Italy, Spain}	{Germany} {Portugal}	Nov 2000	{Austria, Netherlands, Luxembourg} {Belgium, France} {Italy, Spain}	{Germany} {Portugal} {Ireland}
Dec 1999	{Belgium, Finland, France, Italy} {Netherlands, Ireland, Luxembourg}	{Germany} {Portugal} {Austria} {Spain}	Dec 2000	{Austria, Netherlands, Luxembourg} {Belgium, France} {Italy, Spain}	{Germany} {Portugal} {Ireland}

Table 2.2 – Cluster Analysis (Month-by-Month) (cont.)

Month	Clusters with more than one country	One country clusters	Month	Clusters with more than one country	One country clusters
Jan 2001	{Austria, Belgium, Netherlands, Luxembourg} {Finland, Greece, Italy, Spain}	{Germany} {France} {Portugal} {Ireland}	Jan 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Feb 2001	{Austria, Belgium, Netherlands, Luxembourg} {Finland, Italy, France} {Greece, Spain}	{Germany} {Portugal} {Ireland}	Feb 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Mar 2001	{Austria, Belgium, Netherlands, Luxembourg} {Finland, Italy} {Greece, Spain}	{Germany} {Portugal} {Ireland} {France}	Mar 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Apr 2001	{Austria, Belgium, Netherlands, Luxembourg} {Finland, Italy} {Greece, Spain}	{Germany} {Portugal} {Ireland} {France}	Apr 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
May 2001	{Austria, Belgium} {Finland, France, Italy} {Greece, Spain} {Netherlands, Luxembourg}	{Germany} {Portugal} {Ireland}	May 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Jun 2001	{Austria, Belgium, France} {Finland, Italy, Greece, Spain} {Netherlands, Spain}	{Germany} {Portugal} {Ireland}	Jun 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Jul 2001	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Portugal}	{Germany} {Ireland}	Jul 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Aug 2001	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}	Aug 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Sep 2001	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}	Sep 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Oct 2001	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}	Oct 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Nov 2001	{Austria, Luxembourg, Ireland} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Portugal}	{Germany}	Nov 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}
Dec 2001	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}	Dec 2002	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	{Germany} {Portugal}

Table 2.2 – Cluster Analysis (Month-by-Month) (cont.)

Month	Clusters with more than one country	One country clusters
Jan 2003	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	**{Germany}** {Portugal}
Feb 2003	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	**{Germany}** {Portugal}
Mar 2003	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	**{Germany}** {Portugal}
Apr 2003	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	**{Germany}** {Portugal}
May 2003	{Austria, Luxembourg} {Belgium, Finland, France, Italy} {Greece, Spain} {Netherlands, Ireland}	**{Germany}** {Portugal}
Jun 2003	{Austria, Luxembourg, Netherlands} {Belgium, Finland, France, Italy} {Greece, Spain}	**{Germany}** {Portugal} {Ireland}
Jul 2003	{Austria, Luxembourg, Netherlands} {Belgium, Finland, France, Italy} {Greece, Spain}	**{Germany}** {Portugal} {Ireland}
Aug 2003	{Austria, Luxembourg, Netherlands} {Belgium, Finland, France, Italy} {Greece, Spain}	**{Germany}** {Portugal} {Ireland}

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