

PATTERNS OF COOPERATION AMONG REGIONAL OFFICES IN BRUSSELS:  
HOMOPHILY, COMPLEMENTARITY, AND NATIONAL EMBEDDEDNESS

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**Abstract**

Since 1985 sub-national regions of member states of the European Union have opened offices in proximity to European government institutions in Brussels, Belgium. We analyze patterns of contact among 51 regional offices surveyed in 1993. We investigate how homophily based on socio-economic similarities, common goals, and common patterns of orientation toward European institutions; common national embeddedness; and length of co-existence in Brussels and the product of office sizes, affect the likelihood of a cooperative tie between two regional offices. Logistic regression models with bootstrap-based inference show that similarity in GDP per capita, common institutional orientations, and common interests, extended co-existence in Brussels, and a large product of staff sizes increase the likelihood of contact among offices. While these results suggest the emergence of an independent sub-national network involving the regions, being embedded in the same national entity remains the strongest predictor of cooperation among regional offices.

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1. INTRODUCTION

In 1985 the German region of Saarland opened the first regional office in Brussels in proximity to the European Commission and other European government institutions located in the Belgian capital. That same year Schleswig-Holstein, Hamburg, and Bremen combined to open the German Hanse office. (Bremen later created its own office.) Knowingly or not, these German pioneers had created the first instances of a new form of organization: the regional office. These new organizations, which lacked official status within the current structure of the European Union (EU), engaged in activities such as monitoring the work of the European Commission and other agencies, and serving as information-gathering and information-disseminating centers on behalf of the region they represented (Alpermann 1993). Regions within other countries soon joined the trend and the number of regional offices grew explosively. Between 1985 and the summer of 1993 (when the data for this study were collected) their number grew from two to over fifty. Today the vast majority of European regions have a representation in Brussels.

The regional office phenomenon raises a number of theoretical issues. From a broad historical perspective one may wonder how regions within member states of the EU and the representations they delegate to Brussels fit within the intricate process of creation of the single European market (Fligstein and Mara-Drita 1996; Fligstein 1996). Or one might focus on the evolution of regions as loci of power within the emerging governance structure of the EU (Marks et al. 1996; Hooghe and Marks 2001). From the point of view of organization theory one might emphasize the ecological and institutional characteristics of the sub-national regions of

Europe that facilitate or inhibit the creation of an office to represent them (Nielsen and Salk 1998). Finally, from a broad historical viewpoint as well as the more focused perspective of organizational theory, one may analyze the emerging network of cooperative ties among the regions that set up offices in Brussels. Do new inter-regional ties portend the emergence of a new trans-national political order that will supersede established national states (Bartolini 1999)? Or do those ties betray instead the enduring importance of national arenas in framing regional activity in the EU (Marks et al. 1996; Jeffery 2000)?

This paper addresses a set of more immediate and concrete issues concerning the emerging network of ties among offices representing sub-national regions of Europe in Brussels. We use data from a survey conducted in 1993 of all regional offices then in existence in Brussels to investigate which characteristics of regional offices -- or the regions they represent -- explain the existence of a cooperative tie between them. Thus we look for affinities among regions leading to the establishment of a new link in the overall inter-regional cooperative network. In the next section we discuss various mechanisms that may lead two regional offices in Brussels to cooperate, and derive empirical hypotheses from that theoretical discussion. In Section 3 we discuss the data and in Section 4 methods of analysis. In Section 5 we provide a descriptive glimpse at the way regional offices cluster into groups characterized by relatively high levels of within-group cooperative ties, and then use logistic regression models to analyze the determinants of these ties. Section 6 presents a discussion and concluding remarks.

## 2. THE BASES OF REGIONAL AFFINITIES: HOMOPHILY OR COMPLEMENTARITY?

### **Homophilic and Complementary Affinities**

Cooperative networks have been of substantial interest to organization theorists (Laumann and Knoke 1987; Powell and Brantley 1992; Gerlach 1992). In particular, recent studies of inter-

organizational cooperation have sought to explain how organizational attributes (including size, age, and product diversity) affect positions of actors and ties in cooperative networks (e.g., Kogut, Shan, and Walker 1992; Barley, Freeman, and Hybels 1992). While general theories of what prompts actors to cooperate in accomplishing goals may well remain under-developed (Ibarra 1992), the literature as a whole suggests that the development of cooperation among actors tends to be shaped by two distinct (and sometimes contradictory) principles. One is a principle of similarity (the notion that “birds of a feather flock together”) and the other one of dissimilarity/complementarity (the notion that “opposites attract”), with complementarity being understood as a type of dissimilarity that has potential for synergy creation (McPherson and Smith-Lovin 1987; Ibarra 1992). When and how either principle -- or perhaps both -- generate inter-organizational cooperation is not fully understood.

The idea that actors tend to associate on the basis of similarity has been labeled *homophily* by Lazarsfeld and Merton (1954), who describe the homophily principle as “a tendency for friendships to form between those who are alike in some designated aspect”. Rotolo and McPherson (2001) describe the consequence of the homophily principle for the constitution of networks as follows:

Homophily implies that the probability of two individuals sharing a network connection (i.e., friendship, kinship, etc.) is a direct function of their similarity in socio-demographic and spatial characteristics. That is, the more similar two people are, the more likely they are to share a network connection; in more informal terms, birds of a feather flock together. (P. 1101)

Extending the homophily principle to sub-national regions of Europe, we will derive below several propositions linking the similarity of regions with respect to various characteristics with their propensity to form a cooperative tie.

However venerable and perhaps even commonsensical the homophily principle may appear to be, there is an almost equally celebrated tradition that postulates that association can be based on the very *dissimilarity* of actors. This principle of dissimilarity springs from at least two currents of thought. First, in an early classic work of sociology, Durkheim (1933) contrasted mechanical solidarity, which is based on the similarity of actors, with organic solidarity, which is based on a division of labor in which actors perform different and complementary roles. Organic solidarity clearly requires that members entering into an association differ with respect to at least some activities and characteristics. Second, there is a current of thought with roots in both economics and evolutionary theory that focuses on competition as a principal mechanism of structuring of a population of actors. One influential version of this view is the organizational ecology perspective (Hannan and Freeman 1989). In that framework actors (such as organizations) survive by exploiting a specific set of resources, a “niche”, in the social environment. Actors exploiting the same niche are in competition, in the sense that resources captured by one actor become unavailable to the other. The more similar the actors, the more likely they are to be exploiting overlapping niches and to be in competition for the same resources. To the extent that competition inhibits the formation of cooperative ties among actors, it follows that the probability of forming a tie will be *less*, the more similar the actors.

Stated simply the dissimilarity and homophily principles may seem exactly antithetical. The two principles need not be contradictory in empirical situations, however, because actors can be characterized in many ways and engage in multiple activities, so that actors can be similar in one characteristic or activity and different in another. It is further conceivable that similarity of one kind facilitates association, while similarity of another kind amplifies competition, with correspondingly divergent implications for the formation of cooperative ties. For example, two regions of Europe may be similar both with respect to the principal language

and the distribution of the labor force among industrial sectors. The linguistic similarity may facilitate interregional understanding and thereby promote cooperation while the similarity in industrial structure may fuel competition and thereby inhibit cooperation. We discuss concrete examples of such situations in connection with empirical hypotheses below. When the two principles lead to opposite predictions, we adopt the convention of casting the empirical hypothesis as the homophilic version, keeping in mind that there is an opposite “shadow hypothesis” derived from the dissimilarity principle.

### **Socio-Economic Dissimilarities**

In the empirical analysis we describe regions along four socio-economic characteristics: percentage of the labor force in agriculture, percentage of the labor force in industry, gross domestic product per capita, and population size (which in this empirical context is roughly equivalent to a measure of urbanization). We characterize regional dyads (pairs of regions) using measures of the *dissimilarity* along these four socio-economic dimensions (see Section 3 for the specific dissimilarity measures used). With respect to socio-economic characteristics the homophily principle resembles a class interests argument. The expectation under homophily is that regions that are alike with respect to socio-economic dimensions will be more likely to share similar interests and goals and will therefore be more likely to associate in pursuit of these goals. Likewise, regions that are more dissimilar with respect to these characteristics will be less likely to associate. We can thus specify four hypotheses as follows.

**Hypothesis 1.** *Offices representing regions that are more dissimilar with respect to the percentage of the labor force in agriculture are less likely to associate.*

**Hypothesis 2.** *Offices representing regions that are more dissimilar with respect to the percentage of the labor force in industry are less likely to associate.*

**Hypothesis 3.** *Offices representing regions that are more dissimilar with respect to gross domestic product per capita are less likely to associate.*

**Hypothesis 4.** *Offices representing regions that differ more with respect to population size are less likely to associate.*

As noted above, while we cast the empirical hypotheses in the homophilic form we must keep in mind the possibility of an opposite prediction based on the dissimilarity principle. In the course of interviews that members of our research team conducted with personnel of the regional office, we found anecdotal examples supporting both the similarity and dissimilarity scenarios. Supporting the similarity argument is the case of the Brussels region, which had strong cooperative ties with regions representing large urban areas, such as Berlin. These regions were cooperating on common issues such as policing and water distribution management.

Supporting a dissimilarity argument is the case of Centre Atlantique, which represents French Centre and Poitou-Charentes as well as Spanish Castilla-León. One motivation given for this cross-national arrangement was that the French and Spanish regions composing Centre Atlantique are very different socio-economically and therefore do not compete at all for markets or resources from European institutions. Contributing further to a dissimilarity pattern is the practice of certain European agencies to encourage collaborative projects between regions with different make-ups, such as a pairing of a prosperous highly developed region with another based in a poor rural area. Lack of support (such as lack of significance of a coefficient, or a sign opposite to that expected) for any of the hypotheses in the homophilic form may be viewed, in



mirror fashion, as support for the opposite “shadow hypothesis” based on the dissimilarity principle.

### **Community of Interests and Institutional Orientations**

We use two measures to capture the similarity of interests and institutional orientations between two representations. One captures the extent to which regional offices have common interests, i.e. the extent to which they rate fourteen policy areas as similarly important. The other reflects the extent to which regional offices are in contact with the same institutions (among a list of 26 Directorates General and other European agencies). A straight application of the homophily principle leads to two predictions.

**Hypothesis 5.** *Regional offices that are more similar in their interests are more likely to associate.*

**Hypothesis 6.** *Regional offices that have more similar institutional orientations (i.e., which have contacts with the same set of European agencies) are more likely to associate.*

As was the case for the first set of hypotheses, reasons to expect opposite outcomes are not hard to find. Similarity of interests, and similarity in patterns of contact with European agencies may very well be clues that two regional representations are in competition for the same resources. If that is the case, the “shadow hypothesis” from the dissimilarity principle would lead to expect opposite (i.e., negative) effects of these variables on the likelihood of association.

## **Ecological Factors**

Regional representations have tended to open offices in and around the same district of Brussels. Staff members of regional offices tend to eat their lunch in the same restaurants and attend the same (numerous) cocktail parties. For lack of a better word we term “ecological” two factors that reflect this reality of life on the terrain and may affect the likelihood of association between two representations in a mechanical way, independent of the similarity-dissimilarity logic we have used so far. One factor is the length of time during which the two representations in a dyad have co-existed in Brussels prior to the time of the study in mid-1993. Since it takes time for organizations to establish cooperative ties with others, we expect that, *ceteris paribus*, the longer two organizations have existed side by side in Brussels, the greater the likelihood that they have established a cooperative tie. The other factor is the product of the sizes of the staff of the two representations. We speculate that inter-organizational ties often form as the result of prior ties between individual members of the two organizations involved. If this is the case, the likelihood of a tie should obey a sort of law of mass action, so that the probability of a tie between two offices is proportional to the product of the “masses” (i.e., the staff sizes) of the two offices.<sup>1</sup>

**Hypothesis 7.** *Length of co-existence in Brussels increases the likelihood of a tie between two regional offices.*

**Hypothesis 8.** *The likelihood of a tie between two regional offices increases in proportion to the product of the sizes of the staff of each office.*

## **National Embeddedness**

There are strong grounds for believing that the spatial location of a region shapes its ties with other regions. The homophily principle has clear implications: national embeddedness increases the probability that two actors will share a network connection. Social, economic and political networks are likely to be denser within states than among them. States both express and reinforce a host of similarities with respect to language, culture, and history. To the extent that commonality facilitates social interaction, so one would expect ties to be denser among regions situated in the same states.

A parallel line of theorizing builds on the political commonalities that exist among regions in the same state. Such regions generally share a common constitutional framework and exercise similar authoritative competencies. The most powerful source of similarity and difference among European regions is their national location (Hooghe and Marks 2001). The distinctly national pattern of regional authority has not waned with the empowerment of regions in several countries over the past two decades. The power resources of regional governments remain rooted in their domestic arenas (Jeffery 2000). So to the extent that a region attempts to increase its power, so it will be drawn into coalitions with regions from the same country. This is the strategy of "outflanking the state" suggested by Marks (1992; see also Marks et al. 1996) and analyzed in depth by Ansell, Parsons, and Darden (1997). This hypothesis is consistent with recent research on regional mobilization in the European Union. Previous research has found that regions with more authority in their national arenas were also those that were most likely to open an office in Brussels (Marks et al. 1996; Nielsen and Salk

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<sup>1</sup> We discuss later the possibility that the two "ecological" variables are partial proxies for the expansiveness and attractiveness components of the logit  $p^*$  model (see Anderson, Wasserman, and Crouch 1999).

1998). The idea here is that regions embedded within the same national entity will use their offices in Brussels to establish ties with other regions in the same state to pursue collective goals independently of, or in opposition to, the central state. An outflanking strategy, therefore, increases the likelihood of ties among regions that are embedded in the same country.

To the extent that the "transaction costs of networking" (Kohler-Koch 1995) increase with distance, so one would expect ties to be stronger among regions within a country. However, transaction costs facing regional offices in Brussels are unrelated to the distance between the regions they represent -- all are located within easy reach of each other. Brussels is a magnet drawing actors spaced across the Union. Otherwise distant actors are brought into close proximity. Perhaps one can go one step further and speculate that dissimilarity of national origin gives rise to a greater probability of a tie between two offices, as the differential cost of associating across national borders vanishes.

One plausible line of argument begins with the observation that proximity in the same nation may lead to competition as well as cooperation. Regions within the same state may compete for funding, investment, and influence. National proximity provides opportunities for hostility as well as friendship. One might therefore expect that regions opening a representation in Brussels, far from their home country, will be in a position to establish new alliances with regions with which they do not compete in the national arena (Bartolini 1999). Interregional conflict, or conflict between a region and the central state, may prompt a region to use its Brussels office as a springboard to escape old internecine rivalries. By the same logic one may expect that the more culturally or politically distinctive a region is, the less it may be tied to other regions of the same country, and the more it may be tied to regions beyond. Within their respective national arenas, distinct regions are a minority facing an entrenched majority; in the European Union they are simply one among a number of minorities. Such regions may be more

likely to search for coalition partners from similarly placed regions in other countries. From this standpoint one might expect that being embedded in the same national entity will decrease the probability of a cooperative tie between regions.

As there are plausible mechanisms predicting opposite relationships between being part of the same country and the existence of a cooperative tie, what direction of prediction to choose? To keep the hypothesis parallel to the other hypotheses based on homophily, we treat national embeddedness as a kind of similarity and frame the hypothesis as follows.

**Hypothesis 9.** *Offices representing regions that are embedded in the same national state are more likely to establish a cooperative tie.*

The discussion above implies that there are serious reasons to expect the opposite relationship between embeddedness and the existence of a cooperative tie.<sup>2</sup> Deviation from the hypothesized relationship in the form of a non-significant coefficient or one of opposite sign would constitute supporting evidence for these alternative arguments.

### 3. DATA

#### **The Survey of Regional Offices**

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<sup>2</sup> Our discussion of mechanisms affecting ties between regions embedded in the same national state in opposite directions parallels, without coinciding with, the two main perspectives on the recent evolution of the EU distinguished by Fligstein and Mara-Drita (1996). The *integrationist* (or *neofunctionalist*) perspective emphasizes the emergence of new interest groups and alignments that transcend national boundaries (Haas 1958; Ludlow 1989). The *intergovernmental* (or *neorealist*) perspective emphasizes the enduring role of the national governments of member states (Moravcsik 1991). The prediction of stronger ties between regions within the same national state seems more compatible with the intergovernmental perspective; the opposite prediction more consistent with the integrationist perspective.

Network data on cooperation among sub-national offices in Brussels, as well as data on contacts with European agencies, staff size, founding dates, and importance of policy issues come from a survey of regional offices conducted in the summer of 1993. We identified members of the population of sub-national offices by comparing contact lists maintained by various agencies. We obtained lists from the Permanent Delegations of member states, from a high-ranking official in Directorate General XVI (the agency responsible for Regional Policy), from an official of the European Economic and Social Committee, and from several regional offices visited by the first author in November of 1992. Though there was very substantial overlap across lists, comparing lists did yield some offices (especially smaller and newer ones) not listed by all other sources and addresses and names of Directors not included on all lists. Combining these lists we identified 59 different offices in Brussels. A copy of the survey instrument was sent to the Director of each office in summer 1993. Most directors completed the questionnaire themselves; in a few cases that responsibility was assigned to a knowledgeable staff member. We collected 49 completed questionnaires, for a response rate of 82%.

Closer examination of some of the offices surveyed caused us to later eliminate eight offices included on the original list. Among these were the two Italian organizations surveyed. The Mezzogiorno (Southern Italy) office turned out to be a branch of the national government set up to coordinate and administer structural funds for the south of Italy. The Antenne du Latium (Lazio) office turned out to have been opened by private interest groups and was not seen by other offices (and by themselves) to be similar to the rest of the population in terms of their mandate and activities. Though someone in the Flanders regional government completed a questionnaire, they did not have anyone filling their recently created post for managing relationships to EU institutions and other regional organizations. Reported cooperative ties with Flanders were found to be an artifact stemming from Brussels being the Belgian capital as

well as host to EU institutions and the regional offices. A Western Ireland office ultimately was eliminated as well, so that we could concentrate upon countries where more than a single region sent an office to Brussels. The Western Ireland office had very few ties to other offices and their elimination does not affect the results reported here. Three small Danish offices surveyed turned out to represent three municipal governments and therefore were also eliminated. Finally, Scottish Enterprise turned out to be (and was treated by many respondents as) a subsidiary organization of Scotland Europa. After talking to their directors and several other informants, and visiting their shared offices, we concluded that it would make sense to view these two organizations as one office and to aggregate reported ties to each as ties for a single actors. Thus, we end up with a population of 51 organizations. The organizations included in the analysis are listed in Table 1, which will be discussed later.

We also visited twenty of the offices in 1993. During these visits, brochures, organizational charts and other information about the offices and their activities were collected. We fielded semi-structured interviews with officials from these offices, focusing upon when and why the offices were established, their mission and goals, and descriptions of their current activities and contacts. Interviews lasted from 30 minutes to over 2 hours.

### **Measure of Cooperation**

We generated network data by presenting office directors with a list of 59 organizations (including the 51 offices retained, some organizations that we later excluded from this analysis, plus blank spaces to list other offices we might have missed). We asked them to categorize their relationships in terms of six categories:

Category 1: Our organizations are in contact to share information;

Category 2: Our organizations are in contact to coordinate contact with the EC;

Category 3: Our organizations are in contact to collaborate in analyzing EC activities;

Category 4: Our organizations work together on issues of common interest;

Category 5: Our organizations work together to influence EC policy;

Category 6: Our organizations work together to create opportunities to obtain resources from the EC (money for research, industry development, structural funds).

The categories were intended to be ordinal, with 1 indicating an extremely limited contact, to six indicating a close interactive cooperation. Each respondent indicated for each listed actor whether or not they had a tie fitting each of these categories. Hence, multiple categories could be checked off to characterize ties between a given pair of actors. However, some respondents checked off multiple categories, while others picked one category they deemed the most representative. Moreover, interviews and preliminary analysis of responses suggested that we could not treat the categories as strictly ordinal. Rather, levels 1-3 represented more casual contacts (attending receptions, involvement in working groups), while categories 4-6 indicated ties producing common action. For these reasons, we restricted further analysis to ties that fall into categories 4-6, coding a positive response to any or all categories 4-6 for a given actor as a "1" and a negative response as "0" for the dyad between the responding organization and the other organization. This renders our measure of the existence of a tie a conservative one. This produced a 51 by 51 matrix of ties coded 0-1.

Preliminary analysis of the completed surveys revealed that the responses reporting a given tie were symmetric 68% of the time (i.e., if actor i indicated a tie in category 4-6 with actor j, actor j also marked that tie 68% of the time). This is relatively high level of agreement given that we ask respondents to recall specific types of ties across a large number of actors, suggesting that actors are reasonably accurate in their reporting of ties to other organizations.



We received complete network data from 41 out of the 51 organizations.<sup>3</sup> With the exception of three German non-respondent offices (Nordrhein-Westfalen, Brandenburg and Thüringen), the other non-respondents mostly were smaller offices to which other offices reported having few ties. If the link under investigation were a type of choice (in which one can be the active "chooser" or the passive "chosen") it would be essential to maintain the asymmetries in the matrix of reported ties. Since the link we investigate refers not to a type of choice but to the factual existence of a cooperative work relationship between two representations, the direction of a tie is substantively meaningless. We take advantage of this fact to symmetricize the matrix of ties, imputing ties for non-responding offices if responding offices reported them. On the one hand, this procedure may overestimate somewhat ties among respondents, because we impute a tie (perhaps erroneously?) even where only one partner lists it. On the other hand, the procedure could still result in an underestimation in the total number of ties, in that we cannot infer nominations coming from non-respondents. Despite these limitations to our data, we are confident that these problems do not seriously distort our picture of ties and that the data provide a reasonably complete and unbiased picture of network relations for the entire 51 actor population.

### **Independent Variables**

The four measures of socio-economic dissimilarity were calculated from data in the REGIOSTAT database (Eurostat 1993). REGIOSTAT provides the most complete data for the

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<sup>3</sup> Those for whom ties had to be inferred from the responses of other offices were Nordrhein-Westfalen, Brandenburg, Thüringen, Galicia, Canarias, Rhône-Alpes, Martinique, Bouches-du-Rhône, Lancashire, and East of Scotland.

NUTS level 2 territorial units.<sup>4</sup> Data for the regions of Germany (Länder), which correspond to one or more NUTS 2 units, were obtained by aggregation. The Spanish regions correspond directly to NUTS 2 units. Most French regional offices correspond to NUTS 2 territorial units or combinations of NUTS 2 units (the multi-regional offices), with the exception of three départements with offices (Côte-d'Azur, Bouches du Rhône, Manche-Expansion) that are not included in the regression analyses. In the case of the UK, two offices are not included in this analysis for similar reasons (Strathclyde and Surrey). Thus, we included 46 of the original 51 offices in the regression models. The 46 actors correspond to 1035 potential cooperative pairs. Data for 1990 (the most recent available) were used. Values of the variables were calculated for each dyad of regional offices.

*Agricultural Labor Force Dissimilarity:* The dissimilarity in the percentages of the labor force employed in agriculture in the regions represented by the two offices in the dyad.<sup>5</sup>

*Industrial Labor Force Dissimilarity:* The dissimilarity in the percentages of the labor force employed in the industrial sector of the regions represented by the two offices in the dyad.

*Gross Domestic Product Per Capita Dissimilarity:* The dissimilarity in the gross domestic products per capita for the regions represented by the two offices in the dyad.

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<sup>4</sup> NUTS stands for *Nomenclature des Unités Territoriales Statistiques*. The nomenclature classifies territories of the EU into three nested levels from level 1 (largest regions) to level 3 (the smallest). See EUROSTAT (1992).

<sup>5</sup> The dissimilarity measures for agricultural labor force, industrial labor force, and gross domestic product per capita are calculated as  $2 | X_i - X_j | / (X_i + X_j)$ , where  $X_i$  and  $X_j$  are the values of a characteristic  $X$  for region  $i$  and region  $j$  respectively. The dissimilarity measure represents the absolute difference in the characteristics between two regions as a proportion of the average value of the characteristic for the two regions. Population size difference is calculated as the absolute value of the difference in logged (base 10) population sizes of the two regions.

*Population Sizes Difference:* The absolute difference between the logarithms (base 10) of the populations of the regions represented by the two offices in the dyad.

The following variables are based on data from the survey of regional offices.

*Common Country:* Indicator coded 1 if the two regions in the dyad are in the same country, 0 otherwise. For coding purpose Centre Atlantique (which represents both French and Spanish regions) was treated as being both French and Spanish.

*Common Interests Index:* This variable was calculated from a list of 14 policy areas (derived from previous interviews with office directors and European Union officials). Respondents were asked to mark which areas were the most important for their office (2), which were a concern but less important (1) and which were not a concern (0). The variable is a weighted sum of all matches of policy areas for the two offices in the dyad. If any respondent assigned a policy area a zero, the match received a score of zero. If both gave the area a one or one gave it a one and the other a two, the match received a score of 1. If both gave the area a 2, the match received a score of 2. The index is the sum of matches over all policy areas for each dyad.

*Common Institutional Contact Index:* Respondents were presented with a list of 26 Directorates General and other European agencies. Contact on at least a monthly basis with that institution was coded 1. No or very infrequent contact was coded 0. The index is the sum of matches (both offices indicating frequent contact) over all institutions for each dyad.

*Length of Co-Existence:* The length of time in years (to mid-1993) during which the two offices in the dyad co-existed in Brussels, as determined from the founding dates of the two offices.

*Staff Sizes Product (log base 10)*: Logarithm (base 10) of the product of the staff sizes (in 1993) of the two offices in the dyad.

#### 4. METHODS

##### **Network Analysis**

Analyses of the network data employ the UCINET IV Network Analysis Software (Borgatti, Everett, and Freeman 1992). We use the procedure CONCOR to reveals blocks of actors exhibiting a high internal density of ties (White, Boorman, and Breiger 1976; see also Wasserman and Faust 1994). While CONCOR is often justified in terms of deeper network properties such as structural equivalence, we do not use it for this purpose here. As one set of network specialists put it: “In application, then, CONCOR often finds cliques in the social system: the diagonal 1-blocks correspond to 2-cliques, and the off-diagonal 1-blocks indicate ties between cliques or between cliques of peripheral actors.” (Borgatti, Everett, and Freeman 1992:60). We exploit this feature of CONCOR in a descriptive fashion, as a heuristic device to reveal *de facto* groupings of offices with relatively high densities of within-group ties.

##### **Logistic Regression Analyses**

We use logistic regression (Hanusheck and Jackson 1977; Maddala 1983; Neter et al. 1996:567-627) to investigate the nine hypotheses concerning the factors affecting the probability of a cooperative tie linking two organizations. (Laumann, Pappi and Verbrugge 1976 is an early example of this approach.) A logistic regression model is represented by the equation  $P_{ij} = 1 / (1 + \exp(-\mathbf{X}'_{ij}\mathbf{B}))$  where  $P_{ij}$  is the probability that a given dyad of offices  $i,j$  will report the existence of a cooperative tie. The probability  $P_{ij}$  is a function of the row vector  $\mathbf{X}'_{ij}$  of values of the explanatory variables for the dyad  $(i,j)$ . The column vector of coefficients  $\mathbf{B}$  is estimated by the

method of maximum likelihood. Each coefficient in  $\mathbf{B}$  can be interpreted as the change in the (natural) log of the odds of cooperation associated with a unit change in the corresponding independent variable. To evaluate the fit of the models we present the pseudo- $R^2$  using the formula of McFadden (1974). Pseudo- $R^2$  estimates tend to be lower than the traditional  $R^2$  so that values of .20 and above are considered very satisfactory (Hensher and Johnson 1981). We also report the proportion of outcomes correctly classified by the model, a proportion expected to be 50% by chance alone.

### **Bootstrap-Based Inference**

Researchers estimating regression models with dyadic data labor under the suspicion that the error terms corresponding to dyads involving the same actor are not truly independent, as the traditional approach to statistical inference requires. If unmeasured characteristics of an actor affect the likelihood of a tie, they will be forced in the error term corresponding to each dyad in which the actor is involved, causing the errors to be correlated. While errors correlated in that way do not bias regression estimates, they may cause underestimation of the true standard errors of the estimated coefficient. We reckon that the network literature is in a state of flux concerning this methodological issue, and that no single set of guidelines has emerged. Work is on-going along several lines of approach. The QAP technique of inference developed by Krackhardt (1987) for dyadic regression models with a continuous dependent variable is not appropriate for the logistic regression models we use.<sup>6</sup> Perhaps the most comprehensive approach to modeling dyadic data is the *logit p\** family of models (Wasserman and Pattison 1996; Pattison and Wasserman Forthcoming; Robins, Patterson, and Wasserman Forthcoming).

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<sup>6</sup> James Moody at Ohio State University is currently developing a QAP algorithm for logistic regression models (personal communication).

Logit  $p^*$  models are logistic regression models with a (0,1) indicator of the presence of a tie as the dependent variable. The independent variables are measures of the difference made by the presence or absence of the tie in the values of network explanatory variables (i.e., graph statistics) such as individual expansiveness and attractiveness, the mutuality of the network as a whole, etc. (Anderson, Wasserman, and Crouch 1999; see also Lazega and Pattison 1999).<sup>7</sup> The logit  $p^*$  approach justifies the use of ordinary logistic regression with dyadic data to estimate the models, and the approximate validity of the standard errors produced by the logistic regression program (Faust and Skvoretz 1999).

While logit  $p^*$  models offer the promise of a definitive, theoretically grounded methodological solution for the type of dyadic data modeling that we use, they are highly abstract and tend to model the likelihood of a tie as a function of endogenous network characteristics (graph statistics) rather than exogenous characteristics of the actors involved in dyads on which we focus in this paper. Therefore we chose to address the possibility of correlated errors using bootstrap estimation of the standard errors of the coefficients (Efron and Tibshirani 1986, 1993; Neter et al. 1996:429-434). We carried out the bootstrap by drawing a sample of size  $n$  with replacement from the  $n$  valid observations for each model and re-estimating the logistic regression model 1,000 times, saving the estimates each time. As the

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<sup>7</sup> Some of the independent variables that we use (for substantive reasons) are related to elements of logit  $p^*$  models. Two major elements of the logit  $p^*$  model are differential expansiveness and attractiveness (or popularity), i.e. the differential propensity of actors to choose, and to be chosen by, others. In our symmetricized (non-directional) matrix of ties, expansiveness and attractiveness collapse into a single component, the non-directional propensity of an actor to be involved in many ties with others. Some of the individual variables we use to construct dyad level measures, especially the size of the staff of the regional office and the length of existence in Brussels, may be viewed as determinants of this general propensity to establish ties. Thus the product of staff sizes and length of co-existence in Brussels may be partial proxies for the combined expansiveness/attractiveness components of the logit  $p^*$  model. Including these variables may contribute to reduce the severity of the error correlation problem, in addition to the use of bootstrap-based inference.

distributions of the bootstrap estimates were quite symmetrical and not significantly different from normal, we calculated the standard error as the standard deviation of the bootstrap distribution of the coefficient. We assessed significance by calculating the p-value of the ratio of the estimated coefficient to its standard error, relative to the standard normal distribution.<sup>8</sup> As we have directional hypotheses, we use 1-tailed tests. The resulting significance levels are those reported in Table 4.<sup>9</sup>

## 5. RESULTS

### **Patterns of Cooperative Ties**

As explained in the section on methods, we first use the procedure CONCOR heuristically to identify groupings of actors with relatively high levels of reciprocal interactions. We also use this discussion as an opportunity to introduce the various regional offices to the reader. Table 1 presents the results of applying CONCOR to the 51 by 51 matrix of cooperative ties. Four blocks emerge ( $R^2 = .247$ ). A glance at Table 4 reveals that the groups identified by CONCOR correspond closely to national groupings, with interesting exceptions. The first block consists of all of the Spanish offices, with the addition of Centre Atlantique (consisting of two French regions, Centre and Poitou-Charentes, and the Castilla-León region of Spain), Martinique, and Scotland Europa. The second block comprises all British offices, except for Scotland Europa and Cornwall/Devon, with the addition of the French region of Picardie (which shares an offices with Essex). The third block consists predominantly of German offices, but also includes Cornwall/Devon and the two Belgian regions of Brussels and Wallonie. The fourth block

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<sup>8</sup> We tested the bootstrap distributions of all parameters for normality using STATA procedures **sktest** (skewness and kurtosis test) and **swilk** (Shapiro-Wilk test). See StataCorp(1999).

<sup>9</sup> We carried out the bootstrap procedure with the program STATA (StataCorp 1999).

comprises all the French regions, except for Martinique, Centre Atlantique and Picardie. Thus, a common national embeddedness appears to be a strong determinant of the closeness of ties among regional representations.<sup>10</sup>

----- Table 1 about here -----

Table 2 shows the densities of ties within and between the four blocks of representations identified by CONCOR. The blocks are named after the predominant nationality. The German block has the highest within-block density, with 72% of the possible ties realized. The Spanish block has the next highest level, with 53% of possible ties, followed by the British block, with 36%, and finally the French block with only 22% of ties realized. Only two representations account for all the internal ties in the French block. At one extreme, the high density of ties among German representations is not unexpected since we know from interviews that they have organized working groups that meet regularly to hear speakers, to discuss policy areas of common interest and to meet together with European Commission officials. At the other extreme, the low internal level of cooperation among French representations is consistent with qualitative data from interviews suggesting that French organizations are more likely than those of other countries to describe other French regional offices as competitors rather than allies. Another clue is the tendency of representatives of French regions to describe their mandate more as monitors and conduits of European Commission information and activities than as lobbyists and proactive influencers of policy (which is a characterization of their mandate commonly given by Spanish and German representatives).

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<sup>10</sup> We checked the sensitivity of this result to our assumptions concerning the exclusion of Flanders, the merging of cooperation data for Scotland Europa and its Scottish Enterprise subsidiary, and the decision to treat Picardie and Essex as separate, even though they work out of the same office in Brussels. Other CONCOR models reflecting these variations for inclusion and exclusion of cases yield essentially the same block structure, with national origins continuing to be the defining characteristic and with only a few of the actors shifting in their membership to different blocks.



----- Table 2 about here -----

While these findings support Hypothesis 9 in suggesting that a common national embeddedness is a strong determinant of cooperative ties among regional actors, they raise the question of why ties tend to be established preferentially between offices from the same country. The apparent importance of common national embeddedness could be due to the greater socio-economic similarity among regions within the same country, relative to regions from different countries. Likewise, regions from the same country might be more willing to associate because they are more likely to emphasize the same policy areas or otherwise share the same goals and engage in similar activities. We will investigate some of these possibilities in the context of the logistic regression models discussed next.

### **Multivariate Models of Cooperative Ties**

We estimated logistic regression models with the existence of a tie (coded 1, 0) as the dependent variable. We introduce different sets of explanatory variables in turn. Each model is estimated from all the dyads for which data are available. The number of cases varies from model to model due to differences in the availability of data for the explanatory variables. Correlations and basic statistics for all variables are presented in Table 3. The regression results are presented in Table 4.

----- Table 3 about here -----

----- Table 4 about here -----

Model 1 includes four measures of socio-economic dissimilarity between the regions composing the dyad. The Pseudo-R<sup>2</sup> is .035 and the model successfully classifies 72.6% of the outcomes. The effects of dissimilarity in agricultural labor force and population size difference are significant at the .05 level in 1-tailed tests. The effect of dissimilarity in gross domestic

product is more strongly significant ( $p < .01$ ). The coefficient of dissimilarity in labor force employed in industry is non significant. The negative effects of agricultural labor force dissimilarity and especially the strong negative effect of GDP per capita dissimilarity are consistent with Hypotheses 1 and 3, and thus provide some support for the general principle of homophily, the view that similarity (rather than dissimilarity or complementarity) enhances the likelihood of cooperation. However, Hypothesis 2 (concerning dissimilarity in the industrial labor force) is not supported, and the positive effect of difference in population size contradicts Hypothesis 4 and the principle of homophily. Overall, while there is some support for homophily, the results are mixed and the collective explanatory power of the socio-economic dissimilarity variables is not very strong.

Model 2 estimates the effects of the “ecological” factors: length of co-existence in Brussels and product of staff sizes. The coefficients of both variables are positive and significant, at the .05 and .01 levels, respectively. Thus having co-existed together in Brussels for an extended period of time and having both a large staff are features of a dyad of regional representations that enhance the probability of a cooperative tie. These results are fully consistent with Hypotheses 7 and 8.

Model 3 introduces the indexes of common interests and of common institutional contacts. The coefficients of both variables are strongly significant (at the .01 level) and in the expected positive direction. Thus representations that have more similar interests and goals, and that develop more similar institutional contacts, are more likely to develop cooperative ties. These patterns are fully consistent with Hypotheses 5 and 6. Similarity with respect to interests and goals, and with respect to institutional orientations, enhances the likelihood of cooperation. These results are inconsistent with a major role of competitive processes in the mechanisms of

association, since competition would predict negative effects of these variables on the probability of a tie.

Model 4 includes together all the variables introduced so far. While the pseudo- $R^2$  rises to .078, the percentage of correctly classified dyads does not increase in proportion.<sup>11</sup> Only three of the coefficients remain significant: GDP per capita dissimilarity ( $p < .01$ ), length of co-existence in Brussels ( $p < .05$ ), and the common interests index ( $p < .01$ ). The signs of all the significant coefficients are in the expected directions.

Model 5 provides another look at Hypothesis 9, the conjecture that regions embedded in the same national entity are more likely to form cooperative ties. The tendency of offices to cluster under CONCOR into groupings with a strong national flavor already constituted support for Hypothesis 9. In Model 5 the common country indicator (1 if the two regions are part of the same country, 0 otherwise) is the sole independent variable. The results strikingly confirm the pattern of national clustering found previously. The single measure of common national embeddedness is strongly significant (at  $p < .01$ ) and achieves a pseudo- $R^2$  of .198. The model successfully classifies 81.2% of the cases, a performance better than Model 4 with all the other variables combined. Thus common national embeddedness again appears as a very strong predictor of association.

Model 6 pits the common country indicator against the four socio-economic dissimilarity measures. The pseudo- $R^2$  and percentage correctly classified actually decline somewhat, undoubtedly because of the different subset of dyads, due to missing data, on which estimation of this model is based. The only remaining significant coefficient (at  $p < .05$ ) is that of population size difference, which is positive and therefore in the direction of the

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<sup>11</sup> This discrepancy is due to the fact that Model 4 is estimated from fewer dyads, due to the larger number of missing observations.

complementarity, rather than the direction predicted by Hypothesis 4 based on the homophily principle. Thus, when common national embeddedness is controlled, it appears that regions of different sizes (or, alternatively, different degrees of urbanization) have a somewhat greater propensity to cooperate.

Model 7 tests the effects of the “ecological” variables against the common country indicator. Contrary to what might have been expected, in view of the ability of the common country indicator to attenuate effects of the dissimilarity measures in Model 6, here the length of co-existence in Brussels and the product of staff sizes remain highly significant (at the .05 and .01 levels, respectively) despite the presence of the common country indicator in the model. The pseudo-R<sup>2</sup> is a sizeable .230. The persistent effects of the “ecological” variables even in the presence of the common country indicator are not inconsistent with the idea that they might be partial proxies for the combined expansiveness and attractiveness components of the logit p\* model. (See footnote 6.)

Model 8 combines the common country indicator with the common interests index and the common institutional contacts index. Here again the common interests and common institutional contacts remain significant (at  $p < .01$  and  $p < .05$ , respectively) and in the same homophily-consistent direction. The pseudo-R<sup>2</sup> increases to .257, a substantial value for this measure of fit, and the percentage correctly classified reaches 80.8%.

Finally we include all the variables in Model 9. The pseudo-R<sup>2</sup> and percentage correctly classified decrease somewhat, to .218 and 78.6% respectively, due to the restricted subsets of dyads, and only the coefficients of the common interests index and the common country indicator remain individually significant (at  $p < .05$  and  $p < .01$ , respectively). The relatively high correlation between the common country indicator and GDP per capita dissimilarity (-.407) may account for why GDP per capita dissimilarity is no longer significant when the common

country indicator is introduced. Length of co-existence has a low correlation with common country (.057) (so collinearity cannot be an important factor here), but the mean founding dates for offices from different countries are different (British and French offices are newer than German and Spanish ones on the average). The common country indicator may somehow attenuate the effect of length of common existence as a result.

## DISCUSSION AND CONCLUSION

Representations of sub-national regions of Europe that opened in Brussels after 1985 represent a new form of organization. While features of their structure and activities may resemble, and have been inspired by, existing types of organizations such as consulates, chambers of commerce, or even tourism information centers, to a large extent these new organizations faced a “clean slate” unencumbered by pre-existing tradition or expectations. We observed these organizations some eight years after the appearance of the first specimen, during a phase of rapid multiplication, and we captured a snapshot of the network of cooperative ties that these organizations had spontaneously generated.

To explain the existence of a tie between two regional offices we brought to bear several lines of theorizing. On the basis of the principle of homophily we expected that ties would form preferentially between organizations emanating from regions that are more similar along socio-economic dimensions. We found support for the prediction that offices of regions that are more similar in GDP per capita are more likely to cooperate, and weaker support for a positive effect of similarity in agricultural employment. However, regions that differ more with respect to population size (i.e., degree of urbanization) also tend to associate preferentially, contrary to the homophily principle. Similarity of interests, and similarity of institutional contacts were significantly associated with the likelihood of a tie. On balance, therefore, more results support

the homophily principle rather than the opposite, the view that more dissimilar (and therefore complementary) organizations will be more likely to cooperate. Two “ecological” factors, the length of co-existence of the two offices in Brussels and the product of the sizes of their staff, were positively associated with the likelihood of a tie.

By far the most powerful predictor of the likelihood of a tie is the common country indicator. Representing regions in the same country strongly enhances the probability that two offices will establish a cooperative tie. In the EU's system of multi-level governance, regional offices form networks that reflect their roots in territorial states. European integration brings regions from different countries into closer proximity with each other but the resources on which they draw, the commonalities they share, and the networks they form are determined largely by their territorial, political and social roots. A "Europe of the Regions," in which national states would wither away to be replaced by a regional mosaic, appears as a distant utopia. Paradoxically, by bringing diverse actors from different regions under a common roof, European integration enhances, rather than diminishes, the role of territory in shaping networks. In that respect European integration is far from a homogenizing process.

Our snapshot of inter-office ties was taken only a few years after the first regional office opened in Brussels, during a period of fast growth of this type of organizations. Thus the patterns we found may be more characteristic of this growing phase than of a mature community of regional offices. One could speculate, in particular, that the strong effect of national embeddedness we found is only a temporary feature of the community of regional offices, as the fledgling regional representations in an alien environment first turn for support to their national colleagues, before embarking on relationships with more exotic regional entities. If this is the case, and the centripetal tendency in establishing ties is in part characteristic of an early phase of emergence, one would expect that the cooperative network will evolve toward a

more centrifugal (i.e., more integrationist) structure in which common national embeddedness is a less dominant factor. Further research is thus needed to investigate the evolving roles of national origin versus more universal bases of similarity or complementarity in the formation of cooperative ties among regions. Principal hypotheses to test include the predictions that (1) the network of cooperative ties among regional offices will become over time less strongly influenced by common national embeddedness, and (2) as the importance of national origin recedes, similarities in goals and activities will become more powerful predictors of ties.

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TABLE 1: Blocks of regional offices identified by CONCOR

BLOCK 1 "Spanish"	BLOCK 2 "German"	BLOCK 3 "French"	BLOCK 4 "British"
Andalucia (E)	Baden-Württemberg (D)	Alsace <sup>c</sup> (F)	East of Scotland <sup>c</sup> (GB)
Canarias (E)	Bayern (D)	Bouches-du-Rhône <sup>a</sup> (F)	Essex (GB)
Cataluña (E)	Berlin (D)	Bretagne-Pays de la	Highlands and Islands <sup>c</sup>
Centre Atlantique: <sup>b</sup>	Brandenburg (D)	Loire (F)	(GB)
Castilla-León (E)	Bremen (D)	Côte d'Azur (Alpes-	Kent (GB)
Centre (F)	Brussels (B)	Maritimes) <sup>a,c</sup> (F)	Lancashire (GB)
Poitou-Charentes (F)	Cornwall-Devon (GB)	Grand Est: <sup>b</sup>	Midlands (GB)
Galicia (E)	Hanse: <sup>b</sup>	Alsace <sup>c</sup> (F)	Northern Ireland (GB)
Madrid (E)	Hamburg (D)	Bourgogne (F)	North of England (GB)
Martinique (F)	Schleswig-Holstein (D)	Champagne-Ardenne	Picardie (F)
Murcia (E)	Hessen (D)	(F)	Strathclyde <sup>a,c</sup> (GB)
País Vasco (E)	Mecklenburg-	Franche-Comté (F)	Surrey <sup>a</sup> (GB)
Scotland Europa <sup>c</sup> (GB)	Vorpommern (D)	Lorraine (F)	Wales (GB)
Valencia (E)	Niedersachsen (D)	Grand Sud: <sup>b</sup>	Yorkshire (GB)
	Nordrhein-Westfalen (D)	Aquitaine (F)	
	Rheinland-Pfalz (D)	Languedoc-Roussillon	
	Saarland (D)	(F)	
	Sachsen (D)	Midi-Pyrénées (F)	
	Sachsen-Anhalt (D)	Provence-Alpes-Côte	
	Thüringen (D)	d'Azur <sup>c</sup> (F)	
	Wallonie (B)	Corse (F)	
		Manche Expansion <sup>a</sup> (F)	
		Nord-Pas-de-Calais (F)	
		Rhône-Alpes <sup>c</sup> (F)	

Member states: E = Spain; D = Germany; F = France; GB = Great Britain; B = Belgium

<sup>a</sup> represents a territorial unit smaller than NUTS level 2

<sup>b</sup> multi-regional office (territorial units as listed)

<sup>c</sup> territorial unit represented by more than one office

TABLE 2: Densities of ties within and between blocks of regional offices<sup>a</sup>

	BLOCK 1 "Spanish"	BLOCK 2 "German"	BLOCK 3 "French"	BLOCK 4 "British"
BLOCK 1	.53	.13	.04	.19
BLOCK 2	---	.72	.15	.09
BLOCK 3	---	---	.22	.13
BLOCK 4	---	---	---	.36

<sup>a</sup>See Table 1 for the composition of blocks identified by CONCOR

TABLE 3: Pairwise correlations (N's in parentheses) and basic statistics.

	1	2	3	4	5	6	7	8	9	10
1. Interregional link indicator (level 4 to 6)	--	--	--	--	--	--	--	--	--	--
2. Agricultural labor force dissimilarity	-.113 (780)	--	--	--	--	--	--	--	--	--
3. Industrial labor force dissimilarity	-.079 (780)	.206 (780)	--	--	--	--	--	--	--	--
4. GDP per capita dissimilarity	-.172 (780)	.367 (780)	.227 (780)	--	--	--	--	--	--	--
5. Population size difference <sup>a</sup>	-.028 (820)	.190 (780)	.133 (780)	.130 (780)	--	--	--	--	--	--
6. Length of co-existence in Brussels	.116 (741)	-.125 (595)	.009 (595)	.023 (595)	.115 (595)	--	--	--	--	--
7. Staff sizes product	.173 (741)	-.201 (595)	.094 (595)	.162 (595)	.001 (595)	.248 (741)	--	--	--	--
8. Common interests index	.180 (666)	-.100 (528)	-.049 (528)	.029 (528)	-.017 (528)	-.079 (666)	.304 (666)	--	--	--
9. Common institutional contacts index	.180 (666)	-.197 (528)	-.123 (528)	.028 (528)	.038 (528)	.368 (666)	.320 (666)	.465 (630)	--	--
10. Common country indicator <sup>b</sup>	.499 (1035)	-.170 (780)	-.108 (780)	-.407 (780)	-.035 (820)	.057 (741)	.078 (741)	.080 (666)	.086 (666)	--
N	1035	780	780	780	820	741	741	666	666	1035
Minimum	.00	.00	.00	.00	.00	.50	.60	.00	3.00	.00
Maximum	1.00	1.99	.75	1.06	1.68	8.50	2.36	26.00	24.00	1.00
Mean	.26	.92	.22	.31	.42	2.79	1.20	10.61	10.79	.24
S.D.	.44	.55	.16	.23	.30	1.54	.32	3.67	4.28	.43

<sup>a</sup> Absolute difference in log population sizes

<sup>b</sup> Centre-Atlantique coded 1 with both French and Spanish regions

TABLE 4: Coefficients for Logistic Regression Models of Interregional Link Indicator<sup>a</sup>

	Model 1	Model 2	Model 3	Model 4	Model 5
Agricultural labor force dissimilarity	-.283* (-1.732)	--	--	-.226 (-1.015)	--
Industrial labor force dissimilarity	-.658 (-1.227)	--	--	-1.083 (-1.390)	--
GDP per capita dissimilarity	-1.701** (-3.608)	--	--	-2.212** (-3.303)	--
Population size difference	.585* (1.855)	--	--	.594 (1.403)	--
Length of co-existence in Brussels	--	.106* (1.964)	--	.163* (2.160)	--
Staff sizes product	--	1.031** (3.922)	--	.456 (1.295)	--
Common interests index	--	--	.084** (2.876)	.117** (2.915)	--
Common institutional contacts index	--	--	.052** (2.407)	-.004 (-.140)	--
Common country indicator	--	--	--	--	2.465** (14.706)
Constant	-.318 (-1.553)	-2.416** (-7.296)	-2.225** (-7.173)	-2.274** (-4.171)	-1.802** (-17.670)
Pseudo R <sup>2</sup>	.035	.029	.035	.078	.198
Correctly classified (%)	72.6	70.0	68.7	71.6	81.2
N	780	741	630	496	1035

\*\* p < .01 \* p < .05 (1-tailed tests)

<sup>a</sup> Maximum likelihood estimates; number in parentheses is estimate divided by the standard deviation of the bootstrap distribution (1,000 replications); significance levels obtained by normal approximation; all models significant at p<.001

TABLE 4 (cont'd): Coefficients for Logistic Regression Models of Interregional Link Indicator<sup>a</sup>

	Model 6	Model 7	Model 8	Model 9
Agricultural labor force dissimilarity	-.276 (-1.539)	--	--	-.276 (-1.201)
Industrial labor force dissimilarity	-.657 (-1.012)	--	--	-.490 (-.585)
GDP per capita dissimilarity	.478 (.959)	--	--	.478 (.678)
Population size difference	.629* (1.717)	--	--	.460 (.980)
Length of co-existence in Brussels	--	.107* (1.679)	--	.084 (1.056)
Staff sizes product	--	1.059** (3.547)	--	.464 (1.126)
Common interests index	--	--	.090** (2.944)	.085* (2.003)
Common institutional contacts index	--	--	.053* (1.963)	.009 (.290)
Common country indicator	2.314** (10.421)	2.607** (12.604)	2.804** (12.183)	2.567** (7.966)
Constant	-1.638** (-6.249)	-3.206** (-8.201)	-3.073** (-8.087)	-3.231** (-5.084)
Pseudo R <sup>2</sup>	.170	.230	.257	.218
Correctly classified (%)	79.4	80.7	80.8	78.6
N	780	741	630	496

\*\* p < .01 \* p < .05 (1-tailed tests)

<sup>a</sup> Maximum likelihood estimates; number in parentheses is estimate divided by the standard deviation of the bootstrap distribution (1,000 replications); significance levels obtained by normal approximation; all models significant at p<.001