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A decade of international diversity in collaborative research published in highly ranked accounting journals

Abstract

Purpose. This study examines the patterns of international diversity in collaborative research published in highly ranked accounting journals. **Design/methodology/approach.** We examine four types of collaborations: regional collaborations; inter-regional collaborations; European national; and European international collaborations. The empirical study is based on 4,033 papers published in 13 journals between 2010 and 2019. Social network analyses were carried out for the Inter-regional and the European international collaborations. **Findings.** The broad analysis of the regional and inter-regional collaborations reveals not only significant differences between the North American and the non-North American journals but also important dissimilarities among the non-North American journals. The analysis of the European collaborations reveals significant differences between the journals where the UK institutions play a significant role in leading a network of European researchers and the journals where the Dutch and/or German institutions also play a significant role in another network as European leaders in terms of research. **Originality.** Our study shows empirically that the patterns of international diversity in all the types of collaborations under examination in the highly ranked accounting journals vary across different groups of journals, revealing not only significant differences between the North American and non-North American journals in accounting, but also showcasing how the non-North American journals present a lot more heterogeneity. We also believe the analysis of the European case is a noteworthy contribution of this study given existing accounting literature fails in acknowledging European diversity.

Keywords: accounting journals; co-authorship; social network analysis; accounting research; accounting in Europe.

1. Introduction

Our study investigates the patterns of international diversity in collaborative research published in highly ranked accounting journals during the most recent complete decade[1]. Our focus herein is the relationship between international diversity in co-authorships with differences in terms of the type journals, referring to the historical schism between North American and non-North American journals in accounting, with the first often focusing on positivist research and the latter recognized as being more acceptive of critical, interpretive, and interdisciplinary research (e.g., Guthrie et al., 2019; Hussain et al., 2020; Moses & Hopper, 2022). Although there may be dissenting views among researchers regarding a classification based on publication regions, the historical divide between North American and non-North American journals remains noteworthy in the field of accounting (Dhanani & Jones, 2017; Hussain et al., 2020; Moses & Hopper, 2022; Pelger & Grottke, 2015; Pelger & Grottke, 2017; Raffournier & Schatt, 2010). Hence, we compare "North-American or North-American inspired journals" (Guthrie et al., 2019, p. 12) (henceforth "North American journals") with the leading journals for critical, interpretive, and interdisciplinary approaches (Hussain et al., 2020) and those which are more acceptive of this latter approaches (hereafter "non-North American journals") regarding the international diversity in collaborative research published in them. This study, utilizing a large dataset, investigates the patterns of international diversity in collaborative research published in accounting journals. The aim is to empirically verify whether the historical tension and divide in accounting literature persist while offering a more nuanced view of significant dissimilarities that are often conflated.

Our empirical study relies on the 4,033 papers (only those with more than one author) that were published in 13 highly ranked accounting journals between 2010 and 2019. Cluster

[1] The journals examined are presented in Table 1 and the rationale for their selection is further detailed in section 3.1. We consider highly ranked accounting journals those that were ranked as 4*, 4 or 3 in the 2018 ABS Academic Journal Guide (Subject area: Accounting) and are also ranked consistently over the last 3 years under analysis as Q1 or Q2 simultaneously in the ISI Web of Science and Scopus rankings.

analyses aiming at finding the (dis-)similarity of the journals were carried out for the regional collaboration (co-authors affiliated with universities from the same world geographic region). Social network analyses were carried out for the Inter-regional (co-authors affiliated to universities from different regions) and the European international collaborations (co-authors affiliated to European institutions, either from the same European country or from different European countries). We consider the examination of the European scenario to be a valuable addition to this research, as the current body of accounting literature overlooks the diversity within Europe.

A small number of recent studies on the internationalization of accounting research also use social network analysis to examine the structures of international accounting research networks (Andrikopoulos & Kostaris, 2017; Kiliç et al., 2019; Lohmann & Eulerich, 2017; Uyar et al., 2020; see also: Bianchi et al., 2023) who documents the lack of research addressed by this paper). They report that accounting research elites are intertwined with the most prolific authors and function as professional accounting research networks. The present study extends this literature, and through the use of social network analysis explores the structure of collaborative international networks in accounting co-authorships. Unlike existing studies, we discuss whether the geographical polarization that has been detected at the level of the types of research (e.g., Hussain et al., 2020; Moses & Hopper, 2022) and at the level of the internationalization of editorial boards (Dhanani & Jones, 2017; He et al., 2021) also exists at the level of the international co-authorship patterns. We deem as especially relevant the analysis concerning the European case, which offers novel information on the topic. Our findings suggest that the geographical polarization that has been detected at the level of the types of research and at the level of the internationalization of editorial boards also exists at the level of the international co-authorship patterns. The examination of the European case shows a predominance of researchers from the UK,

followed at a distance by those of Germany and the Netherlands, with a certain inclination by researchers from the two latter countries for publishing in North American journals.

The paper unfolds as follows. Section 2 is devoted to presenting relevant related literature. In Section 3, we present the research methods and design. In Section 4 we present the results of the study and the discussion of the findings. Lastly, in Section 5 we offer some concluding remarks.

2. Relevant literature

2.1. Empirical literature on international collaborations in accounting journals

Diversity in accounting academic research has been studied from different perspectives: subject areas and research methods in which the editorial teams of journals have specialized (Endenich & Trapp, 2018 [see also, commenting Endenich and Trapp (2018): Chapman, 2018; Fogarty, 2018; Hermanson, 2018; Kachelmeyer, 2018; Roberts, 2018; Salterio, 2018][2]; gender of journals' editorial boards (Brinn & Jones, 2008; Dhanani & Jones, 2017); internationalization of editorial boards (Dhanani & Jones, 2017); internationalization of accounting research (Carmona et al., 1999; Jones & Roberts, 2005; Lukka & Kasanen, 1996); concentration (distribution among individuals and/or universities) in publishing in accounting journals (Oler et al., 2016; Swanson, 2004; Swanson et al., 2007); and co-authorship in accounting research (Andrikopoulos et al., 2016; Andrikopoulos & Kostaris, 2017; Endenich & Trapp, 2016; Fleischman & Schuele, 2009; Kiliç et al., 2019; Tucker et al., 2016; Uyar et al., 2020).

We understand that the term diversity can be understood and investigated across various domains (e.g., demographic: age, gender, sexual orientation, ethnic/racial, cultural: nationality, language, religious, organizational: functional, educational, professional, as well

[2] All these articles were published in a CPA special issue to the topic of "research diversity in 'top' accounting journals" (Annisette et al, 2018, p. 1).

as, lifestyle, generational, cognitive, psychological, neurodiversity, among others). Given that our main focus is collaboration, we will concentrate on the scarce empirical literature concerning co-authorships and the types of collaborations in accounting research. Our focus contributes to the understanding of functional diversity in the accounting research field (e.g., roles and contributions of each research locus), nationality based on country of academic affiliation and geographic regional participation, as well as a nuanced view of diversity of thought and impact, as papers are representative of perspectives and ideas. Earlier studies, such as Carnegie and Potter (2000), have been restricted to identifying the incidence of co-authorship without a practical contribution on illuminating the types and locus of collaborations. Present-day research offers more sophisticated analyses of the topic (Andrikopoulos et al., 2016; Andrikopoulos & Kostaris, 2017; Endenich & Trapp, 2016; Englebrecht et al., 2008; Fleischman & Schuele, 2009; Kiliç et al., 2019; Tucker et al., 2016).

Based on the analysis of 12 highly ranked accounting and non-accounting journals for the period 1979-2004, Englebrecht et al. (2008) studied co-authorship practices of academic accountants. They found a significant growth in collaboration and a greater level of co-authorship in highly ranked non-accounting journals when compared to accounting journals.

Studies focusing on accounting and auditing research (Andrikopoulos et al., 2016; Andrikopoulos & Kostaris, 2017; Fleischman & Schuele, 2009; Kiliç et al., 2019) reveal an increase in multi-authored papers over time. Another relevant finding pertains to the high representation of US-based institutions (Andrikopoulos & Kostaris, 2017) and the high level of local clustering presented by research networks (that is, one's collaborators also collaborate with each other).

The studies that examine relationships between countries of origin provide an interesting set of initial findings. Based on a sample of 2,593 papers published in 12 auditing and accounting journals during the period 1997-2014, Andrikopoulos et al. (2016) examined

international collaboration between auditing academics. They found that collaboration between researchers affiliated with institutions from different countries increased during the period. However, they also found that the greatest representation of US affiliations pertained to US journals and that US academics "do not often collaborate with scholars from other countries" (p. 68) (as evidenced by only 8.83 percent of the articles being the product of a collaboration between US and non-US institutions). Endenich and Trapp (2016) examined 7,105 papers published in 15 accounting journals from North America, Europe, Australia, and New Zealand, and found that the involvement of researchers from Asian countries in international cooperation is greater than that of researchers from most European countries and the US. They refer to "intensive cooperative relationships" between China and Hong Kong and between Canada and the USA, and "relatively close cooperation" between various Asian countries and the USA (p. 624).

2.2. North American versus Non-North American accounting journals

Concerning the type of research predominantly published in different types of journals, there are a number of studies suggesting and presenting evidence in which one can detect substantial differences between the type of research predominant in different types of accounting journals based on their geographical region (Ballas & Theoharakis, 2003; Dhanani & Jones, 2017; Hussain et al., 2020; Lukka & Kasanen, 1996; Moses & Hopper, 2022; Pelger & Grottke, 2015, Pelger & Grottke, 2017; Raffournier & Schatt, 2010). These studies depict the highly ranked North American accounting journals in a similar fashion. These journals focus on a relatively "limited number of research fields and methodologies (financial accounting studies using a positivist perspective and statistical methods)", reveal a lack of interest regarding "differences in the institutional characteristics of countries", and are reluctant "to publish articles that use heterodox analysis frameworks" (Raffournier & Schatt,

2010, p. 162). These characteristics are typical of those attributed to the North American mainstream approach to accounting research (Pelger & Grottke, 2015, 2017).

Distinguishing between North American and non-North American journals, Wakefield (2008) provided an interesting examination of citation patterns. Her findings are consistent with what has just been stated. This researcher's examination revealed two distinct groups of journals: one including the JAE, the JAR and the TAR, which is closely linked with journals such as CAR and RAS; the other group includes the journal AAAJ, AOS, BAR, CPA, EAR, and MAR. Of the journals in the second group, the one revealing strongest ties to the other group is AOS, "primarily via TAR and JAR" (p. 238). Another interesting finding pertains to the "based discipline's influence" of the journals AOS, CAR, JAE, JAR, and TAR (Wakefield, 2008, p. 238). Wakefield found that the authors of AOS cite the economics and finance disciplines at a rate of 21% whereas the authors of the other four journals cite these disciplines at rates superior to 70%. Focusing on the RAS and examining the period 1996-2020, Baker et al. (2022) reveal that JAE, JAR, TAR, CAR, and RAS are among the top six journals citing articles published in RAS. They also reveal that the theme "financial accounting remains the dominant focus" and that the empirical-archival technique is predominant across these five journals (p. 7).Referring to a divide between North American accounting research and the rest, Dhanani and Jones (2017, p. 1028) refer to "an interesting trend in non-US journals", that of a decrease in the reliance on US academics for boards' composition. These researchers consider that this finding, in combination with their observation of an increasing orientation toward positivist research in the US and a greater prominence of specialism topics (such as history, management accounting, etc.) in the UK and Australia, suggests "that two distinct sub-disciplines are emerging, each being supported by different geographical regions" (ibid.). Whilst the US "is becoming more and more positivist", Europe and Australia "conduct broader research that embraces non-positivist

research". Based on this literature, one would expect that North American journals would be more concentrated on publishing authors affiliated with North American institutions than their counterparts, which are more likely to present greater diversity in publishing patterns.

In what follows we will use the term "North American journals" for journals that have "long been viewed by most scholar as being very close to the North American positivist tradition" (Hussain et al., 2020, p. 5) or those that are "North-American or North-American inspired journals" (Guthrie et al., 2019, p. 12). These are clearly the journals JAE, JAR and TAR, but also the JAAP, the RAS and the CAR, which "is almost certainly another predominantly positivist outlet" (ibid.). Dhanani and Jones (2017) classify all these journals as positivist, except the JAAP, which they classify as generalist. We will use the term Non-North American journals to include journals which have been depicted in the existing literature as less reluctant to accept a larger variety of research fields and methodologies, reveal some interest regarding "differences in the institutional characteristics of countries", and being more acceptive "articles that use heterodox analysis frameworks" (Raffournier & Schatt, 2010, p. 162), such as the journals ABR, BAR, EAR and MAR. The journals AAAJ, AOS and CPA, considered as the "three leading journals" for critical, interpretive and interdisciplinary approaches are certainly included in this latter category (Hussain et al., 2020, p. 3). Dhanani and Jones (2017) classify the three latter journals as critical, and the other four journals as generalist. Hence, we will use this distinction between North American and non-North American inspired journals, with the former publishing predominantly "what may be broadly considered the more positivist, quantitative, economics-based research", and the latter publishing mainly or being substantially more acceptive of the "interpretive, qualitative tradition" (Tucker et al., 2016, p. 190).

3. Research design

3.1. Sample and data collection

The empirical study relies on the peer-reviewed papers published in the most recent complete decade before data collection (2010 to 2019). To ensure that we analyse papers that were published in high-ranked journals, we have selected accounting journals that are ranked as 4*, 4 or 3 in the 2018 ABS Academic Journal Guide (Subject area: Accounting) and are also ranked consistently over the last 3 years under analysis as Q1 or Q2 simultaneously in the ISI Web of Science and Scopus rankings. Table 1 presents the counts of papers and journals included in the analysis.

Insert Table 1 here

Data collection followed a two-stage procedure. First, based on prior literature, we considered only peer-reviewed papers as the unit of analysis (i.e., editorials or book reviews were excluded) (Andrikopoulos & Kostaris, 2017; Englerbrecht et al., 2008; Jones & Roberts, 2005). We manually collected all papers published in the identified journals. Given the research goals of investigating collaborations we have further excluded papers written by a single author. Table 1 presents the resulting sample of 4,033 peer-reviewed papers published in the recent decade, as well as the breakdown by each journal. In a second stage, we collected the country of primary affiliation of all authors in these papers. Data collection was divided among two authors that cross-checked each other's work. A third author inspected all datasets for typos and classification errors.

3.2. Data analysis

We started by classifying each of the papers as regional (with co-authors affiliated with institutions from the same world geographic region) or inter-regional (with co-authors affiliated with institutions from different regions). We have decided to conduct this analysis

because prior literature associates journals with geographic regions (Endenich & Trapp, 2016) or examines authors' regions) (Hopper & Bui, 2016).

As shown in Table 2, globally, 74% of the papers are from co-authors affiliated to institutions from the same region (regional), and this percentage ranges from 68% in BAR to 78% in MAR.

Insert Table 2 here

We analyse the patterns of international diversity in collaborative research considering the regional and inter-regional papers separately. We additionally analysed the papers that were prepared only by co-authors affiliated to a European institution, considering separately those with co-authors from the same European country (national) and those with co-author(s) from different European countries (international). This additional analysis was conducted given that Europe includes countries of very different traditions (e.g., Hall, 2018; Pinto et al., 2019). We believe this additional analysis overcomes some limitations of previous studies that have considered all European countries as if they were very homogenous.

3.3. Analysis of regional collaborations

To analyse the patterns in regional collaborative research, we computed the number of papers classified as regional that were published in each journal and their distribution by regions. We then analyse the (dis-)similarity of the journals by performing cluster analysis.

We first compared 30 different algorithms in R using the package NbClust (Charrad et al., 2014) to determine the optimal number of clusters. We adopted Ward's method (Ward, 1963) as a criterion to form clusters that minimizes the total within-cluster variance

(Kassambara & Mundt, 2017). Then, we generated a dendrogram that illustrates the arrangement of clusters and sub-clusters produced by hierarchical clustering. Specifically, in our research it shows how (dis-)similar a journal is in the vector space to its own cluster (cohesion) compared to other clusters of journals (separation).

3.4. Analysis of inter-regional collaborations

To analyse the international diversity in inter-regional collaborative research, we perform social network analysis (SNA) for each of the 13 journals, having the nodes as the regions of the globe and the links as the co-authorships established between authors from those regions. In addition, we analyse the (dis-)similarity of the journals with cluster analysis, and by providing SNA graphs that aggregate these meaningful groups of journals.

3.5. Analysis of the collaborations of European authors

To analyse the patterns in collaborative research by co-authors affiliated to a European Institution, we perform a parallel procedure to the one used with the entire sample, with nodes directly representing the country of affiliation of the European authors in that region. Therefore, as a first step, we computed the number of papers co-authored only by authors from the same European country (National European) for each journal, and conducted a cluster analysis. As a second step, we perform a SNA with the papers co-authored by authors from different European countries (International European), providing the results both mathematically and visually.

4. Results and discussion

4.1. Regional collaborations

First, the papers whose co-authors are affiliated to institutions from the same region were analysed. Table 3 presents the distribution of these papers by region, globally and for each journal.

Insert Table 3 here

Globally, 54% of the papers are from co-authors affiliated to North American institutions, followed by those from co-authors affiliated to European institutions (33%). The co-authors affiliated to Australasian and Asian Institutions contribute with 8% and 4% of the papers, respectively. The other regions are only marginally represented in each journal or not represented at all.

Based on this distribution of papers by regions in each journal, Figure 1 presents the dendrogram obtained in the cluster analysis. Three clusters are identified: 1) JAR, RAS, JAPP, JAE, TAR, and CAR; 2) CPA, BAR, and AAAJ; and 3) AOS, ABR, MAR, and EAR.

Insert Figure 1 here

In each of the journals included in Cluster 1 (JAR, RAS, JAPP, JAE, TAR, and CAR), about 90% of the papers are from co-authors affiliated with North American institutions (except in the case of JAPP, where this percentage is lower but still predominant - 66%). The second and third most represented regions are Europe and Asia (however with only 7% and 6% of the papers, respectively, on average).

On the other hand, Clusters 2 and 3 are characterized by a predominance of papers from co-authors affiliated with European institutions. Differences on the role of the North American region in Cluster 3 and the Australasia region in Cluster 2 mark the division among

those journals.

In each of the journals included in Cluster 3 (AOS, ABR, MAR, and EAR), about 80% of the papers are from co-authors affiliated with European institutions (except in the case of AOS, where this percentage is lower - 41%). The second and third most represented regions are North America and Australasia (with 27% and 8% of the papers, respectively, on average). We observe an exception for the AOS, where the weight of the North American institutions is quite higher than the weight of the European ones (52% vs 41%).

In the journals included in Cluster 2 (CPA, BAR, and AAAJ), the European region is also predominant but with a lower weight (66%, on average) compared to Cluster 3. The second and third most represented regions are Australasia and North America (with 24% and 7% of the papers, respectively, on average), with a clear predominance of Australasia in the BAR and AAAJ.

4.2. Inter-regional collaborations

Next, the papers whose co-authors are affiliated with institutions from different regions are analysed. Table 4 presents the PR results. The underlying assumption is that influential regions are likely to be linked with other regions. Table 4 presents the likelihood that an author from a given region will be randomly connected with an author of another region. In other words, it conveys the probability that a publication in a given journal would include an Inter-regional collaboration with an author affiliated within a certain region.

Insert Table 4 here

Globally, North America and Europe represent more than 50% of the Inter-regional co-authorships (North America: 29%; Europe: 26%), followed by Asia (18%) and Australasia

(14%). The probability of an author for each of the other regions to be connected to an author from a different region is lower than 10%.

Using the PR proportions, we perform a cluster analysis that generates the dendrogram seen in Figure 2. Three clusters are identified: 1) RAS, JAE, JAPP, JAR, TAR, and CAR; 2) AAAJ; and 3) BAR, CPA, MAR, ABR, AOS, and EAR.

Insert Figure 2 here

In each of the journals included in Cluster 1 (RAS, JAE, JAPP, JAR, TAR, and CAR), the North America is the predominant region, being Asia the second and Europe the third most represented regions (despite with a close weight in the case of RAS and JAR).

Likewise in the regional data, the data obtained here reveals that Clusters 2 and 3 are marked by the different roles of the North American and Australasian regions. In the journals included in Cluster 3 (BAR, CPA, MAR, ABR, AOS, and EAR), there is a predominance of Europe, followed by North America (except in the case of BAR, where the second most represented region is Australasia). Australasia and Asia are the third and fourth most represented regions (except in the case of EAR, where Asia has a higher weight than Australasia). In the AAAJ (Cluster 2), there is also a predominance of Europe, followed by Australasia and then, by North America and Asia. Therefore, Clusters 2 and 3 are characterized by a predominance of Europe, but they differ by the significant role of the North American in Cluster 3 and Australasia in Cluster 2.

Next, we perform SNA with the co-authorships between authors from different regions. Figures 3 and 4 present, respectively, the SNA graphs prepared for each journal, and by aggregating these journals under the three formed clusters. These graphs convey the diversity of regions represented, the influence of each region and the density of the

collaborations between authors from the different regions (inter-regional co-authorships). The size of the nodes (circles) and the strength of the lines are proportional to the influence of that region and the strength of connectivity between regions.

Insert Figures 3 and 4 here

The graphs presented in Figure 4 show that in the Cluster 1, comprised by RAS, JAE, JAPP, JAR, TAR, and CAR, the network is led by North American institutions, whose authors work together mainly with authors from Asian institutions, but also to some extent with authors affiliated to European Institutions. The Australasian institutions have a very small participation in this network. In contrast, in the Cluster 3, composed of BAR, CPA, MAR, ABR, AOS, and EAR, the network is led by European Institutions, whose authors work together either with authors from North American or with authors from Australasian Institutions. For these journals, the participation of Asian institutions is small. In the AAAJ (Cluster 2), the network is led by authors from European and Australasian institutions, which work together with each other, and also with authors from North American and Asian institutions.

A more detailed analysis of the graphs presented in Figure 3 shows that, of all journals, AAAJ, ABR, BAR and CPA are the ones presenting a more diverse network, being the ones in which Africa and South America have some relevance, albeit still diminutive.

4.3. The European case

Analogous to the general analysis, we have considered separately those with authors from the same European country (national collaborations) and those with authors from different European countries (international collaborations). Table 5 presents the geographical

distribution of the papers whose co-authors are affiliated to institutions from the same European country.

Insert Table 5 here

Globally, 48% of the papers are from co-authors affiliated to UK institutions, followed by the papers from co-authors affiliated to institutions from Germany (11%) and the Netherlands (7%). The co-authors affiliated to Swedish, Finnish, and Italian (French and Spanish) institutions each contribute with 5% (4%) of the papers. Figure 5 presents the dendrogram obtained in the cluster analysis, identifying four clusters: 1) EAR and MAR; 2) JAR, CAR, and TAR; and 3) BAR, ABR, AOS, AAAJ, and CPA; and 4) RAS, JAE, and JAPP.

Insert Figure 5 here

In each of the journals included in Cluster 3 (BAR, ABR, AOS, AAAJ, and CPA), more than 50% of the papers are from co-authors affiliated to UK institutions (except in the case of AOS, where this percentage is 45%). The remaining papers are from co-authors from several countries, with no one assuming a dominant role. The second most represented countries are Italy (10%) in the AAAJ, Netherlands (10%) in the ABR, Germany (12%) in the AOS, Ireland (4%) in the BAR, and France (9%) in the CPA.

In each of the journals in Cluster 4 (RAS, JAE, and JAPP), the UK is also the most represented country, however with a slightly smaller proportion (about 40% of the papers). Furthermore, in contrast with Cluster 3, in the Cluster 4 it is denoted a significant role of other countries, apart from the UK, as Belgium (29%), the Netherlands (14%), and Spain

(14%) in the JAE, Germany (21%), Spain (16%), and Italy (11%) in the JAPP, and the Netherlands (22%), Spain (11%), France (11%), and Denmark (11%) in the RAS.

On the other hand, Clusters 1 and 2 are characterized by the significant role of Germany and the Netherlands, as opposed to the UK. Differences in the significance of these two countries (dominant versus non-dominant role) mark the division among these clusters. In each of the journals included in Cluster 1 (EAR and MAR), Germany is the most represented country (with 38% in the EAR, and 16% in the MAR), followed by the Netherlands and the UK (with a proportion between 11% and 16%). In each of the journals that belong to Cluster 2 (JAR, CAR and TAR), Germany (and the Netherlands), together, represent most of the papers – 27% (27%) in CAR, 10% (50%) in JAR and 31% (31%) in TAR.

Next, the papers whose co-authors are affiliated to institutions from different European countries are also analysed to identify their patterns of geographical distribution. Table 6 presents the PR results ranking the countries in our networks.

Insert Table 6 here

Using the PR probabilities, we perform a cluster analysis that generates the dendrogram seen in Figure 6, identifying four clusters: 1) TAR, JAE, and JAR; and 2) CAR; and 3) BAR, CPA, and AAAJ; and 4) ABR, AOS, RAS, MAR, EAR, and JAPP.

Insert Figure 6 here

In the journals in Cluster 3 (BAR, CPA, and AAAJ), the UK is the most represented country (with about 30% of the papers), followed by Spain (with about 10% of the papers). In

the majority of the journals included in Cluster 4 (ABR, AOS, RAS, MAR, EAR, and JAPP), the UK is also the most represented country (with about 20% of the papers), but Germany and/or the Netherlands also denote a significant and equivalent role (with also about 20%).

In each of the journals included in Cluster 1 (TAR, JAE, and JAR) and Cluster 2 (CAR), Germany and/or the Netherlands take the lead, leaving the UK less represented. However, in the CAR (Cluster 2), there are also other important countries, such as Finland, Sweden, Austria, and Ireland.

Figures 7 and 8 present, respectively, the SNA graphs prepared for each of the journals, and by aggregating these journals under the four formed clusters. These graphs convey the diversity of European countries represented, the influence of each country and the density of the relationship between authors from the different countries in the region.

Insert Figures 7 and 8 here

Figure 8 shows that in the Cluster 1, comprised by TAR, JAE, and JAR, the network is led by the Dutch Institutions, whose authors work together with authors affiliated to institutions from Germany, France, Belgium, and the UK. The CAR is positioned as a separate cluster (Cluster 2), in which none of the countries assumes a dominant role. In contrast, in the Cluster 3, composed of BAR, CPA, and AAAJ, the network is, in general terms, led by the UK institutions, whose authors work with colleagues from a wide range of other European countries. However, in the Cluster 4, composed of ABR, AOS, RAS, MAR, EAR, and JAPP, the role of the UK is shared and, in some cases, slightly surpassed by other countries, mainly the Netherlands and Germany.

Examinations of Figure 7 and Table 6 show more clearly the importance of the UK as the networks' leader in the case of AAAJ, BAR, and CPA, and the importance of the

Netherlands and Germany mainly in the case of the EAR, but also in the case of MAR and AOS.

The UK research elite seems to be highly relevant in the case of four journals: the AAAJ, the ABR, the BAR, and the CPA. The MAR is an especially interesting case given that we have four countries of very different traditions with almost equal representation: the UK and Sweden with 14% each; and Germany and the Netherlands, with 16% each. Moreover, these results also seem to indicate the existence of a pole of influence of the academic accounting research published in non-North American journals: Anglo-Saxon scholars from the UK and Australasia. The EAR and the MAR seem to be the only of these journals in which such is not the case. In the case of the EAR there seems to exist a high level of influence of Germany. One could speak of an "inclination" of researchers from Germany and Netherlands (and Belgium) for North American journals and the EAR.

4.4. Discussion

Our findings suggest that there are many differences in the patterns of geographical distribution of the national and international co-authorships in highly ranked accounting journals, with the North American journals revealing a clearly distinct pattern. These differences seem to be consistent with the distinction described in the literature reviewed between the North American journals and the other journals (Ballas & Theoharakis, 2003; Dhanani & Jones, 2017; Hussain et al., 2020; Pelger & Grottke, 2015, 2017; Raffournier & Schatt, 2010; Tucker et al., 2016). By conducting this large empirical data research we provide a more representative sample and increase the statistical validity of the previous findings. A large-scale empirical research allows for more confident generalization of findings that can inform practice, which is crucial for making claims that are applicable beyond the specific context of the study. Grounded on the evidence that North American

accounting research and journals are dominated by positivist approaches and focus on economic perspectives, it is possible to detect support for different types of research undertaken in different geographical regions at the level of international networks of research cooperation, albeit indirectly. North America and Asia seem to support one type of research, and Europe (albeit with the caveat mentioned below) and Australasia another.

The strongest pole of influence consists of the North American scholars. North American journals publish primarily articles authored by North American authors. Moreover, "one could speak of a "powerful U.S. accounting research elite centered around the major journals" (Lukka & Kasanen 1996, p. 772). At the time these researchers were writing, these journals were the JAE, JAR and TAR. Nowadays, to these same three journals one must add the CAR and RAS, and, albeit not as much, the JAPP. Lukka and Kasanen (1996, p. 772) also referred to an "emerging mostly European elite" centred on AOS. Nowadays, one could refer to an "established mostly European elite" centred on the ABR, BAR, EAR, and MAR. Our results indicate that, albeit nowadays AOS publishes predominantly research from North American authors, one could almost refer to AOS as a journal with shared influence of both elites. Our results also indicate that, within the non-North American journals, in the cases of the AAAJ of the BAR the Australasian institutions have higher representation than the North American ones, whereas regarding the ABR, the EAR, and the MAR the case is the opposite. In the particular case of the CPA there is a pretty similar level of representation of both.

We also contribute to the literature by examining in more detail the collaborations of researchers from European countries. Large datasets often enable the identification of subtle patterns and trends that may not be so apparent in smaller samples. Our findings suggest the existence of central and peripheral European countries in terms of access to publishing in highly ranked journals. The UK is the central country. Then, at a distance, comes Germany, followed by the Netherlands. Interestingly, the researchers from these two latter countries

seem to be more in line with the North American and Asian researchers than with researchers from the other European countries, as they seem to support the research typically published in the North American inspired journals. The most significant concern is that a hegemonic style can lead to the exclusion of diverse perspectives, theories, and methodologies. Possibly, scholars in certain countries, such as what we observed in the European region, may feel compelled to embrace research that aligns with the norms typically found in journals inspired by North American publications, driven by the motivation to secure publication opportunities. Researchers whose work does not conform to the dominant style may face challenges in getting their work published, limiting the diversity of voices in the academic discourse. Furthermore, hegemonic styles can reinforce power dynamics within a field, privileging certain scholars, institutions, regions, or perspectives. This can perpetuate inequalities and hinder the recognition of alternative voices and knowledge systems, and ultimately could narrow the research focuses in the field. To address these practical implications, it is essential for journals and academic communities to actively promote inclusivity, diversity, and openness to various research styles.

Our results are aligned with Andrikopoulos et al.'s (2016) and Ballas and Theoharakis's (2003) results. In their analysis of perceptions of journal quality, the latter researchers found that North America and Europe "appear to act as poles of influence" (p. 640). They also found that whereas researchers from Asian countries tend to rank journals in a similar way to North American researchers, researchers from Australia and New Zealand tend to rank journals more similarly to researchers from Europe, in particular from the UK. The current poles of influence in academic accounting research do seem to be: North Americans, and Anglo-Saxon researchers affiliated in the UK and Australian universities. Our findings are consistent with this idea that Asian researchers seem to adhere to the type of research typically published in North American inspired journals.

This is consistent with the investigation of articles on developing countries in highly ranked accounting journals and findings reported in Moses and Hopper (2022). These researchers found Asian papers to be predominantly positivistic research, especially in China. They also found that published research on developing countries "has been heavily weighted to Asian countries, especially China, and countries at intermediate levels of development", with a high level of neglect regarding "the poorest countries", in particular those in Africa, Central and South America, and Oceania (p. 1041). Curiously, these researchers refer to "a minority of studies, especially on Africa and Oceania, have examined broader review themes and were more inclined to employ social theories and qualitative methods" (p. 1048). Our findings also suggest that the non-North American journals are substantially more likely to accept papers resulting from collaborations that include authors from Africa and South America (in particular, the AAAJ, the BAR, and the CPA), albeit such collaborations are extremely scarce.

Hence, another significant practical contribution of our study is the identification of scarce research publications from African, Central American and Caribbean, South American, and Middle Eastern institutions in highly ranked accounting journals. Perhaps creating special issues for these regions in such journals could play a role in addressing the limited visibility and accessibility barriers faced by accounting researchers in these regions, thereby fostering a more representative global voice in the accounting field.

5. Concluding remarks

Our findings show that the patterns of international diversity in all the types of collaborations under examination in the highly ranked accounting journals vary across different groups of journals. The "North-American or North-American inspired journals" (Guthrie et al., 2019, p. 12) have the highest level of geographical concentration and the

North American universities/institutions contribute with the majority of the papers. The "non-North American journals" – the leading journals for critical, interpretive, and interdisciplinary approaches (Hussain et al., 2020) and those which are more acceptive of these latter approaches – have a lower level of geographic concentration of the papers and there is a broader set of regions and countries involved, including North American countries, the UK and two Continental European countries (Germany and the Netherlands).

The home country bias that Brinn and Jones (2008) alluded to in their examination of editorial boards seems to exist also in the case of international co-authorships. What is more, the "dual pathway in accounting research by geographical sector" that Dhanani and Jones (2017, p. 1034) consider to "have become more prominent", seems also to have implications in terms of international co-authorship patterns. It may be the case that the trends in the internationalization of editorial boards (Dhanani & Jones, 2017; He et al., 2021) and the subject areas and research methods represented by the members of editorial boards (Endenich & Trapp, 2018) may be sending signals to the academic communities about the types of research and publication that are preferred, as Endenich and Trapp (2018) suggest. It may also be the case that these signals lead to different journals attracting different types of research and, given that there seems to exist some kind of association between the preferred type of research and the geographical region of academic communities, different journals end up by publishing research from scholars who are predominantly from certain geographical regions. Our findings seem to suggest this. Cummings and Hoebink (2017) expressed apprehension regarding equity, responsibility and diversity in scientific journal editorial boards. They highlighted the need to acknowledge the inherent endogenous nature and characteristics of these boards and emphasized the importance of addressing underrepresentation of academics of developing as both authors and editorial members. As a practical application and contribution, our study has laid the groundwork for researchers to

adopt our methodology and explore the content of publications within the field of accounting in these collaborative efforts and regions.

This study presents several limitations. One is that although it reveals the patterns of internationalization of the highly ranked accounting journals, and offers some insights regarding why such patterns exist, it does not assess co-authorship networks with regard to the authors' orientation in terms of methods, content, and research topics. We acknowledge that the networks amongst authors should also be influenced by the specific PhD-granting institutions. However, we let the data speak to these points, showing how journals differ in publication patterns. Not all highly ranked journals in accounting have the same networks and patterns of co-authorship. Hence, we believe that these results in and of themselves contribute to the field; empirically uncovering and/or supporting these different (pre)-conceptions. Another limitation pertains to the limited aspect of diversity it focuses on, that of geographical diversity. Furthermore, our analyses do not speak directly to the nationalities of the authors, but to the country in which the publication was granted at the time of the paper's publication.

These limitations indicate possible avenues for further research in the area. One such avenue would be to complement the quantitative approach used in this study with a qualitative approach (for example, via interviews), which might reveal the motives underlying the different patterns of internationalization. Another avenue for further research pertains to the examination of other features of diversity, such as age, gender, and/or the career stage. Yet another concerns the assessment of co-authorship networks with reference to the authors' orientation in terms of methods and research topics. When the current decade is completed, it will be interesting to replicate our results to evaluate if any changes occurred (i.e., potential impact of the COVID-19 pandemic). By design, we have decided not to include the years beyond the complete decade (2010-2019), as little is known about how

collaboration has changed in recent years. It will be an important avenue to be explored when comparable data becomes available. In addition, it would be worthwhile to explore whether the patterns depicted in this study regarding social networks are similar in different areas of accounting research, as well as to compare such patterns between different areas (for example, between accounting, finance, and marketing).

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Table 1. Journals and papers used in the analysis

Journals		ABS	N. papers
AOS	Accounting, Organizations and Society	4*	280
JAE	Journal of Accounting and Economics	4*	304
JAR	Journal of Accounting Research	4*	266
TAR	The Accounting Review	4*	621
CAR	Contemporary Accounting Research	4	482
RAS	Review of Accounting Studies	4	316
AAAJ	Accounting, Auditing and Accountability Journal	3	465
ABR	Accounting and Business Research	3	182
BAR	British Accounting Review	3	215
CPA	Critical Perspectives on Accounting	3	273
EAR	European Accounting Review	3	234
JAPP	Journal of Accounting and Public Policy	3	237
MAR	Management Accounting Research	3	158
			4,033

Table 2. Distribution of the papers based on the type of co-authorship

CO-AUTHORSHIP	AAAJ	ABR	AOS	BAR	CAR	CPA	EAR	JAE	JAPP	JAR	MAR	RAS	TAR	TOTAL
Regional	340	134	210	146	356	207	174	232	180	204	124	219	470	2,996
Inter-regional	125	48	70	69	126	66	60	72	57	62	34	97	151	1,037
	465	**182**	**280**	**215**	**482**	**273**	**234**	**304**	**237**	**266**	**158**	**316**	**621**	**4,033**
Regional	73%	74%	75%	68%	74%	76%	74%	76%	76%	77%	78%	69%	76%	74%
Inter-regional	27%	26%	25%	32%	26%	24%	26%	24%	24%	23%	22%	31%	24%	26%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 3. Distribution of the papers whose co-authors are affiliated to institutions from the same region

REGIONS	AAAJ	ABR	AOS	BAR	CAR	CPA	EAR	JAE	JAPP	JAR	MAR	RAS	TAR	TOTAL
North America	14	13	110	6	301	34	22	211	118	186	12	184	417	1,628
Europe	210	105	86	108	29	141	131	9	27	12	100	17	20	995
Australasia	107	14	13	26	7	30	7	0	11	1	10	3	7	236
Asia	4	2	1	4	19	0	11	12	24	3	1	13	26	120
Middle East	2	0	0	1	0	0	2	0	0	2	0	2	0	9
Africa	3	0	0	1	0	2	0	0	0	0	0	0	0	6
South America	0	0	0	0	0	0	1	0	0	0	1	0	0	2
Central America & Caribbean	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	340	**134**	**210**	**146**	**356**	**207**	**174**	**232**	**180**	**204**	**124**	**219**	**470**	**2,996**
North America	4%	10%	52%	4%	85%	16%	13%	91%	66%	91%	10%	84%	89%	54%
Europe	62%	78%	41%	74%	8%	68%	75%	4%	15%	6%	81%	8%	4%	33%
Australasia	32%	10%	6%	18%	2%	15%	4%	0%	6%	1%	8%	1%	2%	8%
Asia	1%	2%	1%	3%	5%	0%	6%	5%	13%	2%	1%	6%	6%	4%
Middle East	2%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%	1%	0%	0%
Africa	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
South America	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Central America & Caribbean	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 4. Ranking of the regions in the networks based on the PR algorithm

REGIONS	AAAJ	ABR	AOS	BAR	CAR	CPA	EAR	JAE	JAPP	JAR	MAR	RAS	TAR	All Journals
North America	15%	24%	26%	9%	37%	23%	29%	40%	34%	36%	23%	40%	38%	29%
Europe	36%	36%	28%	38%	15%	35%	28%	16%	17%	20%	34%	20%	16%	26%
Australasia	25%	15%	23%	23%	10%	16%	12%	9%	9%	9%	16%	5%	9%	14%
Asia	9%	11%	10%	13%	26%	11%	19%	24%	26%	22%	13%	21%	26%	18%
Middle East	3%	6%	3%	7%	4%	6%	4%	4%	5%	4%	6%	7%	4%	5%
Central America & Caribbean	2%	3%	2%	2%	3%	2%	2%	2%	3%	3%	3%	2%	3%	2%
South America	4%	4%	2%	3%	3%	3%	3%	3%	3%	3%	3%	2%	3%	3%
Africa	6%	2%	3%	4%	3%	4%	2%	2%	3%	3%	3%	2%	3%	3%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 5. Distribution of the papers whose co-authors are affiliated to institutions from the same European country

COUNTRIES	AAAJ	ABR	AOS	BAR	CAR	CPA	EAR	JAE	JAPP	JAR	MAR	RAS	TAR	TOTAL
UK	94	39	22	72	5	80	11	3	7	2	10	4	3	352
Germany	1	6	6	1	6	5	35	0	4	1	11	0	4	80
The Netherlands	3	7	4	0	6	2	10	1	0	5	11	2	4	55
Sweden	11	2	4	2	2	4	4	0	0	0	10	0	0	39
Finland	11	4	1	1	0	5	4	0	1	0	6	0	1	34
Italy	16	0	1	3	0	5	4	0	2	0	3	0	0	34
France	9	1	4	0	1	10	3	0	1	0	3	1	0	33
Spain	7	3	1	1	0	2	9	1	3	0	3	1	1	32
Denmark	5	2	3	0	0	0	1	0	0	0	3	1	0	15
Belgium	0	4	0	0	1	0	2	2	1	0	4	0	0	14
Ireland	6	3	2	4	0	0	0	0	0	0	0	0	0	15
Austria	1	1	1	0	1	1	2	0	0	2	0	0	0	9
Other *	4	1	0	5	0	1	7	0	0	0	5	0	0	23
	168	**73**	**49**	**89**	**22**	**115**	**92**	**7**	**19**	**10**	**69**	**9**	**13**	**735**
UK	56%	53%	45%	81%	23%	70%	12%	43%	37%	20%	14%	44%	23%	48%
Germany	1%	8%	12%	1%	27%	4%	38%	0%	21%	10%	16%	0%	31%	11%
The Netherlands	2%	10%	8%	0%	27%	2%	11%	14%	0%	50%	16%	22%	31%	7%
Sweden	7%	3%	8%	2%	9%	3%	4%	0%	0%	0%	14%	0%	0%	5%
Finland	7%	5%	2%	1%	0%	4%	4%	0%	5%	0%	9%	0%	8%	5%
Italy	10%	0%	2%	3%	0%	4%	4%	0%	11%	0%	4%	0%	0%	5%

France	5%	1%	8%	0%	5%	9%	3%	0%	5%	0%	4%	11%	0%	4%
Spain	4%	4%	2%	1%	0%	2%	10%	14%	16%	0%	4%	11%	8%	4%
Denmark	3%	3%	6%	0%	0%	0%	1%	0%	0%	0%	4%	11%	0%	2%
Belgium	0%	5%	0%	0%	5%	0%	2%	29%	5%	0%	6%	0%	0%	2%
Ireland	4%	4%	4%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
Austria	1%	1%	2%	0%	5%	1%	2%	0%	0%	20%	0%	0%	0%	1%
Other *	2%	1%	0%	6%	0%	1%	8%	0%	0%	0%	7%	0%	0%	3%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

* Other: includes 11 countries whose weight is lower than 1% each.

Table 6. Ranking of the European countries in the networks based on the PR algorithm

COUNTRIES	AAAJ	ABR	AOS	BAR	CAR	CPA	EAR	JAE	JAPP	JAR	MAR	RAS	TAR	Average %
UK	26%	29%	18%	28%	9%	30%	15%	12%	17%	2%	23%	15%	10%	18%
Germany	6%	3%	7%	2%	14%	6%	17%	12%	12%	23%	10%	1%	10%	9%
Netherlands	5%	6%	14%	1%	1%	2%	9%	23%	14%	12%	7%	8%	15%	9%
Finland	4%	2%	4%	1%	14%	1%	3%	2%	1%	2%	2%	5%	2%	3%
Italy	10%	8%	4%	11%	1%	12%	7%	2%	13%	2%	6%	9%	2%	7%
Denmark	4%	1%	4%	8%	1%	4%	3%	2%	1%	12%	4%	1%	2%	4%
Belgium	1%	5%	3%	1%	1%	2%	5%	2%	4%	2%	2%	12%	13%	4%
France	6%	3%	8%	2%	5%	11%	7%	2%	1%	2%	4%	8%	9%	5%
Sweden	2%	2%	2%	8%	9%	7%	3%	2%	1%	2%	8%	1%	2%	4%
Austria	4%	5%	8%	1%	9%	4%	4%	2%	5%	2%	8%	8%	2%	5%
Ireland	5%	4%	4%	5%	9%	3%	2%	2%	1%	2%	2%	1%	2%	3%
Switzerland	1%	4%	4%	1%	1%	1%	3%	2%	5%	2%	7%	8%	2%	3%
Spain	5%	6%	7%	6%	1%	2%	4%	2%	4%	2%	2%	5%	2%	4%
Norway	2%	5%	2%	6%	5%	2%	5%	2%	4%	2%	2%	1%	10%	4%
Russia	1%	5%	1%	1%	1%	1%	1%	2%	1%	2%	1%	1%	2%	2%
Other *	18%	11%	11%	17%	14%	12%	12%	24%	15%	24%	12%	16%	18%	17%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

* Other: includes 11 countries whose weight is lower than 1% each.

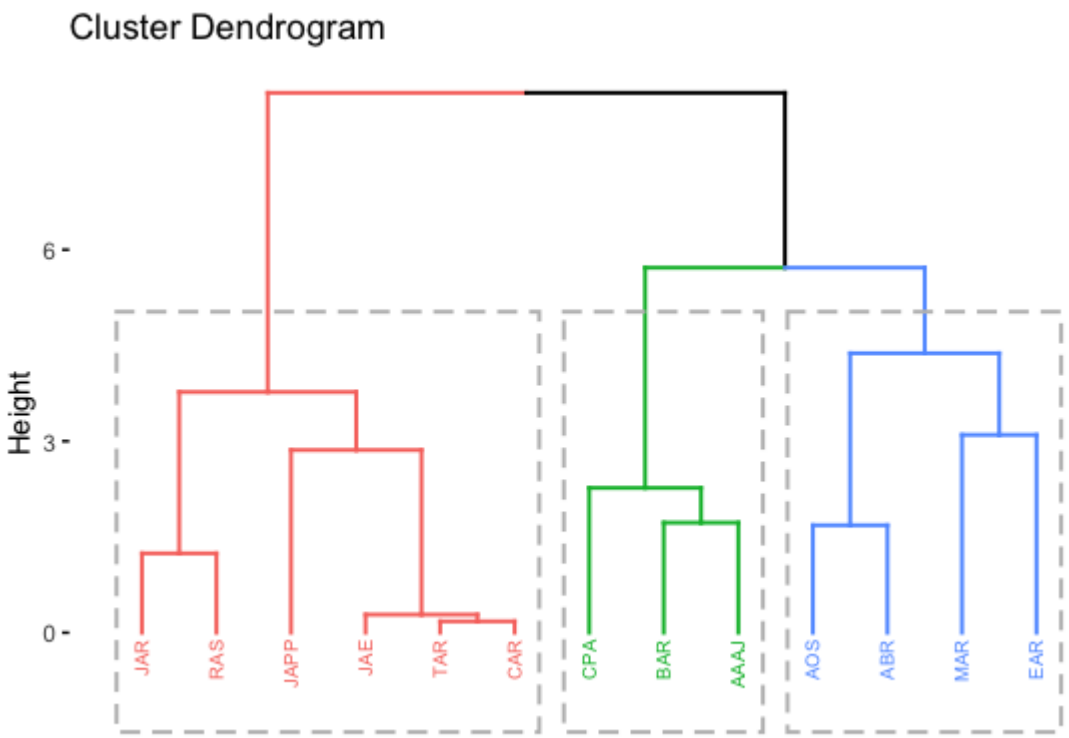


Figure 1. Journals classification based on the regional collaborations

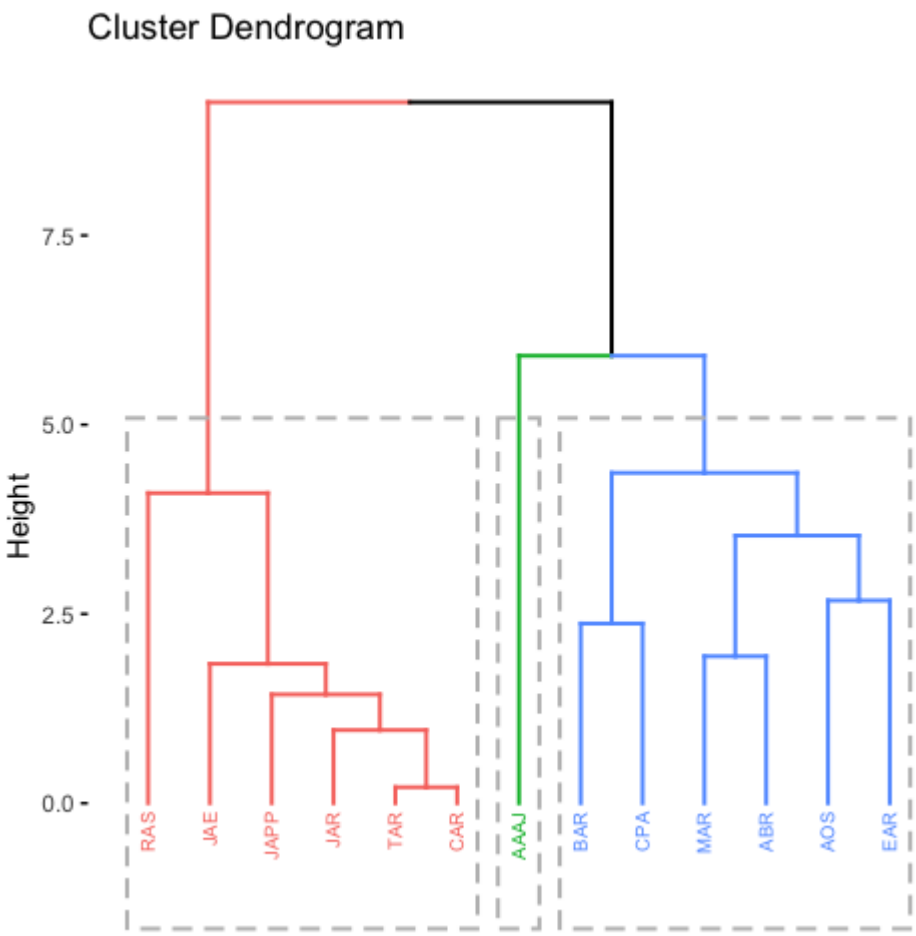
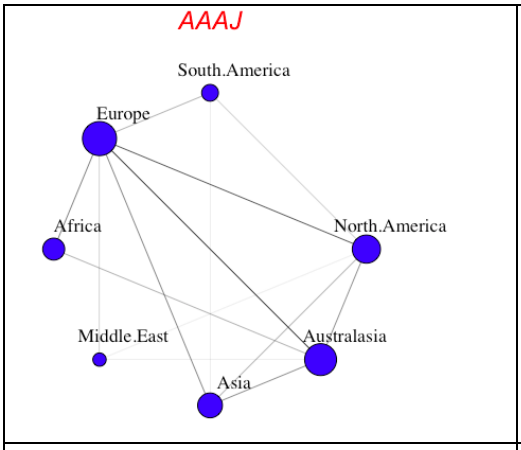
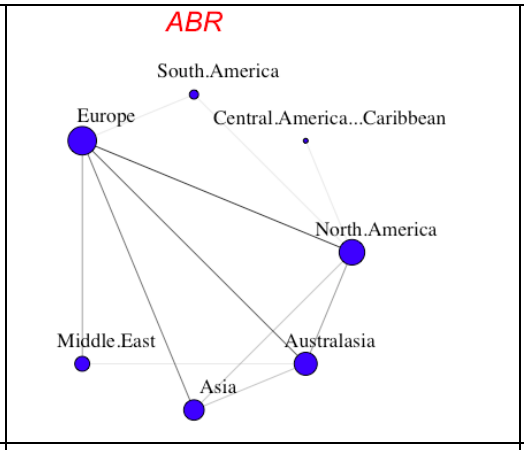
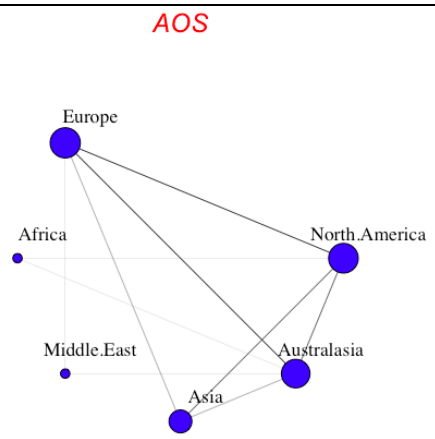
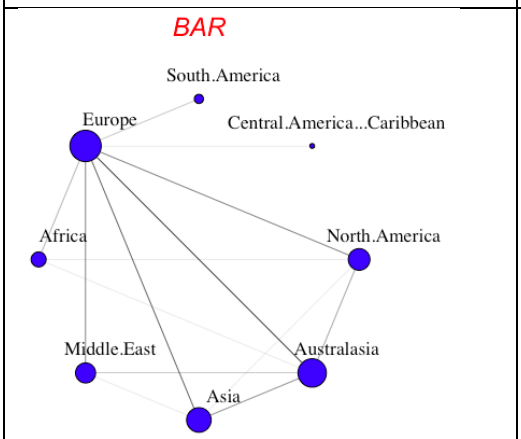


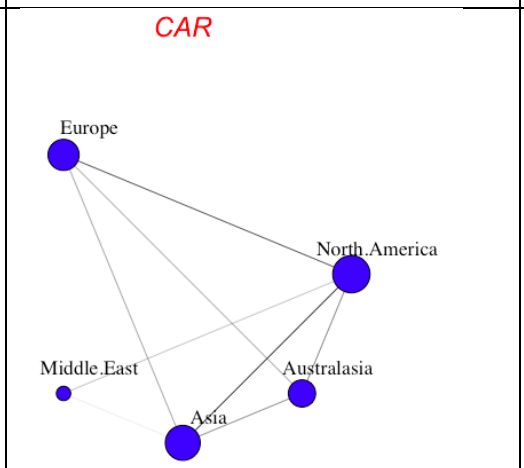
Figure 2. Journals classification based on the inter-regional collaborations

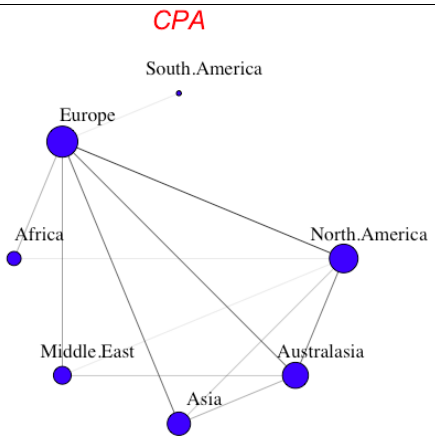

AAAJ
South.America
Europe
Africa
North.America
Middle.East
Australasia
Asia

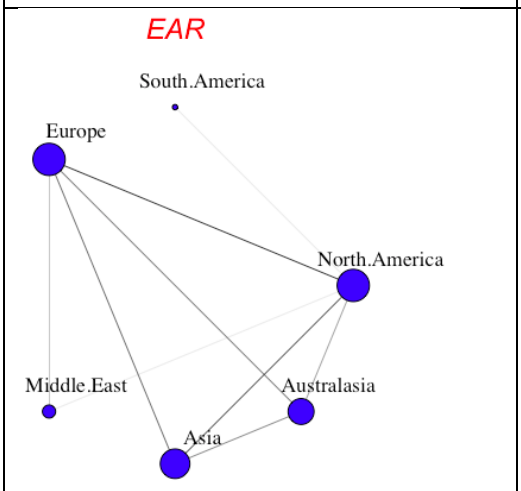

ABR
South.America
Europe
Central.America...Caribbean
North.America
Middle.East
Australasia
Asia

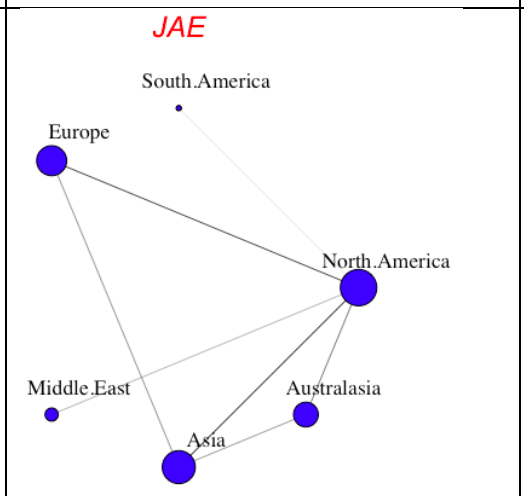

AOS
Europe
Africa
North.America
Middle.East
Australasia
Asia

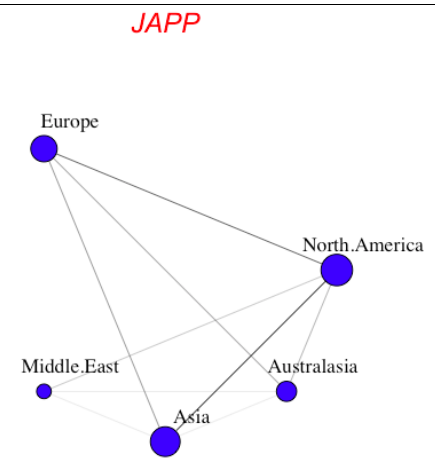

BAR
South.America
Europe
Central.America...Caribbean
Africa
North.America
Middle.East
Australasia
Asia


CAR
Europe
North.America
Middle.East
Australasia
Asia


CPA
South.America
Europe
Africa
North.America
Middle.East
Australasia
Asia


EAR
South.America
Europe
North.America
Middle.East
Australasia
Asia


JAE
South.America
Europe
North.America
Middle.East
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Asia


JAPP
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North.America
Middle.East
Australasia
Asia

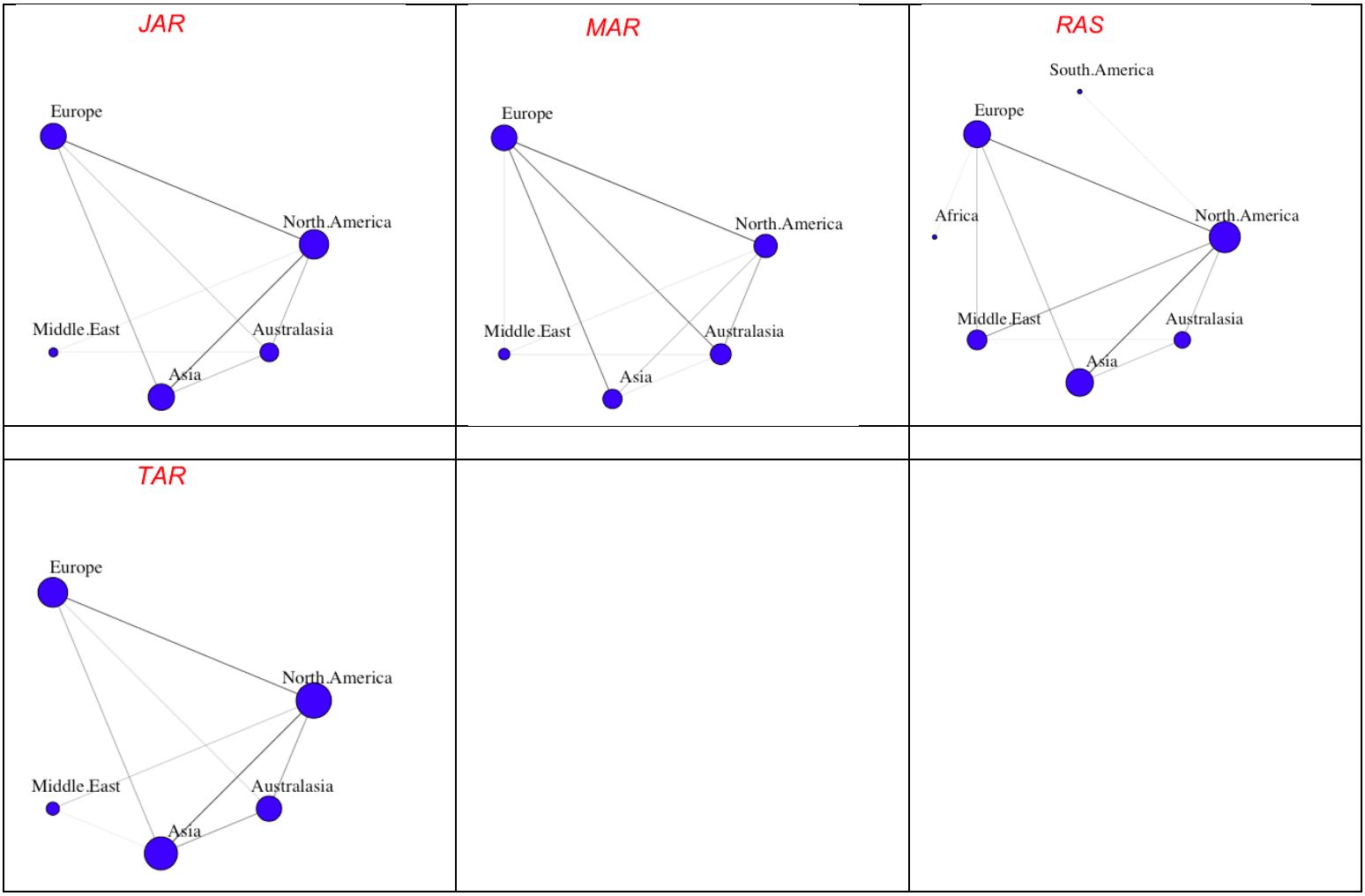


Figure 3. Regions SNA Graphs per journal

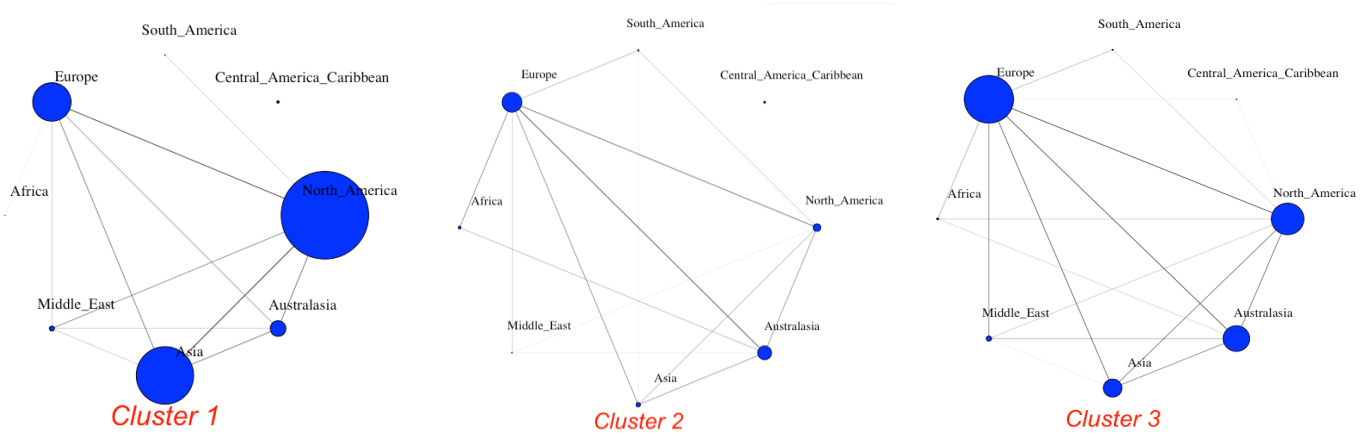


Figure 4. Regions SNA Graphs by cluster

Cluster 1: RAS, JAE, JAPP, JAR, TAR, and CAR. Cluster 2: AAAJ. Cluster 3: BAR, CPA, MAR, ABR, AOS, and EAR

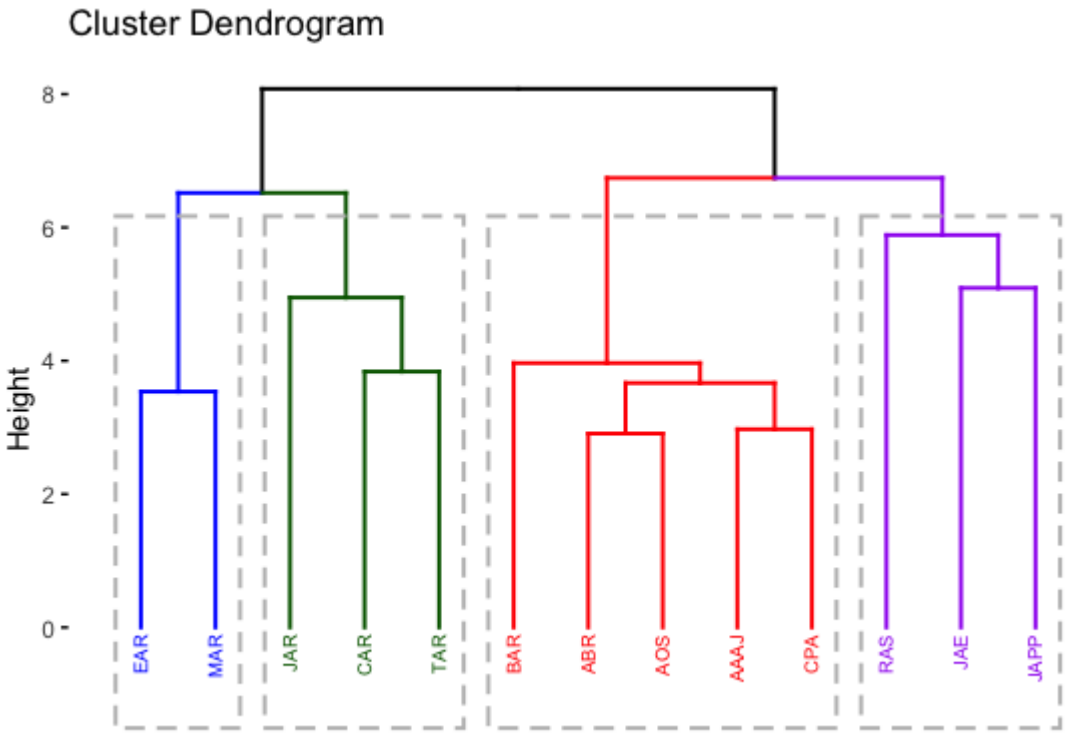


Figure 5. Journals classification based on the Europe's National collaborations

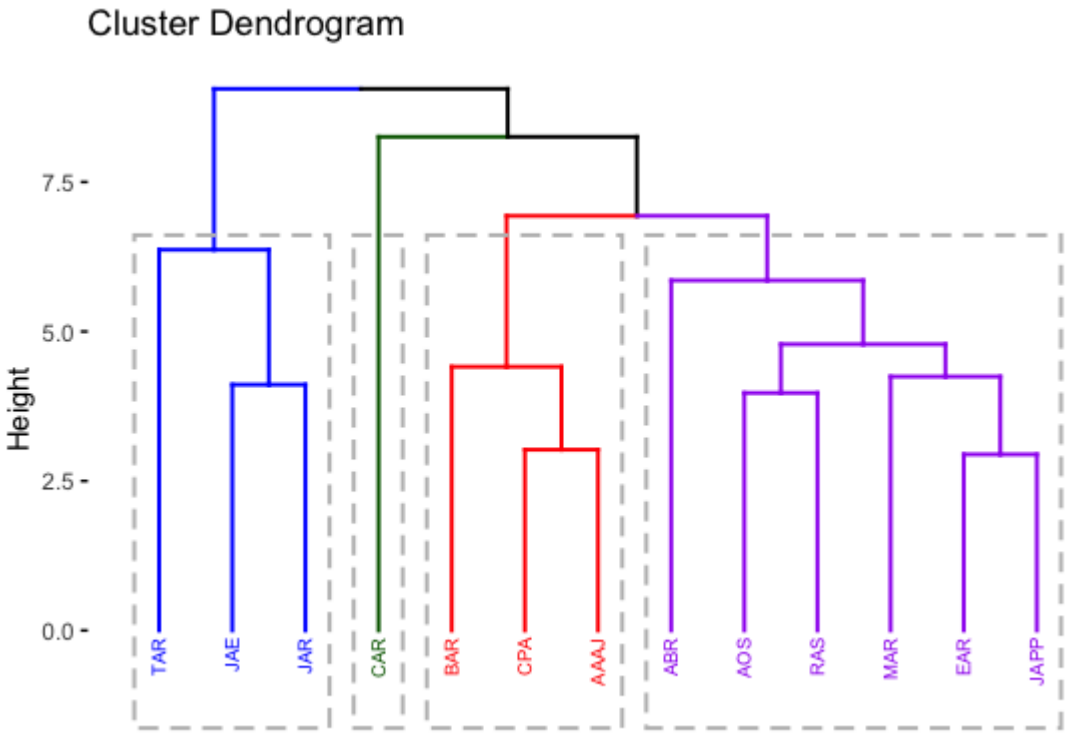
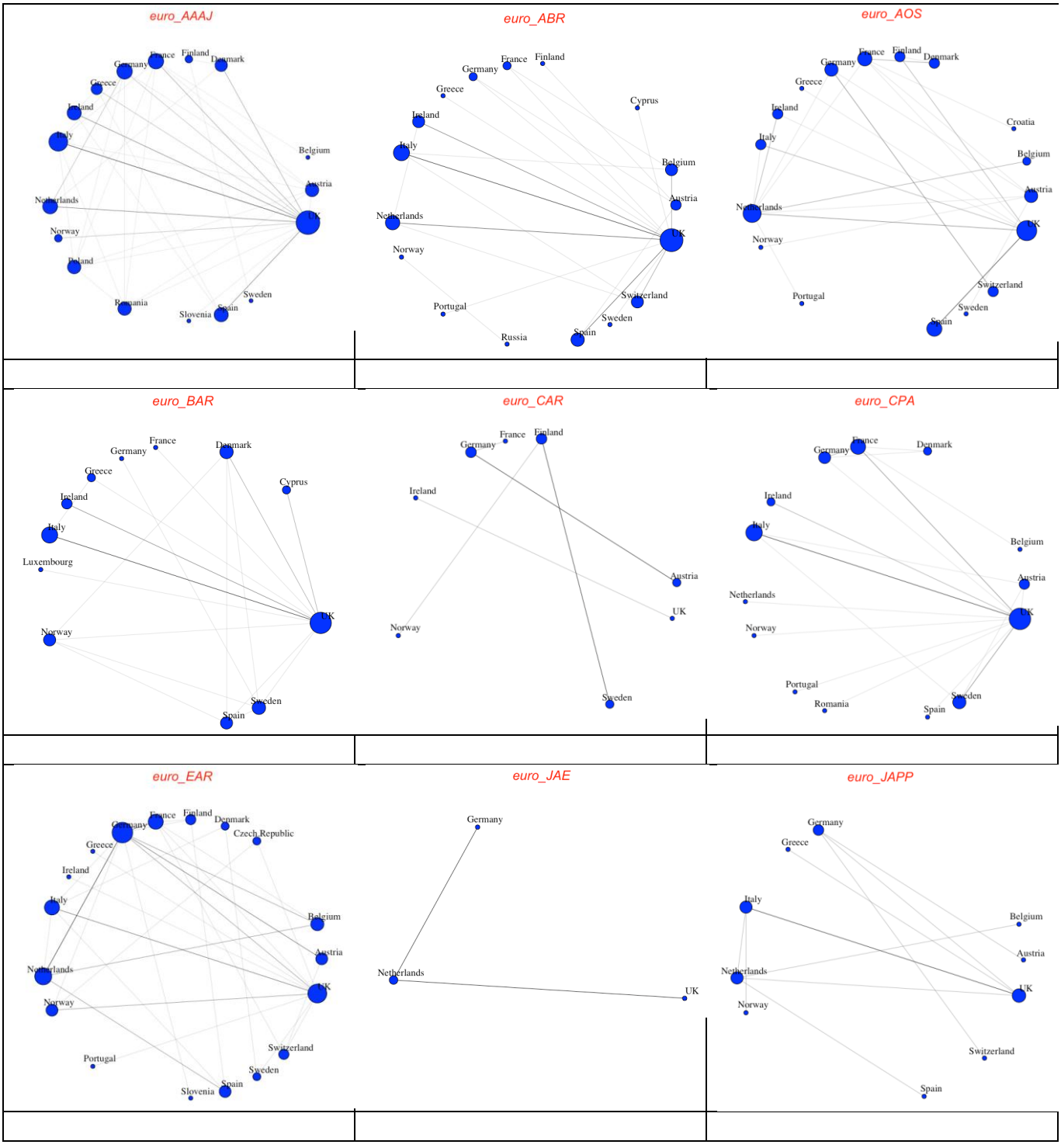


Figure 6. Journals classification based on the Europe's International collaborations


euro_AAAJ
France
Finland
Germany
Denmark
Greece
Ireland
Italy
Belgium
Austria
Netherlands
UK
Norway
Poland
Romania
Slovenia
Spain
Sweden
euro_ABR
France
Finland
Germany
Greece
Cyprus
Ireland
Italy
Belgium
Austria
Netherlands
UK
Norway
Portugal
Switzerland
Sweden
Spain
Russia
euro_AOS
France
Finland
Germany
Denmark
Greece
Ireland
Croatia
Italy
Belgium
Austria
Netherlands
UK
Norway
Portugal
Switzerland
Sweden
Spain
euro_BAR
France
Germany
Denmark
Greece
Cyprus
Ireland
Italy
Luxembourg
UK
Norway
Sweden
Spain
euro_CAR
France
Finland
Germany
Ireland
Austria
UK
Norway
Sweden
euro_CPA
France
Germany
Denmark
Ireland
Italy
Belgium
Austria
Netherlands
UK
Norway
Portugal
Romania
Sweden
Spain
euro_EAR
France
Finland
Germany
Denmark
Czech Republic
Greece
Ireland
Italy
Belgium
Austria
Netherlands
UK
Norway
Portugal
Switzerland
Sweden
Spain
Slovenia
euro_JAE
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Austria
Netherlands
UK
Norway
Switzerland
Spain

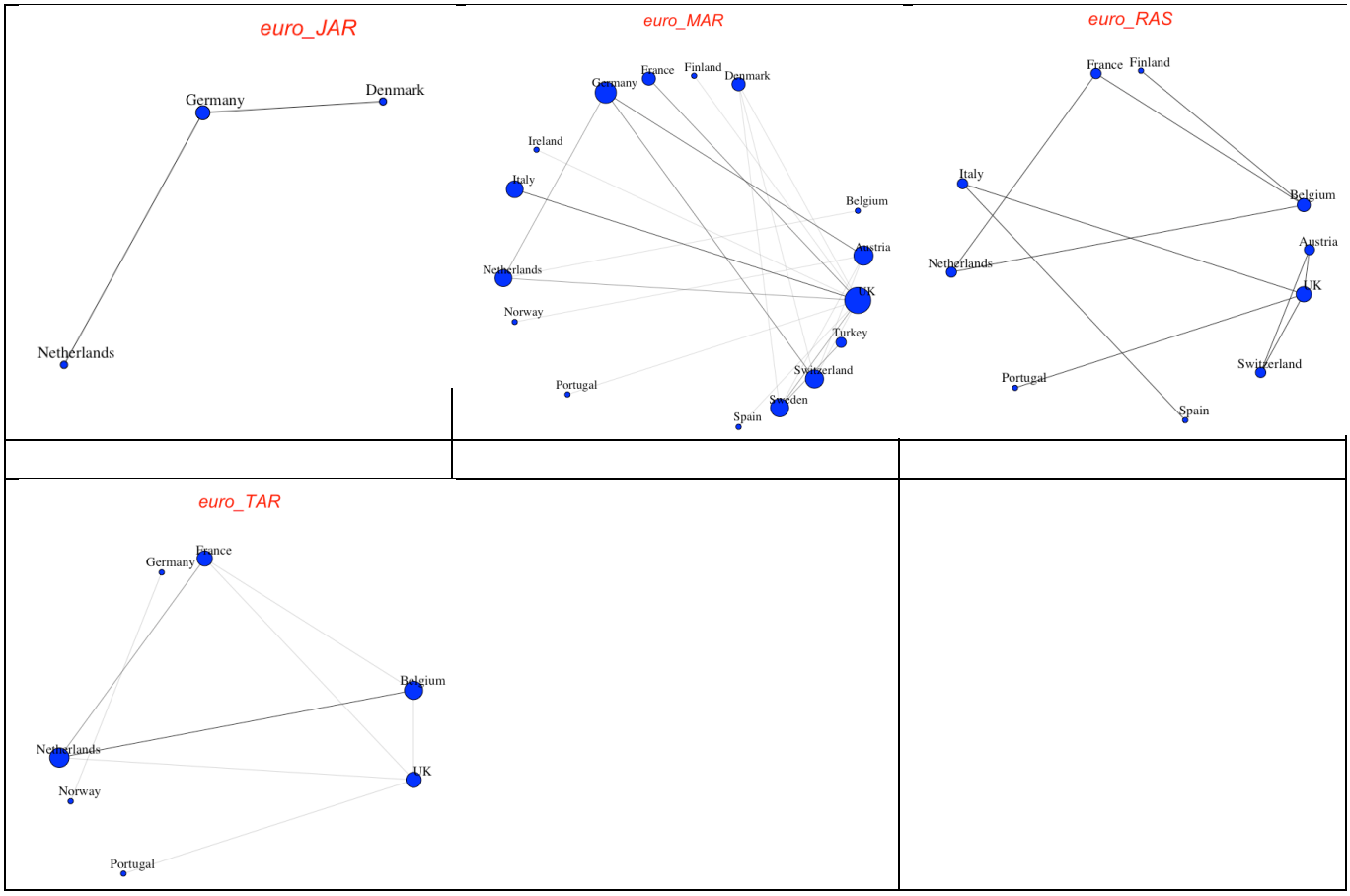


Figure 7. European countries SNA Graphs per journal

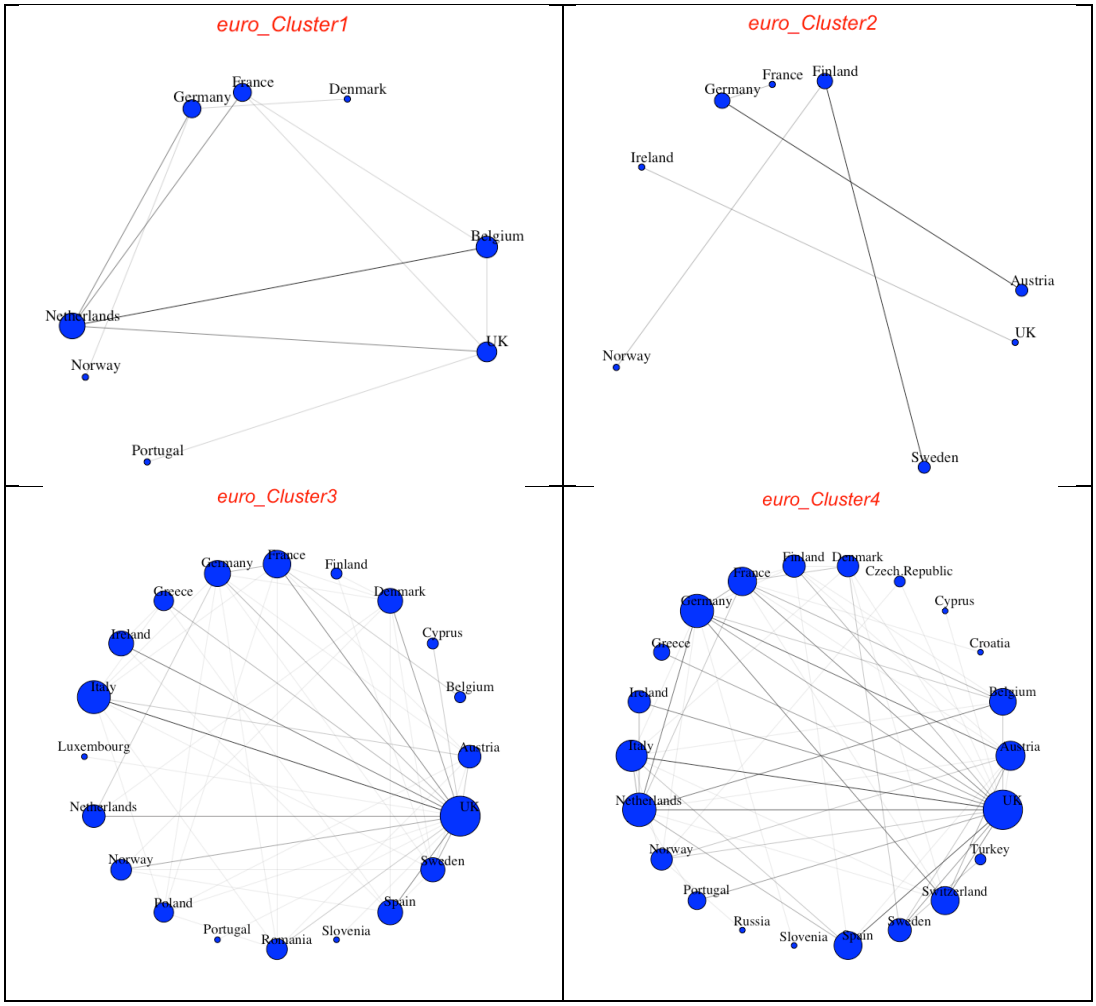


Figure 8. European countries SNA Graphs per cluster

Cluster 1: TAR, JAE, and JAR Cluster 2: CAR. Cluster 3: BAR, CPA, and AAAJ. Cluster 4: ABR, AOS, RAS, MAR, EAR, and JAPP.