A Comparison among the director networks in the main listed companies in France, Germany, Italy, and the United Kingdom.

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A COMPARISON OF THE DIRECTOR NETWORKS OF THE MAIN LISTED COMPANIES IN FRANCE, GERMANY, ITALY, THE UNITED KINGDOM, AND THE UNITED STATES[1]

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Abstract
The purpose of this paper is to contribute to the literature on director interlocks by illustrating and analysing the interlocking directorships among the Italian, French, German, UK and US listed Blue Chips. The comparison of the five countries considered shows that two national models stand out. On the one hand a model made of a high number of companies linked to each other through a small number of shared directors who serve on several company boards at the time (France, Germany, and Italy). On the other hand, in the UK much fewer companies are connected to each other essentially through directors who have no more than two board positions at the time. A case in between is represented by the US, where a high number of companies are connected to each other just like Germany, France, and Italy. However, just like the UK, such connections are made through directors who tend to have just two board positions at the time, a sign that, differently from Italy, Germany, and France, the UK and US networks might not be functional to systemic collusion.

Keywords: corporate governance, interlocking directorships, antitrust, competition, social network analysis (SNA), exploratory data analysis (EDA), empirical corporate finance.

JEL Classification: C0; L1; L4; G3; M2.

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1. INTRODUCTION. THE ROLE OF INTERLOCKING DIRECTORSATES IN CORPORATE GOVERNANCE

There are several theories on the function of interlocking directorships. Mizruchi's (1997) comprehensive review on the topic illustrates three main reasons for the formation of interlocks: collusion, cooptation and monitoring, and legitimacy, career advancement, and social cohesion.

As for the first reason, the extensive debate on the causes and consequences of interlocks started in the early twentieth century when the US Senate Pujo Committee, analysing the linkages between the main New York banks and the industrial sector, argued that interlocks between competitors provided a means of restricting competition. In 1914 Section 8 of the Clayton Act expressly prohibited interlocks between firms competing in the same markets. Pennings (1980) found a positive association between industry concentration an horizontal ties (interlocking directors between firms operating in the same sector), while Burt (1983) found an inverted U-shaped function: in the case of very high market concentration, the few producers have little need to interlock to set prices.

A second reason for the formation of interlocks is cooptation and monitoring (Dooley, 1969 and Mizruchi and Stearns, 1994). According to Selznick (1949), firms invite on their board representatives of the various resources they depend on to reduce environmental incertainty and maintaining their position in the market. For this reason companies have on their boards bankers, suppliers, clients (Pfeffer e Salancik, 1978). As regards monitoring, information theories hold that there are information asymmetries between creditors and debtors, since creditors know less about the quality of debtors. Interlocking is one of those institutions that can help surmount information asymmetry by offering access to internal information (Mariolis, 1975). Through membership in directorates and boards banks are able to keep the company management under their influence. Dooley (1969) finds that less solvent firms are likely to be interlocked with banks. Later studies also report that firms with high debt-to-equity ratios (Pfeffer, 1972) or organizations with an increased demand for capital (Mizruchi and Stearns, 1988) have a higher tendency to interlock their boards. The quest for legitimacy is a further source of interlocking (Selznick, 1957). In order to better their reputation firms invite on their boards individuals with ties to important organisations.

Moving from a firm perspective to an individual director perspective, that is from a demand perspective to a supply perspective, Zajac (1988) states that one reason for interlocks is the fact that individuals join boards for financial remuneration, prestige, and contacts that may prove useful in securing subsequent employment opportunities. Furthermore, according to Useem (1984), interlocks are a tool to promote upper-class cohesion creating a business elite. Such incentives for directors to assume multiple directorships might have negative consequences. According to Ferris et al. (2003) and Fich and Shivdasani (2006), multiple directorships place an excessive burden on directors with a negative impact on their ability to monitor and influence managers (business hypothesis).

More in particular, those empirical studies that examine the hypothesis of collusion find that interlocking directorates can have a negative impact on the economic system since they endanger the independence of interlocked firms, decrease competition in the market for corporate control, exacerbate agency problems, violate directors' fiduciary obligations as the agents of stockholders (Fich and White, 2005), and improve the ability of the controlling shareholders to expropriate the minority shareholders, extracting private benefits from control (Barucci 2006). As regards the market for corporate control, Cotter et al. (1997) study

director interlocks between bidder and target firms. Their findings suggest that the presence of director interlocks reduces the gains to target shareholders and decreases the likelihood that a target firm receives multiple bids. Moreover, Fich and White (2003) report a negative association between the number of interlocking directorships and the probability of CEO turnover. Finally, as regards the risk of expropriation of minority shareholders, according to Bertoni and Randone (2006) this risk is higher for companies tied by board interlocks, because these firms are more likely to act in concert entailing an advantage for the controlling shareholders who appoint the majority of directors and a higher risk of expropriation for non-controlling shareholders.

Much empirical research has been carried out on the effect of interlocks on firm performance. Having seen above the plurality of the views on the function of interlocks, it is with no surprise that results of these studies are mixed (Bunting, 1976, Pennings, 1980, Burt, 1983, Fligstein and Brantley, 1992, and Phan et al. 2003). For instance, according to the reputation hypothesis, entering in the corporate elite has a positive impact on firms' value, while the business hypothesis assumes the opposite effect.

Another important part of the empirical literature on interlocks focuses on providing data on the actual extent of interlocks in several countries. These studies analyse the structure of the networks created by interlocking directors and match the "small world phenomenon", a situation in which firms have a high degree of interconnection through a relatively small number of firms which act as hubs.

According to Elouaer (2006), the largest listed companies are at the center of the network in France, and 30% of the more connected companies are represented by financial companies. Moreover, according to Yeo, Pochet and Alcuff (2003) the French network is formed in a significant proportion by executive directors.

To our knowledge only two studies have attempted to address in a systematic way the comparison among the national networks: Stokman and Wasseur (1985) and Leo Mac Canna et al. (1998), who both use a database dating back to 1976. Another attempt more limited in scope is made by Elouaer (2006) who compares the French network with the UK's one, using for the latter data from Stokman, Ziegler and Scott (1986). The comparison shows a substantial uniformity between the networks of the two countries.

Finally, from the comparative study of the UK and German networks by Windolf and Beyer (1996) in Germany most of the companies that share the same directors tend to belong to the same economic sector and are also characterised by cross-ownership links. In the UK financial companies tend to be connected with non-financial ones and not to have cross-ownership links. The authors conclude that the German network shows the features of a collusive system, while the UK one of a competitive system.

The purpose of the present paper is to contribute to the literature on director interlocks by illustrating and analysing the interlocking directorships among the Italian, French, German, UK and US listed Blue Chips. Chapter 2 illustrates the methodology and data; chapter 3.1 to 3.5 illustrate the characteristics of the country networks considered; chapter 4 concludes.

2. METHODOLOGY AND DATA

Our database is made of all the directors of the first forty Blue Chips in the five countries considered.[2] In particular, for Italy we have examined the companies making the S & P - MIB 40 index;[3] for France the companies belonging to the CAC 40 index,[4] for the UK the first forty companies by capitalization belonging to the FTSE 100 index,[5] for Germany the companies belonging to the DAX 40 index,[6] and for the US the first forty companies by capitalization belonging to the NYSE US 100 Index.[7] In total we considered a number of directorships equal to 575 in Italy,[8] 595 in France, 515 in the UK, 796 in Germany, and 489 in the US, for a total of 2718 directorships.

The data analysis[9] is made according to the principles of the exploratory data analysis[10] as regards the number of directorships in all the five countries considered (Table 1-4). The analysis then moves on to apply the Social Network Analysis (SNA)[11] to describe the networks' general structure and their centrality (Table 5 and fig. 1-4).

3.1. ITALY

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[2] The board composition refers for Italy to 31 December 2007, for France and the UK March 2008, for Germany August 2008, and for the US to the annual reports 2008. In case of companies with a supevisory board and a management board (as is the case in Italy, in France and in Germany), both boards have been considered. For Italy the source of the directorships is the Consob website: www.consob.it , for France, the UK and Germany the list of the directors has been downloaded from the companies' websites, while for the US from the 2008 annual reports. The complete list of the websites accessed is available from the authors at any time upon simple request.

[3] That is (as of 18 March 2008): A2A, Alitalia, Alleanza Assicurazioni, Assicurazioni Generali, Atlantia, Autogrill, MPS, BPM, Bulgari, Buzzi Unicem, ENI, ENEL, Fiat, Fastweb, Finmeccanica, Fondiaria – SAI, Gruppo Editoriale L'Espresso, Impregilo, Italcementi, Lottomatica, Luxottica, Mediaset, Mediolanum, Mondadori, Parmalat, Pirelli, Prysmian, Seat, Snam, Saipem, Telecom Italia, Tenaris, Terna, Unicredito Italiano, Unipol, Banco Popolare, Intesa Sanpaolo, UBI, Mediobanca, STMicroelectronics. La nostra analisi per l'Italia non include Tenaris e quindi si basa su 39 società invece di 40.

[4] That is (as of 23 January 2008): Accor, Air France-Klm, Alcatel-Lucent, Alstom, ArcelorMittal, BNP Paribas, Bouygues, Air Liquide, Capgemini, Carrefour, Crédite Agricole, Dexia, Danone, EADS, Essilor, France Telecom, Oreal, Gaz de France, Lafarge, LVMH, Pernod Ricard, PPR, Renault, Sanofi-Aventis, Saint-Gobain, Suez, Total, Veolia, Vinci, Axa, EDF, Unibail-Rodamco, Peugeot, Schneider, Vallourec, Vivendi, Michelin, STMicroelectronics, Societe Generale, Lagardere.

[5] That is (as of 15 March 2008): Royal Dutch Shell, BP, BHP, Vodafone, Rio Tinto, GlaxoSmithKline, BAT, Tesco, Diageo, HSBC, Astrazeneca, BT Group, Reckitt Benckiser, Imperial Tobacco, Aviva, Kazakhmys, Centrica, Lloyds TSB, Standard Chartered, Prudential, Man Group, SabMiller, BG, Royal Bank of Scotland, Unilever, Cadbury Schweppes, Anglo American, Scottish & Newcastle, WM Morrison Supermarkets, Carnival, Scottish & Southern Energy, British Sky Broadcasting, Legal & General, Xstrata, HBOS, Reuters, Barclays, Rolls-Royce, BAE Systems, National Grid.

[6] That is (as of 7 April 2008): Allianz, Basf, BMW, Bayer, Siemens, Volksvagen, E. On, Daimler, Metro, ThyssenKrupp, RWE, Man, Deutsche Borse, Linde, Beiersdorf, Deutsche Post, Celesio, Deutsche Telekom, Fraport, Adidas, Fresenius, EADS, HeidelbergCement, Salzgitter, TUI, Hochtief, Merck, Munich Re, Fresenius, Commerzbank, Wacker, AMB Generali, K+S, Deutsche Bank, Deutsche Postbank, SAP, Continental, Lufthansa, Henkel. Our analysis includes 39 companies out of 40.

[7] That is (as of 2 September 2008): Exxonmobil, General Electric (GE), Procter & Gamble (P&G), Johnson & Johnson (J&J), AT&T, Chevron, IBM, Wal-Mart, Bank of America, JPMorgan, Pfizer, ConocoPhillips, Hewlett-Packard (HP), Philip Morris Int., Schlumberger, Coca-Cola, PepsiCo (Pepsi), Citigroup, Verizon Communications (Verizon), Wells Fargo, Abbott Laboratories (Abbott), Merck, McDonald's, Occidental Petroleum (Oxy), Monsanto, Medtronic, United Technologies (Utc), Goldman Sachs, Time Warner, Walt Disney, Wyeth, U.S. Bancorp (Bancorp), CVS Caremark (CVS), American International Group (AIG), Exelon, Anheuser-Busch, 3M, Genentech, Home Depot, Eli Lilly.

[8] Il dato non include Tenaris.

[9] The software used has been Borgatti, Everett and Freeman (2002).

[10] Exploratory Data Analysis according to the definition given by Nooy et al (2005).

[11] See Wasserman and Faust (1994) and De Nooy (2005) as regards the SNA methodology with particolar reference to the network structure.

Figure 1 shows the network of the Italian listed companies considered which are connected through directors who seat at least on two different company boards. The first observation is that the first component[12] is made of 31 companies linked with each other through a high density[13] of connections (Table 1). This density translates into a significant number of directors who serve on at least three companies here considered (Table 2 and 3): fifteen in total (2.6% of the total number of directors cosidered), with one director serving on five boards, four directors on four boards, and ten directors on three boards.

We now continue examining the features of the company network made of those Italian listed companies that belong to the first component. We want to identify whether there are companies that play a pivotal role, that is which companies are the necessary nodes to ensure the the communication of all the listed companies involved. We make recourse to two measures of interconnection, Freeman Degree and Betweenness. The Freeman Degree is a measure of local centrality, that is the potentiality to act or communicate with a specified number of directors. The Freeman Degree identifies here the extent of connections of a company with directors belonging also to other companies. However, a high Freeman Degree can correspond to a low or high level of centrality with respect to the entire company network. We then make recourse to the indicator called Betweenness which is a measure of centrality within the entire network. Betweenness indicates the number of paths that pass through a node. In this context, a node indicates a company, and a path indicates the shortest route which relies two companies through board interlocks. Betweenness is a complementary measure with respect to the Freeman Degree because it allows to specify whether a company has a central or peripheral position within the entire network (Wasserman and Faust, 1994, Freeman, 1979, and Borgatti, 2005).

Figure 1 and Table 4 show that the Italian Blue Chip with highest level of "Freeman Degree", with largest number of connections with directors also serving on other company boards (Pirelli) is characterized by having connections with 22 other directors belonging to 14 companies, followed by Mediobanca with 17 (12 companies) and Atlantia (16 directors and 10 companies). Figure 1 and Table 5 illustrate the ranking of the first ten Italian listed companies according to their Betweenness: in the first places Pirelli, Assicurazioni Generali, Mediobanca and Atlantia. We conclude that the Italian Blue Chips with the higher number of connections tend to be located at the center of the network.

3.2. FRANCE

The first observation related to the network of French companies (Figure 2) is that the first component is made of 39 companies out of 40: virtually all the French Blue Chips are connected with each other through interlocking directorships. Such 39 companies are linked with each other through a density of connections which is higher than in the case of Italy. (Table 1). In the French case a higher number of directors than Italy with at least three directorships connects the said 39 companies (Table 2 and 3): 26 in all (4.4% of the total directors considered), with one director serving on six company boards, five directors serving on four boards, and twenty directors serving on three boards.

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[12] We define as components of the network the sets of nodes (companies) through which it is possible to reach other nodes. The first component is made of the higher number of companies (Wasserman and Faust, 1994).

[13] Given a specified number of companies and of directors, density indicates the ratio between the number of ties and its total possible number. A tie is a link between two companies established through their having a director in common or between two or more directors sitting on the same board. The higher the density of a network of companies or directors, the higher the number of links among the companies or directors. Moreover, the more numerous the directors who connect the companies belonging to the examined network, the higher the network density. (Wasserman and Faust, 1994).

Moving on to the centrality measures, figure 2 and Table 4 show that the companies with a higher Freeman Degree (Paribas, Accor, Total) have a number of links to other directors similar to those of the main Italian Blue Chips (but a higher number of companies linked through a lower number of interlocked directors). Figure 2 and Table 5 indicate that, as in the case of Italy, companies with a higher "Freeman Degree" also tend to be those who are at the center of the network, which also takes in this case a centralized form.

3.3. GERMANY

In the case of the network of German companies (Figure 3) the first component is made of 38 companies out of the 39 examined: even in this case, as for France, virtually all the German Blue Chips are connected with each other through interlocking directorships. However, such 38 companies are linked with each other through a density of connections which is higher than in the case of France, and almost double than Italy. (Table 1). In the German case we also have a high number of directors with at least three directorships connects the said 39 companies (Table 2 and 3): 23 in all (2.1% of the total directors considered), with six directors serving on four company boards, and seventeen serving on three boards.

As for the centrality measures, Figure 3 and Table 4 show that the companies with a higher Freeman Degree (E. On, Bayer,Allianz) have a number of links to other directors similar to those of the main Italian and French Blue Chips. Figure 3 and Table 5 indicate that, as in the case of Italy and France, companies with a higher "Freeman Degree" also tend to be those who are at the center of the network, which also takes in this case a centralized form.

3.4. THE UNITED KIMGDOM
The Network of the UK companies (Figure 4 and Table 1) is made of 26 companies connected in the first component, two companies making up the second, and 12 isolates. The first component is then made by a number of companies largely inferior compared to France, Germany and Italy, with also a much lower density, as also witnessed by the presence of just two directors with three directorships (Table 2 and 3).

Concerning centrality measures, Fig. 4 and the tab. 4 show that the UK Blue Chips have lower values of Freeman Degree than Italy, Germany and France (5 directors of other companies in the network connected with Centrica against 22 for Pirelli and 21 for Paribas). On the contrary (Table 5) the Betweenness of British companies in the national network tends to be higher for the three countries previously examined. This is due to the fact that fewer British Blue Chips have links with a smaller number of companies and directors from other companies and also to the shape of the British network which is much more elongated than the Italian, French and German network, with a much longer distance between the peripheral and the central companies of the network.

In the case of the first three countries any two companies are linked with a high degree of redundancy: this situazion makes each link less determinant in the maintenance of the network. On the contrary, the UK network is based on a limited number of links between a limited number of companies and so the companies with a central position assume a greater centrality (Betweenness) in the network. As a consequence the British network is characterized by the presence of many "cut-off points", links between companies whose disappearance would lead to the exclusion of one or more companies from the first

component and increase the number of components of the network. In the Italian, French and German networks, cut-off points are a very small number (fig. 1-2-3).

3.5. THE UNITED STATES

The US network (Figure 5) is made for its first component of 35 companies out of the 40 examined, finding its place just behind France and Germany and ahead of Italy. However, such 35 companies are linked with each other through a density of connections which is much lower than the three mentioned countries and almost equivalent to the UK one (Table 1). The latter feature is reflected in the fact that in the US case we also have, just as with the UK, just two directors serving on three boards.

As for the centrality measures, Figure 5 and Table 4 show that the companies with a higher Freeman Degree (General Electric, UTC) have a low number of links to other directors, close to the UK case. However, Figure 5 and Table 5 show that taking Betweenness into account the US feature close to France, Germany and Italy rather than the UK, with companies with a higher "Freeman Degree" which also tend to be those who are at the center of the network, which also takes in this case a centralized form.

4. CONCLUSION

The purpose of this paper was to contribute to the literature on director interlocks by illustrating and analysing the interlocking directorships among the Italian, French, German, UK and US listed Blue Chips. Theoretical contributions identify (besides the interest for directors to expand their social relationships) two possible explanations for interlocking directorships, on the one hand collusion between operators in the same market or in general among companies that have business relations with each other and on the other giving creditors access to information on their debtors' management.

We proceeded by first considering the features of the companies connected to each other in each country and then moved on to compare the country networks according to Freeman Degree (a measure of local centrality, that is the potentiality to act or communicate with a specified number of directors) and Betweenness (which allows to specify whether a company has a central or peripheral position within the entire network).

The comparison of the five countries considered shows that two national models stand out. On the one hand a model made of a high number of companies linked to each other through a small number of shared directors who serve on several company boards at the time (France, Germany, and Italy). On the other hand, in the UK much fewer companies are connected to each other essentially through directors who have no more than two board positions at the time.

A case in between is represented by the US, where a high number of companies are connected to each other just like Germany, France, and Italy. However, just like the UK, such connections are made through directors who tend to have just two board positions at the time, a sign that, differently from Italy, Germany, and France, the UK and US networks might not be functional to systemic collusion.

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REFERENCES

Barabasi, A. (2002). *Linked, Perseus Publishing*, Cambridge, MA.

Barucci, E. (2006). *Mercato dei capitali e corporate governance in Italia*. Carocci editore

Bertoni, F. and P.A. Randone (2006). *The Small-World of Italian Finance: Ownership Interconnections and Board Interlocks Amongst Italian Listed Companies*, available at http://ssrn.com/abstract=917587

Bianchi, M., M. Bianco, S. Giacomelli, A. M. Pacces, and S. Trento (2005). *Proprietà e controllo delle imprese in Italia*, Bologna, Il Mulino.

Borgatti, S.P. (2005). Centrality and network flow. Social Networks, 27(1), 55-71.

Borgatti, S.P., Everett, M.G. and Freeman, L.C. (2002). *Ucinet for Windows: Software for Social Network Analysis,* Harvard, MA: Analytic Technologies.

Bunting, D. (1976). *Corporate Interlocking, part III - Interlocks and Return on Investment, Directors & Boards*, vol. 1, p. 4–11.

Burt, R.S. (1983). *Corporate Profits and Cooptation*, Academic Press, New York.

Chabi, S. and J. Maati (2005). *Le petit monde du CAC 40*, La revue du financier, vol. 153, p. 45-62.

Ciocca, P. (2007). *Ricchi per sempre? Una storia economica d'Italia (1796-2005)*, Torino, Bollati-Boringhieri.

Cotter, J., A. Shivdasani, and M. Zenner (1997). *Do Independent Directors Enhance Target Shareholder Wealth During Tender Offers?*, Journal of Financial Economics, vol. 43, p. 195– 218.

Davis, G. F. (1991). *Agents Without Principles? The Spread of the Poison Pill Through the Intercorporate Network*, Administrative Science Quarterly, vol. 36, p. 583–613.

De Nooy, W. Mrvar, A. and Batagelj, V. (2005). *Exploratory Social Network Analysis with Pajek*. New York: Cambridge University Press.

Dooley, P. C. (1969). *The Interlocking Directorate*, American Economic Review, vol. 59, p. 314–323.

Elouaer S. (2006) *Boardroom Networks Among French Companies: 1996 and 2005*, mimeo.

Enriques, L. and M. Volpin (2007). *Corporate Governance Reforms in Continental Europe,* Journal of Economic Perspectives, Vol. 21, No. 1, pp. 117-140, Winter 2007

Ferris, S. P., M. Jagannathan, and A. Pritchard (2003). *Too Busy to Mind the Business? Monitoring by Directors with Multiple Board Appointments*, Journal of Finance, vol. 58, 1087–1111.

Fich E. M. and L. J. White (2005). *Why Do CEOs Reciprocally Sit on Each Other's Boards?*, Journal of Corporate Finance, vol. 11, p. 175–195.

Fich, E. M. and A. Shivdasani (2006). *Are Busy Boards Effective Monitors?*, Journal of Finance, vol. 61, p. 689–724.

Fich, E.M. and L.J. White (2003). *CEO Compensation and Turnover: the Effects of Mutually Interlocked Boards,* Wake Forest Law Review, vol. 38, p. 935– 959.

Fligstein, N. and P. Brantley (1992). *Bank Control, Owner Control, or Organizational Dynamics: Who controls the large modern corporation?*, American Journal of Sociology, 98, 280–307.

Freeman, L.C. (1979). Centrality in networks: I. Conceptual clarification. Social Networks 1, 215–239.

Hanneman, R. A. and M. Riddle (2005). *Introduction to Social Network Methods*. Riverside, CA: University of California, Riverside http://faculty.ucr.edu/~hanneman/

Maati J. (2007). *Les administrateur europeens du FTSEurofirst 100 constituent-t-ils un petit monde?* Working paper.

Mac Canna L., N. Brennan and O'Higgins (1998). *National Networks of Corporate Power: An Irish Perspective*, Journal of Management and Governance Volume 2, Number 4, 1998 , pp. 357-379(23)

Mariolis, P. (1975). *Interlocking Directorates and Control of Corporations: the Theory of Bank Control.* Soc. Sci. Q. 56:425–39

Mizruchi, M.S. (1992). *The Structure of CorporatePolitical Action*. Cambridge: Harvard Univ. Press

Mizruchi, M.S. (1996). *What Do Interlocks Do? An Analysis, Critique, and Assessment of Research on Interlocking Directorates*, Annual Review of Sociology, 22, 271–298.

Mizruchi M.S., and L.B. Stearns (1988). *A Longitudinal Study of the Formation of Interlocking Directorates,* Administrative Science Quarterly 33, pp.194-210.

Mizruchi, M. S. and L. B. Stearns (1994). *A Longitudinal Study of Borrowing by Large American Corporations*, Administrative Science Quarterly, 39, 118–140.

Palmer D.A., P.D. Jennings, and X. Zhou (1993). Late Adoption of the Multidivisional Form by Large US Corporations: Institutional, political and economic accounts." Administrative Science Quarterly, 38: 100-131.

Pennings, J. M. (1980). *Interlocking Directorates*, Jossey-Bass, San Francisco

Pfeffer, J. E G.R. Salancik (1978). *The External Control of Organizations: A Resource Dependence Perspective. New York, NY, Harper and Row.*

Pfeffer, J. (1972). *Size and Composition of Corporate Boards of Directors: the Organization and its Environment*, Admin. Sci. Q. 17:218–28

Phan, P. H., S. H. Lee, and S. C. Lau (2003). *The Performance Impact of Interlocking Directorates: The Case of Singapore*, Journal of Managerial Issues, 15, 338–352.

Rinaldi, A. (2004). *Business Elites in Italy: 1913-1972*, paper prepared for "Business and Society: the 2004 Conference of the Association of Business Historians", Nottingham, 25-26 June.

Rinaldi, A., and M. Vasta (2005). *The Structure of Italian Capitalism, 1952-1972: New Evidence Using the Interlocking Directorates Technique*, Financial History Review, 12.2, 2005, pp. 173-198.

Santella, P., C. Drago, and A. Polo (2007). *The Italian Chamber of Lords Sits on Listed Company Boards: An Empirical Analysis of Italian Listed Company Boards from 1998 to 2006*, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1027947

Selznick, P. (1949). *TVA and the Grass Roots.* New York: Harper & Row

Selznick, P. (1957). *Leadership in Administration.* New York: Harper & Row

Stokman, F.N. and F.W. Wasseur (1985). *National Networks in 1976: A Structural Comparison*, in F.N. Stokman, R. Ziegler e J. Scott (eds.), Networks of Corporate Power: A Comparative Analysis of Ten Countries, Cambridge, U.K.: Polity Press, 1986, pp. 20–44.

Useem, M. (1984). *The Inner Circle*. New York: Oxford Univ. Press

Wasserman, S. and K. Faust (1994). *Social Network Analysis.* Cambridge: Cambridge University Press.

Yeo, H-J, C. Pochet and A. Alcouffe (2003), CEO Reciprocal Interlocks in French Corporations Journal of Management and Governance 7: 87–108, 2003.

Zajac, E.J. (1988). *Interlocking Directorates as an Interorganizational Strategy*. Acad. Manage. *J.* 31:428–38

Table 1. Country networks: descriptive statistics

Country network	Components	N. of companies In first component	N. of isolates	Density
Italy	9	31	8	0.1039
France	2	39	1	0.1551
UK	14	26	12	0.041
Germany	2	38	1	0.1984
US	6	35	6	0.0564

Table 2. Board directorships in the countries considered

US	Total	Rel. freq.	Cum. freq.	France	Total	Rel. freq.	Cum. freq.
1	448	0.916	1	1	413	0.694	1
2	39	0.079	0.084	2	48	0.081	0.125
3	2	0.004	0.004	3	20	0.034	0.044
				4	5	0.008	0.01
				5	0	0	0.002
				6	1	0.002	0.002
Total	489	1		Total	595	1	
Italy	Total	Rel. freq.	Cum. freq.	UK	Total	Rel. freq.	Cum. freq.
1	428	0.744	1	1	457	0.887	1
2	48	0.083	0.109	2	26	0.05	0.054
3	10	0.017	0.026	3	2	0.004	0.004
4	4	0.007	0.009	4	0	0	
5	1	0.002	0.002	5	0	0	
Total	575	1		Total	515	1	
Germany	Total	Rel. freq.	Cum. freq.				
1	713	0.895	1				
2	60	0.075	0.105				
3	17	0.021	0.03				
4	6	0.007	0.007				
Total	796	1					

Table 3. Number of directorships by country

France		Italy		UK	
N. of directors	directorships	N. of directors	directorships	N. of directors	directorships
1	6	1	5	2	3
5	4	4	4	26	2
20	3	10	3		
US		**Germany**			
2	3	6	4		
39	2	17	3		
448	1	60	2		

Tab. 4 Freeman Degree

US			Francia CAC 40	
General Electric	7 (7)		Bnp Paribas	21 (16)
UTC	5 (5)		Accor	17 (15)
IBM	4 (4)		Total	16 (11)
Anheuser-Busch	4 (3)		Saint-Gobain	15
AIG	4 (4)		Axa	14
JPMorgan	4 (4)		Lafarge	14
Wells Fargo	4 (4)		Suez	13
Medtronic	4 (3)		Lagardere	13
			Veolia	12
			Sanofi Aventis	11
			Oreal	11
Italia S&P MIB 40			**Gran Bretagna FTSE**	
Pirelli & C. Spa	22 (14)		Centrica	5 (5)
Mediobanca Spa	17 (12)		Rolls-Royce	4 (4)
Atlantia Spa	16 (10)		Cadbury Schweppes	4 (4)
Assicurazioni Generali Spa	14		Bt Group	3
Italcementi Spa Fabbriche Riunite Cemento	14		Bhp	3
Telecom Italia Spa	12		Royal Dutch Shell	3
Mediaset Spa	12		Xstrata	3
Alleanza Assicurazioni Spa	11		Vodafone	3
Autogrill Spa	11		Reuters	3
Intesa Sanpaolo Spa	9		Bae Systems	3
Luxottica Group Spa	9		Bp	3
Arnoldo Mondatori Editore Spa	9			
Germany				
E. On	19			
Bayer	18			
Allianz	17			
Deutsche Bank	15			
Lufthansa	15			
ThyssenKrupp	14			
Linde	13			
Daimler	13			
Munich RE	12			
BMW	10			
Deutsche Telekom	10			

Tab. 5 Normalized Betweenness Centrality

| US			Francia Cac 40	
General Electric		20.524	Bnp Paribas	16.47
AIG		18.444	Accor	10.99
UTC		17.072	Air Liquide	10.97
Wells Fargo		17.038	Lagardere	10.184
Walt Disney		12.877	Eads	10.048
JPMorgan		12.427	Sanofi Aventis	8.405
P&G		11.842	Oreal	5.915
Eli Lilly		11.550	Axa	5.501
IBM		11.269	France Telecom	5.369
Anheuser-Busch		10.493	Total	5.337
Italia S&P Mib 40			**Gb Ftse**	
Pirelli & C. Spa		13.893	Rolls-Royce	18.668
Assicurazioni Generali Spa		12.296	Royal Dutch Shell	16.262
Mediobanca Spa		8.846	Bt Group	15.61
Atlantia Spa		8.09	Vodafone	13.495
Luxottica Group Spa		7.002	Centrica	12.506
Fondiaria - Sai Spa		5.084	Cadbury Schweppes	9.829
Italcementi Spa Fabbriche Riunite Cemento		4.388	Bhp	8.907
Banca Monte Dei Paschi Di Siena Spa		4.125	Reuters	7.962
Unicredito Italiano Spa		4.125	British Sky Broadcasting	6.208
Autogrill Spa		4.072	Rio Tinto	6.208
Germany				
Allianz		15.635		
Basf		15.074		
Lufthansa		10.222		
Bayer		8.867		
E. On		8.647		
Linde		8.219		
Deutsche Bank		7.132		
Commerzbank		6.523		
ThyssenKrupp		6.090		
Fresenius		5.360		

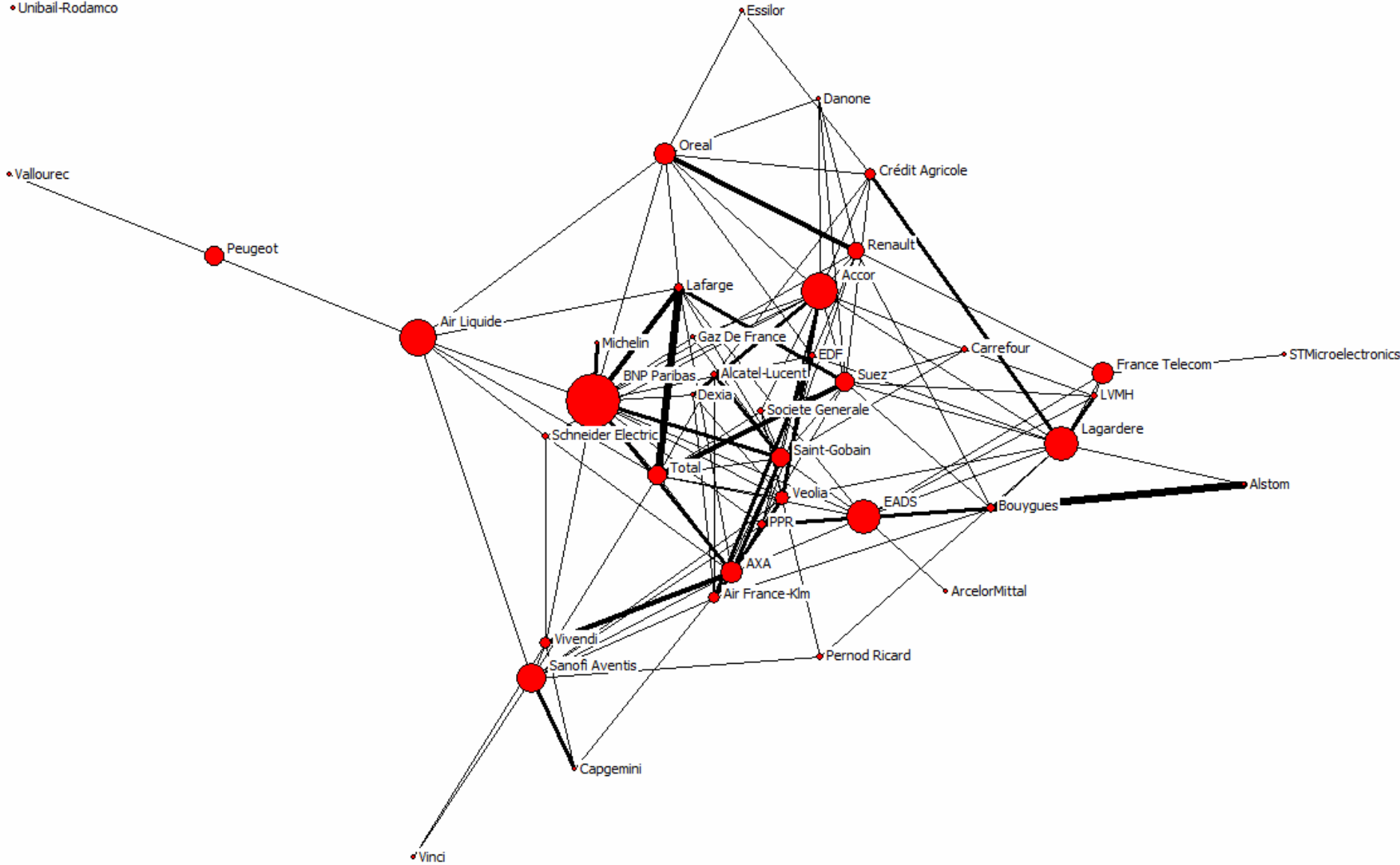**Figure 1. The Italian network.**
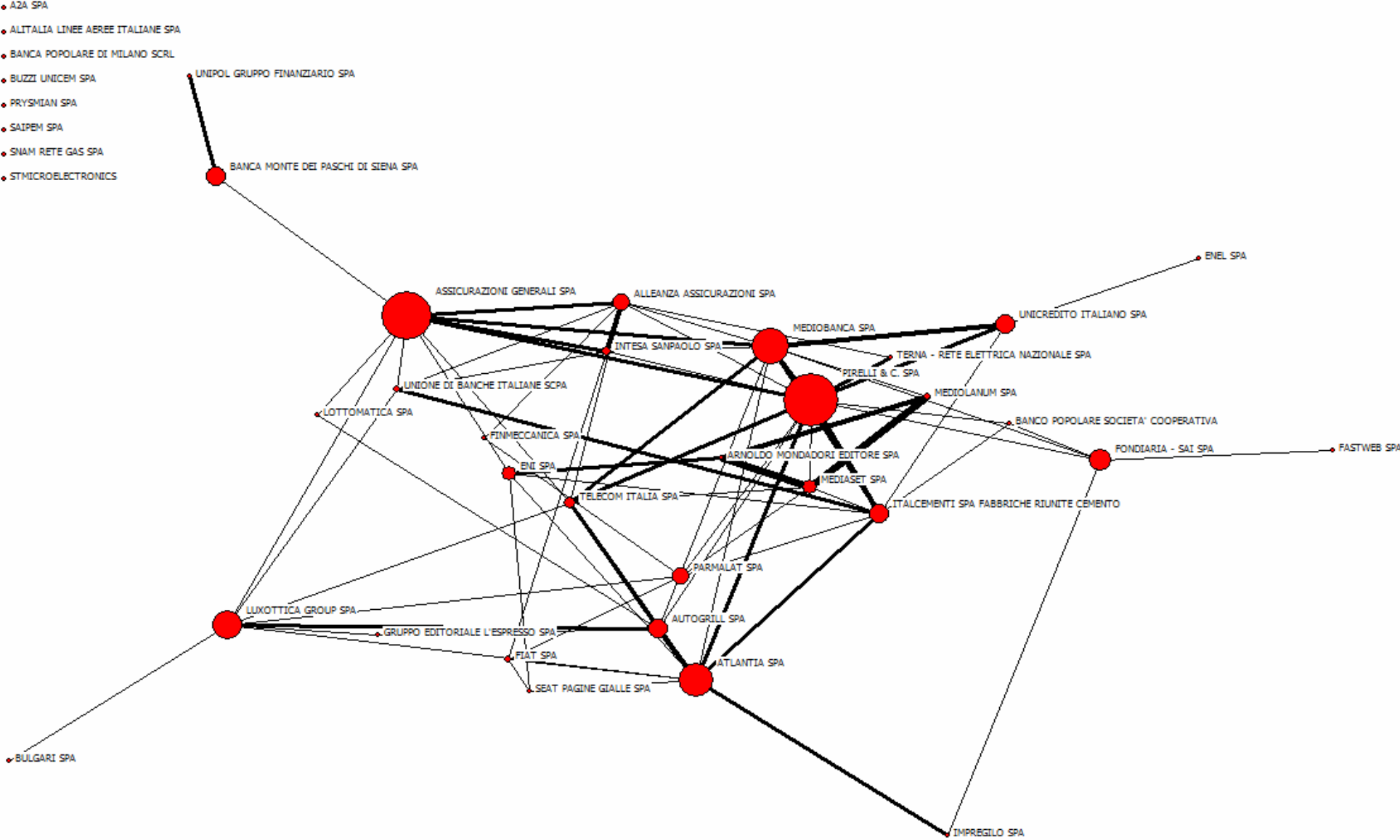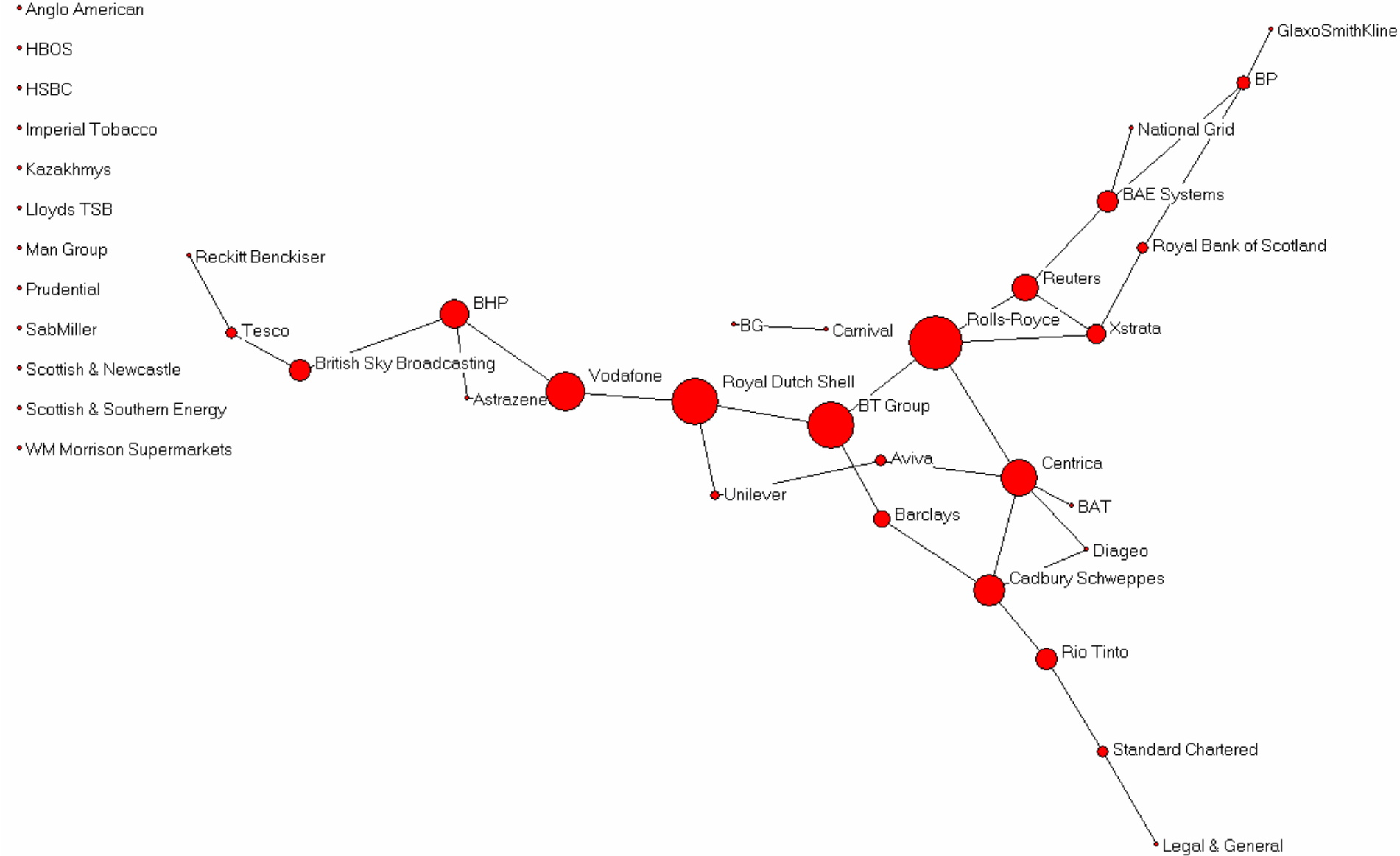
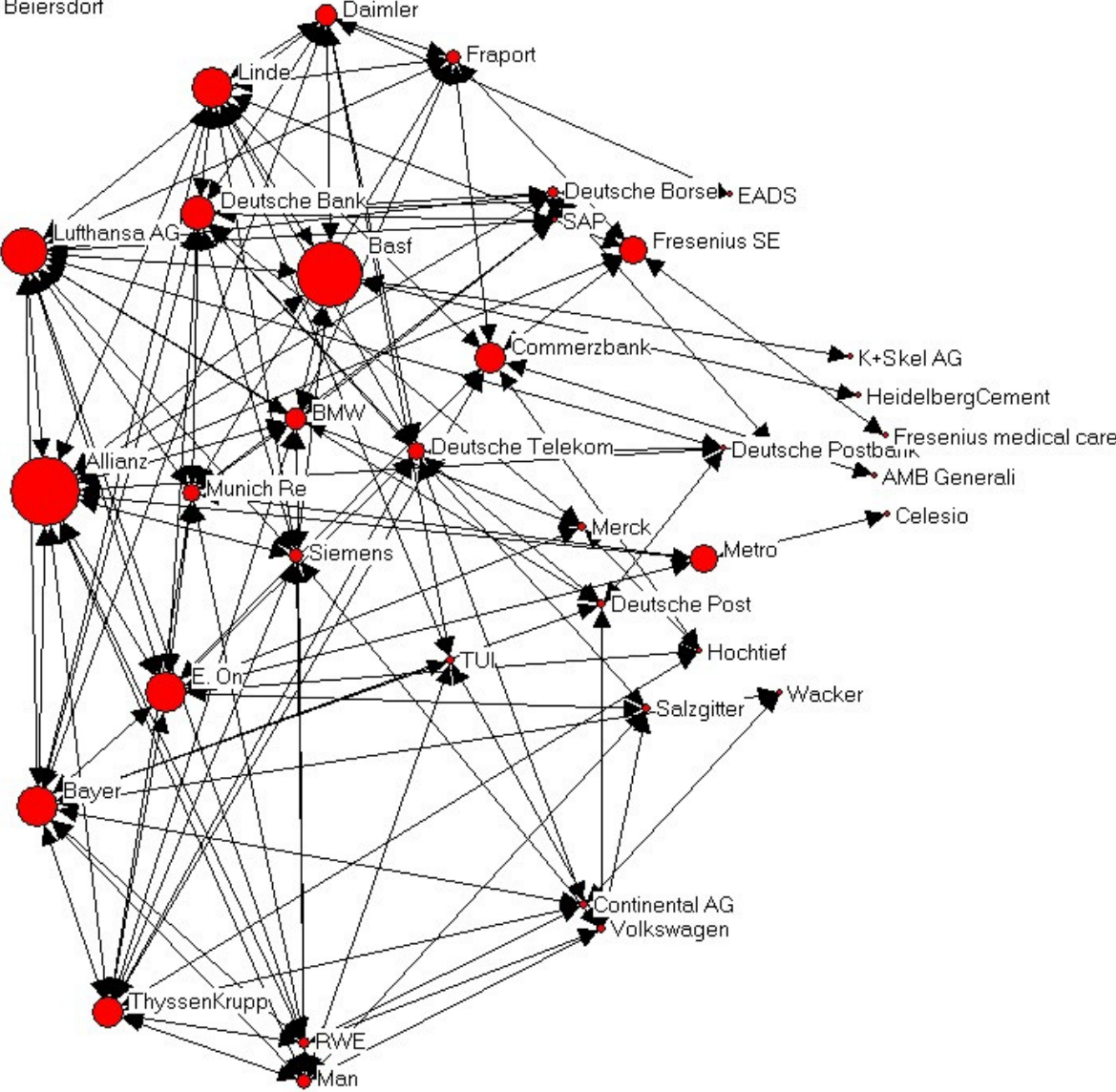**Figure 2. The French network.**

Figure 4. The UK network.

Figure 3. The German network.

Figure 5. The US network.