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# Dynamics in the German system of corporate governance? Empirical findings regarding interlocking directorates

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**Abstract**

Recent discussion on German corporate governance is empirically inconclusive as to whether institutional change has been strong enough to speak of convergence tendencies towards the Anglo-Saxon outsider system. This article adds to this debate in two ways. First, structural changes in the network of interlocking directorates of large German corporations are examined from a longitudinal perspective. There is considerable continuity of structural network features on the meso- and macro-level between 1989 and 2001. Quantitative dilution of the network has not been translated into a process of structural erosion. Second, the German market for corporate control is found underdeveloped over time, because three-quarters of public take-over bids are tendered to consolidate already existing controlling stockholdings, and no critical mass of companies exists for trade in this market. It is concluded that current institutional change should not be interpreted as system change or convergence towards the Anglo-Saxon model of corporate governance.

Keywords: corporate governance; network; interlocking directorates; market for corporate control; Germany.

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## Introduction

Since the hostile take-over of Mannesmann AG by British Vodafone plc, there has been considerable debate regarding institutional change in the system of German corporate governance. For many decades it was beyond doubt that large German corporations are embedded into an extensive corporate network of capital and personnel interlockings in which financial companies play a central role. Yet recent literature suggests that this *insider-control* system has not only come under severe pressure but might converge towards the Anglo-Saxon *outsider-control* system (Jürgens *et al*. 2000; Beyer and Hassel 2002). Mannesmann is believed to be a milestone in a development that will finally make the way clear for a German market for corporate control (Höpner and Jackson 2001).[1]

The following article takes up this argument and suggests that, in order to grasp the ongoing institutional change adequately, it has to be analysed in a two-fold way. In a first step, the *institutional infrastructure* of the German corporate governance system needs to be examined with regard to recent structural changes. In a second step, the *institutional core* itself needs to be analysed. The depth and scope of the changes in the institutional core can answer the question as to whether or not the institutional change is a fundamental one.

The structure of the article is as follows. In the second section *outsider-oriented* and *insider-oriented* corporate governance systems are delineated and compared to each other. The third section discusses recent results as to recent changes within this set of institutions. The next section, the fourth, presents empirical evidence as to changes in the institutional core. Here, networks of interlocking directorates of large German companies are analysed for 1989 and 2001. Against this background preliminary conclusions are drawn. The fifth section sketches out the potential for a German market for corporate control in the respective time window. The final section provides a synthesis of the results.

## Two modes of corporate governance

The production of goods and services is embedded in an ensemble of legal and economic institutions. Among others, these are (Soskice 1999: 109–10; Hall and Soskice 2001: 17–21):

1 industrial relations (e.g. wages, work conditions),
2 vocational training and education (e.g. workforce skills, educational institutions),
3 inter-firm relations (e.g. technology transfer, standard-setting), and
4 the sphere of corporate governance (e.g. financial structure of companies, capital markets, take-over regulation).

Hall and Soskice (2001: 17) argue that these institutions interact with each other and that, in course of time, they develop functional complementarities. First, this means that the presence (or absence) of one institution increases (or

decreases) the returns from (or efficiency of) the other institution. 'The returns from a stock market trading in corporate securities, for instance, may be increased by regulations mandating a fuller exchange of information about companies' (Hall and Soskice 2001: 18). Second, this means that institutional practices are not distributed randomly across time and space, but co-evolve into coherent institutional regimes with a characteristic *governance mode* of economic activity. The governance mode is not only present at the production system level, but also at the sub-levels of the institutional systems and, hence, the sphere of corporate governance.

Generally, the analysis of corporate governance starts with the principal agent problem, how shareholders as owners of corporate property rights can ensure that managers charged with increasing shareholder value really do so. One of the central answers to this problem in the economics literature is the idea of a *market for corporate control* which limits managerial capacity to pursue inferior business strategies or to maximize their own income instead of the company's value. Listed companies are continuously monitored by stock markets via the buy-and-sell mechanism that gives a premium on efficient companies (high price) and sanctions poorly managed ones (low price). In the latter case, the company is comparatively cheap and can be taken over in order to replace the inefficient board of directors (Shleifer and Vishny 1997; Jensen and Ruback 1983; Manne 1965). Such a change of control usually takes the form of a public take-over bid and has the function of transferring corporate control to the most efficient management team. Criticism as to the efficiency theorem[2] apart, there is abundant empirical evidence that (hostile) take-overs are a common phenomenon in US and UK stockmarkets. In these *Atlantic-liberal production systems*, corporate governance is organized as a *market* (Buddenbrock 1999; Dickerson *et al*. 1998; Mayer 1994; Jensen and Ruback 1983; Singh 1975).

In the *Rhenish-organized production system*, particularly in Germany, the mode of governance is *relational contracting*. Corporate governance is embedded in a system of tamed competition with large combines on the meso-level and extensive corporate networks (both capital and personnel) on the macro-level (Ziegler *et al*. 1985; Franks and Mayer 1995; Windolf and Beyer 1996; Windolf and Nollert 2001). Public companies, which take (substantive) shares in other companies' stock, send managers to their supervisory boards, whose members are again members of other supervisory boards, and so on. Two aspects are noteworthy in this relational contracting arrangement. First, managers add to the bureaucratic control function they take in their own company that of owner in the supervisory bodies of other companies (Windolf 1994: 90). Two types of legitimate control (ownership, managerial), being functionally differentiated at the company level, are thus recombined on the macro-level via a network of multiple directors. Corporate control is embedded in a network form or organization and not in a market structure. Second, both capital and multiple directorship networks have different properties pointing to differential forms of control. Windolf and Beyer (1996) and Beyer (1996) identified, for the majority of the German stock corporations, star and pyramid structures where control is

exercised from top to bottom (*top down control*). In contrast, within the network's core, where financial companies are central actors, circle or clique structures indicate *reciprocal control*.[3] All in all, so-called *Germany Inc.* (Adams 1999) is an alternative institutional answer to the principal agent problem arising from the differentiation of ownership and control.

Modes of corporate governance emerge through the complex interplay of a number of institutions:

1 the organization of stockmarkets (e.g. liquidity, rules of entry and exit, transparency regulations),
2 the structure and concentration of equity (e.g. stockholding caps, insider trading legislation),
3 the legal position of shareholders (e.g. protection of minority shareholders, types of shares issued),
4 the legal position of banks (permitted business operating areas, limits to holding shares in non-banks, proxy voting), and
5 the take-over regulation (e.g. obligatory take-over bids, caps on voting rights, poison bills, golden parachutes).

In Germany up to the early 1990s, these institutions could be characterized as follows (Heinze 2001: tables 1, 2; Vitols 2001: 339). The main financial resource for companies, due to underdeveloped, illiquid and corporatist stock markets, is bank loans. Inefficient disclosure regulations, absence of limits on accumulating stock, and a sophisticated group law foster ownership concentrations, mostly in the hands of large banks and non-financial companies. Ineffective legal protection for minority shareholders channels investment capital into the bond market and prevents an active shareholding culture. Banks are given powerful means to exercise influence: first, because they are allowed to operate in any financial business (universal business law); second, because they are allowed to vote for those shareholders that place their shares on bank deposits (proxy voting law); and, third, because there are no substantial limits on bank managers sitting on supervisory boards of non-banks. The absence of an effective regulation of public take-overs and numerous possibilities of manipulating voting rights (caps on voting rights, multiple voting stock, non-voting preferred stock) prevent effective control transfers. All in all, these institutional practices are organized such that structures of both capital and multiple director networks are likely to develop. In this sense, *network governance* has not emerged by chance, but mirrors manifold institutional-functional complementarities in Germany whose roots reach back into the late nineteenth century.[4]

## Dynamics in the German system of corporate governance: institutional infrastructure

Since the early 1990s numerous institutional changes have taken place (Beyer and Hassel 2002; Heinze 2001: 658–67; Windolf 2001: 18–31; Jürgens *et al.* 2000).

*Organization of the stockmarkets*: the dismantling of the corporatist structures of the German stockmarkets, extended obligatory disclosure, and transparency requirements and the possibility for companies to prepare balance sheets according to international standards have partly improved the quality of information necassary for financial markets to operate properly.[5] *Structure of stock ownership*: an increasing share held by both German and international institutional investors in German public companies illustrates the opening up of formerly insider-oriented stock markets and indicates growing expectations towards financial performance of large listed companies. *Take-over regulation*: the abolition of devices for manipulating voting rights and new take-over regulation have both improved legal security for take-overs and strengthened minority shareholder protection.

On the other hand, a considerable number of institutions have been unaffected so far (Deutsche Bundesbank 2001: 28; Hopt 2000: 798–809; Korn & Ferry 1998: 33–7). *Group law*: there are still no effective limits for pyramiding in German group law, thus encouraging companies to build up cross-shareholdings. *Replacement of incumbent management*: co-determination in supervisory boards and the dual board structure prevent effective replacements of incumbent management in the case that a company receives a take-over bid. *Technical orientation of German boards of directors*: German boards place significantly more stress on reducing costs and improving productivty (both are technical improvements) than their Anglo-Saxon collegues whose priority is to meet financial goals and stock-market-based indicators. *Corporate finance*: companies still rely on substantial internal financing and loan-based external financing. The short boom of Initial Public Offerings (IPOs) between 1997 and 1999 did not have an impact on corporate capital structure.

To sum up, recent empirical evidence suggests a *heterogeneous picture* as to the institutional infrastructure of German corporate governance. It appears difficult to discern a clear trend in current development, mostly because some institutional practices have changed, while other have continued.

## Dynamics in the German system of corporate governance: institutional core

As findings have been heterogeneous so far, there is need for empirical evidence as to the institutional core of German corporate governance. The main research question is whether and to what extent institutional changes have left their traces on both the network of capital and personnel interlockings. These network structures, which have co-evolved historically, can be conceived of as the institutional core of the German governance system. Because their structures have been found highly similar, the following analysis will examine only the network of interlocking directorates of large public companies. We take into consideration the 100 largest German companies, which represent a corporate segment where structural changes are most likely to occur. As the most

important institutional changes had been implemented by the early and mid-1990s, 1989 and 2001 appear suitable as reference points in time.

By means of handbooks and databases from Hoppenstedt (1989, 2001) and reports from the German Monopolies Commission (Monopolkommission 1990, 2000), two networks were built, one for 1989 and the other for 2001. As the German board system has a dual structure (management board, supervisory board), these networks were further divided into directional and non-directional sub-networks, where the former network type refers to ties from the management board (company X) to a supervisory board (company Y), and the latter points to ties from the supervisory board (company X) to another supervisory board (company Z). The sample covers all public companies among the 100 largest German corporations. In sum, sixty-nine companies could be identified for both points in time (see appendix for details of the sample).[6]

To analyse structural changes at the institutional core of the German corporate governance system two working hypotheses were tested:

*Hypothesis 1*: The network of interlocking directorates has undergone a process of *quantitative dissolution* in recent years. The number of directional and non-directional ties decreased between 1989 and 2001.

*Hypothesis 2*: The network of interlocking directorates has undergone a process of *qualitative dissolution* in recent years, affecting structural characteristics of the network:

*H2a*: Traditionally, managers from banks and insurance companies were co-opted into the supervisory boards of non-financial companies, where they received company information and acted as institutional monitors (*insider control agencies*). Now, financial companies play a decreasing role because the function of the capital markets has improved. In 2001 financial companies are not as central actors as in 1989.

*H2b*: Traditionally, stars, pyramids, circles, and cliques were structural elements of the network of directional ties (*top down control*, *reciprocal control*). Now, as capital markets operate under a new regulatory regime, a German market for corporate control is taking hold (*outsider control*), thus rendering these structures disfunctional. Stars, pyramids, and cliques were diluted between 1989 and 2001.

*H2c*: Traditionally, the meso- and macro-levels of the network of non-directional ties were integrated by cohesive sub-groups and a centre-periphery structure. Now, because the network is being increasingly replaced by a market mechanism, these structures have undergone erosion. The non-directional network is less integrated in 2001 compared to 1989.

*General characteristics of the network of interlocking directorates*

Table 1 shows general characteristics of both the directional and non-directional network. First, there is a quantitative decrease in the overall number of ties (directional network: 25 per cent; non-directional network: 15 per cent). Second, this decrease can be attributed to the fact that financial institutions (banks and insurers) have been dismantling their information and influence channels to non-financial companies in the directional network, while non-directional ties have been reduced between non-financial companies (rows 5 and 7). Third, the network density increased in the directional network, while slightly decreasing in the non-directional one (rows 2 and 3). These empirical findings tend to confirm hypothesis 1. There has been a process of quantitative erosion over this recent decade.

*Structural characteristics of the directional network*

Hypothesis 2a states that financial companies have retreated from their traditional role as institutional monitors in the insider-control system. Likewise, hypothesis 2b assumes a process of erosion rendering central elements of the directional network disfunctional. Which structures are affected here? First, German corporate networks are made up of circle, pyramid, star, or clique structures. Second, four types of actors within these structures have been identified in the literature: sender, receiver, intermediaries (both sender and

**Table 1** Networks of interlocking directorates in Germany (directional and non-directional ties

| | | *Directional network* | | *Non-directional network* | |
|---|---|---|---|---|---|
| | | *1989* | *2001* | *1989* | *2001* |
| 1 | Total number of ties | 151 | 114 | 782 | 664 |
| 2 | Density, dichotomized (%) | 3.1 | 2.3 | 12.8 | 11.2 |
| 3 | Density of tied companies, dichotomized (%) | 4.1 | 4.6 | 17.6 | 15.4 |
| 4 | Multiple ties (%) | 4.9 | 5.6 | 29.9 | 26.2 |
| 5 | Finance is sender to non-financial companies (% of row 1) | 54.3 (82) | 32.5[a] (37) | 31.7[b] (242) | 37.0[b] (248) |
| 6 | Non-finance is sender to financial companies (% of row 1) | 14.6 (22) | 17.5 (20) | | |
| 7 | Non-finance is sender to non-financial companies (% of row 1) | 27.2 (41) | 42.1 (48) | 62.9[c] (492) | 56.6c,a (376) |
| 8 | Isolated companies (% of row 9) | 13.0 | 29.0 | 14.5 | 14.5 |
| 9 | Total number of companies (N) | 69 | 69 | 69 | 69 |

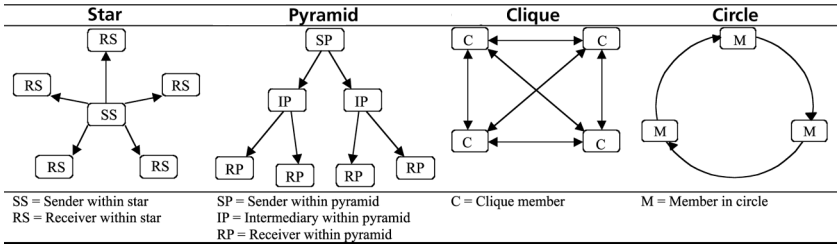
*Source*: Computations based on Hoppenstedt (1989, 2001)

*Notes*

[a] Difference of mean relative to 1989, significant at 5% level (*t*-test).

[b] Non-directional interlockings between financial and non-financial companies.

[c] Non-directional interlockings within the non-financial sector.




*Source*: Windolf and Beyer (1996)
**Figure 1** Basic structures in networks of directional ties

receiver), and isolated actors (Windolf and Beyer 1996; Beyer 1996). Figure 1 illustrates these structural types. For the majority of German enterprises, star and pyramid structures and thus top-down control relations are most typical. The core of the network is composed of circle or clique structures. Hence, control relationships based on reciprocity are characteristic.

Table 2 presents results for these structural types in 1989 and 2001. First, the proportion of receivers in pyramids – these are enterprises within a pyramidal structure which co-opt directors from other companies onto their supervisory board without seconding any themselves – is decreasing. Many of the companies of this type in 1989 are isolated in 2001. In contrast, the proportions of companies embedded in the remaining star and pyramid structures remain relatively stable. Second, as financial companies have increasingly withdrawn from the role of monitoring non-financial companies (sender), their share in this category is approaching zero. This tends to confirm the claims of large German

**Table 2** The network structure of directional ties (percentages)

| | *1989* | | *2001* | |
|---|---|---|---|---|
| | *All* | *Finance* | *All* | *Finance* |
| Sender | 4.3 | 14.3 | 5.8 | – |
| – within star configuration | 1.4 | 7.2 | 2.9 | – |
| – within pyramid configuration | 2.9 | 7.2 | 2.9 | – |
| Receiver | 46.4 | 14.3 | 34.8 | 35.7 |
| – within star configuration | – | – | 1.4 | – |
| – within pyramid configuration | 46.4 | 14.3 | 33.4 | 35.7 |
| Intermediary | 34.8 | 50.0 | 30.4 | 42.9 |
| – within circle configuration | 7.2 | 7.2 | 8.7 | 7.2 |
| – within reciprocal clique configuration | 15.9 | 28.6 | 11.6 | 28.6 |
| – within pyramid configuration | 11.6 | 14.3 | 10.1 | 7.2 |
| Isolate | 14.5 | 21.4 | 29.0 | 21.4 |
| Total | 100 (N=69) | 100 (N=14) | 100 (N=69) | 100 (N=14) |

*Source*: Computations based on Hoppenstedt (1989, 2001)

banks to be substituting their traditional role as lender in favour of investment banking: bank managers have increasingly withdrawn from supervisory boards of non-financial corporations (Deutsche Bank 2002). In contrast, the proportions of the interlockings typical within the financial sector (circle and clique) remain constant over time.

To sum up, empirical findings tend to support hypothesis 2a, whereas hypothesis 2b receives little support. There is an increase of isolates in 2001 due to the decreasing number of ties from the financial to the non-financial sector. However, many structural elements of the insider-control systems have been reproduced: circle and clique structures for the financial sector, on the one hand, and pyramid structures for all companies, on the other, are easily discernible in 2001.



*Structural characteristics of the non-directional network*

Non-directional interlockings are not necessarily based on motives for corporate control. They can best be interpreted in terms of network integration. On the macro-level, integration can be detected by core-periphery structures, on the meso-level by cohesive sub-groups (cliques). Hypothesis 2c states that both meso- and macro-level integration is weaker in 2001 than in 1989.

The results for core-periphery structures are presented in Table 3. By means of block model analysis, a computational tool for discerning positions in a space of social relations (Wasserman and Faust 1999: 419–22, 681–4), a core-periphery structure was identified.[7] Three results are noteworthy. First, company blocks 1 and 2 stand out because of their stable and high internal block densities (0.98 and 0.95 respectively). In addition, they are densely connected with each other (0.45 and 0.44 respectively). Further inspection reveals that these two blocks are in fact a double network core, where block 1 has properties of an *inner core* and block 2 represents the *outer core*.[8] Inner core means that a block is reproduced to a higher degree than the outer core. So, block 1 is reproduced to about 50 per cent, i.e. about half of the companies are in block 1 in both 1989 and 2001. This is a remarkable continuity for a twelve-year period. In contrast, the reproduction rate of block 2 is much lower, as only Bayer remains in its position over time. However, if one takes blocks 1 and 2 together, again half of all companies are reproduced into either from block 1 (2) to block 1 (2) or from block 1 (2) to block 2 (1). In Table 3, companies showing the latter form of reproduction across blocks 1 and 2 are in italics, companies showing the former are underlined.

As a second result, companies in block 4 belong to the periphery of the corporate network, not only because of their poor internal integration, but because they have virtually no ties with other blocks. This periphery comprises half of all companies and remained highly stable between 1989 and 2001. Third, there is a semi-periphery comprising those companies whose board members sit on few other supervisory boards and accordingly have only limited access to

**Table 3** Core-periphery structures of non-directional networks (image matrices)

| | | *1* | *2* | *3* | *4* |
|---|---|---|---|---|---|
| *1989* | *1* | 0.95 | 0.45 | 0.29 | 0.02 |
| | *2* | 0.45 | 0.78 | 0.24 | 0.04 |
| | *3* | 0.29 | 0.24 | 0.17 | 0.03 |
| | *4* | 0.02 | 0.04 | 0.03 | 0.02 |

Block 1: N = 12; Block 2: N = 9; Block 3: N = 16; Block 4: N = 32; $R^2 = 0.36$

| | | *1* | *2* | *3* | *4* |
|---|---|---|---|---|---|
| *2001* | *1* | 0.98 | 0.44 | 0.29 | 0.04 |
| | *2* | 0.44 | 0.88 | 0.16 | 0.06 |
| | *3* | 0.29 | 0.16 | 0.31 | 0.03 |
| | *4* | 0.04 | 0.06 | 0.03 | 0.02 |

Block 1: N = 10; Block 2: N = 7; Block 3: N = 18; Block 4: N = 34; $R^2 = 0.32$

1 = inner core; 2 = outer core; 3 = semi-periphery; 4 = peripherie

*Block 1*
1989: Dresdner Bank, BASF, Karstadt, Linde, RWE, Thyssen, VEBA, Siemens, Volkswagen, Münchener Rück, MAN, Beiersdorf
2001: Dresdner Bank, Deutsche Bank, *Allianz*, Münchener Rück, E.ON (formerly VEBA), Siemens, Thyssen, *MG Technologies (formerly Metallgesellschaft)*

*Block 2*
1989: Daimler Benz, Allianz, Holzmann, Lufthansa, Bayer, Mannesmann, Hoechst, Metallgesellschaft, Degussa
*2001: Preussag, Continental, Schering, Hochtief, Karstadt, Bayer, Volkswagen*

*Source*: Computations based on Hoppenstedt (1989, 2001)

company information and control ressources (bBlock 3). Their orientation towards blocks 1 and 2 (higher inter-block than intra-block density), which can be interpreted as deference pattern in 1989, is reversed in 2001.

For the meso-level of networks, cliques as cohesive sub-groups are important units of analysis (Wasserman and Faust 1999: 254–57). Whereas block model analysis identifies companies according to their positional similarity, clique analysis examines network connectivity. Table 4 presents the results.

First, between 1989 and 2001 the number of cliques with seven or eight members decreased (lines 1 and 6). The integration of the network thus has somewhat weakened at the meso-level. Second, however, both multiple clique membership (lines 4 and 9) and integration of financial companies into clique structures remain stable (lines 5 and 10). So, companies, as long as they are integrated in the cohesive sub-groups of the network, have multiple ties and almost get into contact with the same financial companies there (lines 2 and 7), namely Allianz, Deutsche Bank, (former) Dresdner Bank AG and Münchener Rück. These financial companies were at the heart of the German corporate network in the 1970s (Ziegler *et al*. 1985: 109) and the 1980s (Windolf 1998), and they are still important elements of the clique structures.

In sum, the empirical findings for the non-directional relationships in the corporate network for the period between 1989 and 2001 do not suggest a process of substantial structural erosion. Though the number of cohesive

**Table 4** Clique structures in the non-directional network

| | | *Clique size* | | |
|---|---|---|---|---|
| | | *7* | *8* | |
| 1 | Total number of cliques | 16 | 7 | *1989* |
| 2 | Cliques comprising financial companies | 14 | 7 | |
| 3 | Total number of companies in cliques | 25 | 17 | |
| 4 | Multiple membership in cliques (%) | 84.0 | 82.3 | |
| 5 | Total number of financial companies in cliques | 5 | 4 | |
| 6 | Total number of cliques | 7 | 5 | *2001* |
| 7 | Cliques comprising financial companies | 6 | 5 | |
| 8 | Total number of companies in cliques | 15 | 11 | |
| 9 | Multiple membership in cliques (%) | 93.3 | 81.8 | |
| 10 | Total number of financial companies in cliques | 4 | 4 | |

*Source*: Computations based on Hoppenstedt (1989, 2001)

sub-groups somewhat decreases, the core-periphery structure is reproduced between 1989 and 2001. Equally, multiple clique memberships and constant involvement of financial companies in the cliques point to considerable structural continuities. So, hypothesis 2c receives no support.

*Central actors in the network of interlocking directorates*

So far, empirical evidence supports hypotheses 1 and 2a, but not hypotheses 2b and 2c. Therefore, a regression analysis is carried out in order to integrate the empirical findings. The research question is now to ascertain the central actors in the networks of both directional and non-directional ties. Centrality as dependent variable is measured by outdegree (directional network) and degree (non-directional network) respectively. Independent variables include network role, membership of clique structures, and control variables such as company age, company size (number of employees), and listing in the German Stock-market Index (Dax 30). Table 5 presents the results of OLS regressions.[9]

The results from regression analysis are revealing in three respects. First, banks and insurance companies have significantly more directional ties than non-financial companies. Financial institutions are, both in 1989 and in 2001, more central in the outdegree network despite their overall reduction of interlocks (see Table 1). So, in contrast to the findings presented under 'Structural characteristics of the directional network' above, hypothesis 2a receives no support from the regression analysis. Second, the negative effects of the variables *isolates* and *receiver* are apparent only in 2001. Due to the retreat of financial institutions from their role as sender, more companies fall into these two categories, which in turn leads to a significant negative effect on the outdegree in the directional network. This result seems to be contradictory to the first one, as, according to the latter, banks and insurers are still most central in the network. However, it appears more plausible that financial companies have redrawn their ties only to a limited extent and thus remain in central positions over time. In

**Table 5** Regression models (OLS) for explaining degree centrality

| | *1989* | | | | *2001* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Outdegree* | | *Degree* | | *Outdegree* | | *Degree* | |
| *Independent variables* | *B* | $t_{emp.}$ | *B* | $t_{emp.}$ | *B* | $t_{emp.}$ | *B* | $t_{emp.}$ |
| Constant | –.15 | –.30 | –1.99 | –.35 | –.24 | –.30 | –18. 30[a] | –2.44 |
| Company age | .00 | 0.83 | .00 | .68 | .00 | .01 | –.00 | –.59 |
| Company size | .00 | .20 | .35 | .77 | .01 | 1.16 | 1.95[a] | 2.83 |
| Dax 30 listing (D) | .01 | .29 | 6.10[a] | 2.92 | .57[a] | 3.33 | 2.90[c] | 1.80 |
| Financial sector (D) | .49[a] | 2.95 | 1.02 | .54 | .43[a] | 2.80 | .70 | .49 |
| Role in network | | | | | | | | |
| Isolates (D) | –.16 | –.48 | –.25 | –.07 | –.63[b] | –2.37 | 1.88 | .75 |
| Receiver (D) | –.17 | –.54 | 2.59 | .73 | –.87[a] | –3.47 | 6.50[a] | 2.72 |
| Intermediary (D) | .93[a] | 2.76 | 3.39 | .88 | –.01 | –.36 | 8.36[a] | 3.26 |
| Clique member (D) | .66[a] | 4.03 | 15.24[a] | 8.12 | .41[b] | 2.27 | 11.29[a] | 6.61 |
| *Model statistics* | | | | | | | | |
| $R^2$ | 0.75 | | 0.77 | | 0.74 | | 0.81 | |
| N | 69 | | 69 | | 69 | | 69 | |
| df (residuals) | 60 | | 60 | | 60 | | 60 | |

S*ource*: Computations based on Hoppenstedt (1989, 2001)

*Notes*

[a] significant at 1% level; [b] significant at 5% level; [c] significant at 10% level

1) Operationalization of independent variables:
Company age*:* 1989 (2001) – year of foundation
Company size*:* number of employees
Dax 30 listing*:* listed (1), not listed (0)
Financial sector*:* bank, insurance company (1); non-financial companies (0)
Role in network: isolates, receivers and senders are coded (1), others (0)
Clique member*:* membership clique in 8-member clique (1), others (0)

2) Operationalization of dependent variable:
*Outdegree:* number of directional ties
*Degree:* number of non-directional ties

3) D = dummy variable (0,1)
4) Outdegree transformed logarithmically due to skewed distribution: ln (outdegree+1)
5) Company size transformed logarithmically: ln (size)

other words, although there has been a reduction of directional ties between financial and non-financial companies, this development has hardly altered the position of the former. Third, the role of *intermediary* is connected with high centrality. Intermediate companies acting as both sender and receiver realize a high number of ties.[10] At the same time, the links from large companies embedded into clique structures show high centrality in 2001. Larger companies are apparently better integrated than smaller ones.

*Preliminary conclusions*

Two preliminary conclusions can be drawn from the empirical findings on the changes in German corporate governance. First, the number of interlocking

directorates decreased on the whole, to a greater extent in the network of directional ties than in that of non-directional ties. In the former network financial companies partly withdrew their mangagement from supervisory boards of non-financial companies, while in the latter network network density between non-financial companies shows a downward trend. Hypothesis 1 receives empirical support. Second, this process of quantitative erosion did not yet affect to any great extent the structural properties of the networks. Although some findings suggest that slight disembeddings occurred (cliques, receiver in pyramidal configurations), both meso- and macro-structures appear to be robust. Financial companies are the most central actors in the time period examined, they are embedded in redundant clique structures, and they still belong to the inner core of the networks. Multiple ties and the network's core-periphery structure remain stable. In sum, hypotheses 2a, 2b and 2c are not confirmed. This preliminary conclusion is supported by a recent simulation analysis of the capital network showing that massive re-structuring would be necessary in order to disentangle the network of corporate capital of large German companies in its present form (Kogut and Walker 2001).



## A market for corporate control as new institutional core of the German corporate governance system?

As set out in 'Two modes of corporate governance' above, the market for corporate control is an alternative governance mechanism to solve the principal agent problem in public companies. In order to estimate its potential in Germany, two questions have to be answered. First of all: what does current practice in public take-over bids look like? How many bids are made per year, and what are the strategic goals behind these bids? Second, those public companies that can potentially be traded in a market for corporate control need to be identified.

For the answer to the first question, see Table 6, where all public take-over bids between 1996 and 2001 are compiled. The former Take-over Commission

**Table 6** Public take-over bids in Germany between 1996 and 2001

| | *1996* | *1997* | *1998* | *1999* | *2000* | *2001* |
|---|---|---|---|---|---|---|
| Voluntary take-over bids | 13 | 13 | 20 | 31 | 38 | 25 |
| Bidder holds >50% before offer | 12 | 8 | 17 | 21 | 27 | 19 |
| Bidder holds <25% before offer | 1 | 1 | 3 | 1 | 7 | 4 |
| friendly mergers | – | 1 | 1 | – | unknown | 1 |
| Obligatory take-over bids | – | 3 | 2 | 1 | 12 | 8 |
| Total | 13 | 16 | 22 | 32 | 50 | 33 |

*Source*: http://www.kodex.de; Übernahmekommission (1997, 1998, 1999)

(whose responsibilities are now assumed by a body established under the new take-over regulation in 2001)[11] distinguishes voluntary take-over bids from obligatory offers. Both types can be attributed to the market for corporate control.

Table 6 shows that the number of voluntary take-over bids increased considerably from 1996 and reached a provisional peak in 2000 with thirty-eight bids. However, the number of take-over bids is only one side of the coin. In addition, it appears important to examine the stock owned by the bidding company before a public offer is tendered. Here, the findings are revealing. Three-quarters of all bids are tendered in order to consolidate existing majority stockholdings. Take-over bids where the bidder has accumulated a controlling majority of more than 50 per cent have little if any resemblance to what is said about public take-overs in the literature on the market for corporate control.[12] Considering only stockholdings under 25 per cent, where no shareholder has a blocking minority at general meetings, gives a more reasonable estimate of the potential of a market for corporate control. In sum, there were seventeen public offers between 1996 and 2001 that could be conceived of as real bids. From this figure three mergers must be deducted that were negotiated off-market before bid submission. Thus *fourteen genuine take-over bids* within six years remain. Caution is needed in interpreting the annual average, because for the year 2000, where stockmarket activity went through an unusual boom, the number of mergers could not be determined; for the observed years 1996 to 2001 this means an annual average of somewhat more than two public take-over bids. Without the exceptional year 2000 merely *one genuine bid per year* remains.

The exceptional character of public take-over bids in the German system of corporate governance raises the question what type of and how many companies might be considered as potential take-over candidates. As shown in Table 7, there is a relatively constant share of large companies with highly dispersed ownership over the course of time. If majority is strictly defined as exclusion of the blocking minority of 75 per cent in the general meeting of shareholders, then about 10 per cent of the 100 largest German companies are take-over candidates, even if, according to Becht and Boehmer (1999), the real share tends to be smaller. Consequently, there does not yet appear to be a critical mass of companies that could be traded in a German market for corporate control.

All of these ten companies with highly dispersed ownership in 2000 are listed on the Frankfurt stock exchange, seven are listed in the German stock index (DAX 30), and the majority have institutional investors among their shareholders. These companies are Continental, Siemens, Deutsche Lufthansa, Bayer, Vodafone Gruppe (formerly Mannesmann), Deutsche Bank, Commerz-

**Table 7** Dispersed ownership among the 100 largest German companies

| | *1988* | *1990* | *1992* | *1994* | *1996* | *1998* | *2000* |
|---|---|---|---|---|---|---|---|
| >50% dispersed ownership | 28 | 30 | 29 | 29 | 27 | 22 | 20 |
| >75% dispersed ownership | 9 | 6 | 13 | 13 | 11 | 12 | 10 |

*Source*: Monopolkommission (1992, 1996, 2000, 2002)

bank, K+S AG, DaimlerChrysler, and Volkswagen. Unsurprisingly, more than half of these companies belonged to the inner and outer core of the network of interlocking directorates both in 1989 and in 2001.

## Discussion

What conclusions can be drawn from the empirical findings as a whole? Can the principal question, whether or not institutional change has been fundamental in nature, be answered?

The section on 'Dynamics on the German system of corporate governance: institutional infrastructure' (above) showed that the empirical findings for the institutional infrastructure of the German system of corporate governance are inconclusive at present. It appeared difficult to distil a clear trend in development from current evidence. For this reason, the traditional institutional core of German corporate governance (the network of interlocking directorates) was examined first, and, second, the potentials for an alternative institutional core were estimated (the market for corporate control). 'Dynamics in the German system of corporate governance: institutional core' (above) illustrated that the quantitative dilution has not been translated into a substantial process of structural erosion of the network. Despite some evidence of structural change, many properties of the directional and non-directional networks remain intact. The previous section, 'A market for corporate control as new institutional core of the German corporate governance system', argued that three-quarters of public take-over bids are tendered to consolidate already existing controlling stockholdings. In addition, up to now there has been no critical mass of companies for trade in the German market for corporate control.

In sum, there has been institutional change in the German system of corporate governance. This change has had partial impacts on the network of interlocking directorates. However, these impacts are of quantitative rather than structural nature. Neither has *network governance* undergone such a structural erosion, as was surmised elsewhere, nor has *market governance* gained such depth and scope as to challenge the proper function of network governance. Institutionalized practices change slowly unless severe external shocks put them off their course. Our analysis of the core of these institutionalized practices of the German system of corporate governance suggests that, so far, gradual changes should not be interpreted as 'system changes' or 'convergence' towards the Anglo-Saxon model of corporate governance.

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## Appendix

The starting point for empirical analysis was a list of the largest 100 German companies (size measured by value added) published biennially by the Monopolies Commission (Monopolkommission 1990, 2000). From these 100 companies all public stock corporations (Aktiengesellschaften, AG) were taken into further consideration. Many of the companies were identical in 1989 and 2001. However, thirty companies from 1989 did not appear on the 2001 list, as they were then not among the 100 biggest, and vice versa for twenty-nine companies. In total, twenty of these companies could be identified in Hoppenstedt. For some companies, data could not be collected because there was missing data for at least one point of observation: *market entry* (e.g. Deutsche Telekom), *market exit* (e.g. Co-op), *merger* (e.g. Viag AG and VEBA AG), *change of legal form* (e.g. Rewe & Co. oHG changed into Rewe KGaA). Further, for some companies data could not be obtained due to incomplete data sources. All in all, a sample of sixty-nine public stock corporations was compiled (see Table A.1).

**Table A1** List of sixty-nine public stock corporations

| |
|---|
| Aachener und Münchener Beteiligungs (formerly AMB) |
| ABB |
| Adam Opel |
| AGIV |
| Alcatel SEL |
| Allgemeine Handelsgesellschaft der Verbraucher (formerly AVA) |
| Allianz Holding |
| AXA Colonia Konzern |
| Axel Springer Verlag |
| Babcock Borsig |
| Bankgesellschaft Berlin (formerly Berliner Bank) |
| BASF |
| Bayer |
| Bayerische Hypo- und Vereinsbank |
| Bayerische Motoren Werke |
| Beiersdorf |
| Bertelsmann |
| Bewag |
| Bilfinger + Berger |
| Commerzbank |
| Continental |
| Daimler Chrysler (formerly Daimler Benz) |
| Debeka Allgemeine Versicherung |
| Degussa |
| Deutsche Bank |
| Deutsche Genossenschafts-Hypothekenbank |
| Deutsche Lufthansa |
| Dillinger Hütte Saarstahl |
| Dresdner Bank |
| Dyckerhoff & Widmann |
| E.ON (formerly VEBA) |
| Energie Baden-Württemberg (formerly Badenwerk) |
| ERGO Versicherungsgruppe (formerly Victoria Holding) |
| FAG Kugelfischer |
| Fraport (formerly Flughafen Frankfurt) |
| Ford |

**Table A1** List of sixty-nine public stock corporations

| |
|---|
| Gerling-Konzern |
| Grundig |
| Henkel |
| Hochtief |
| Hoechst |
| Karstadt |
| Klöckner-Werke |
| KPMG |
| Linde |
| MAN |
| Mannesmann |
| Metro (formerly Kaufhof) |
| MG Technologies (formerly Metallgesellschaft) |
| Münchener Rück |
| Neckarwerke Stuttgart |
| Philipp Holzmann |
| Porsche |
| Preussag |
| R+V Allgemeine Versicherung |
| RAG |
| Rheinmetall |
| Ruhrgas |
| RWE |
| Salzgitter (formerly Stahlwerke Peine-Salzgitter) |
| SAP |
| Schering |
| Siemens |
| Spar |
| STRABAG |
| Südzucker |
| Thyssen |
| Volkswagen |
| Zahnradfabrik Friedrichshafen |

For these sixty-nine companies two types of network at two points in time were computed by means of handbooks and databases from Hoppenstedt (1989, 2001): first, the sub-network of directional ties; second, the network of non-directional ties. In 1989, 497 management board members were identified, in 2001 426 respectively. There were 971 members of supervisory boards in 1989 and 1030 board members in 2001. Further, all multiple directors (board members with more than one position either on the management or on the supervisory board) were identified. The directional network has sixty-six multiple directors in 1989, and fifty-five in 2001. Likewise, in the directional network ninety-eight multiple directors/board members were identified in 1989, and 108 in 2001. Finally, incidence matrices (row: directors; column: companies) were transformed into adjacency matrices (row: companies; column: companies). For this step UCINET 5 (Borgatti *et al*. 1999) was used.

## Notes

1 For such a convergence hypothesis with regard to the French corporate governance system, see Goyer (2001).
2 The empirical studies arrive at ambivalent results regarding the theory of the market for corporate control postulated by Manne (1965). Public take-overs do not in all cases lead to efficiency effects in the companies taken over, as could be expected from the theory (Jenkinson and Mayer 1994: 27–50; Walsh and Kosnik 1993).
3 For an overview of these structural forms see the section on 'Structural charactersitics of the directional network'.
4 For the cartel tradition and on the close capital and personnel interlockings of industry and finance companies between 1880 and 1930, see Hilferding (1981) and Fohlin (1999).
5 International accounting standards are, on the one hand, IAS (International Accounting Standards) and, on the other hand, US GAAP (General Accepted Accounting Principles).
6 Parts of the following sections draw upon Heinze (2002).
7 Analysis was carried out via UCINET 5 (Borgatti *et al*. 1999).
8 After a first block model analyis, all ties with n>1 are recoded as '1', all others as '0'. Hence, ties 'by chance' were excluded from further consideration. Then the block model analysis is repeated. For 1989, eight of the ten companies still belong to block 1; for 2001, nine firms of twelve do so.
9 The core-periphery structure was not operationalized in the regression model in order to avoid tautologies (where independent and dependent variables would measure the same).
10 At first sight the significant effect for the receivers appears contradictory. However, their number – as documented in Table 2 – is reduced considerably between 1989 and 2001, causing many companies to be isolates. Those companies that remain are obviously well-integrated receivers in the directional network. In this sense, an impact of the quantitative dilution in the overall network is apparent in the regression results.
11 The 'Law to regulate public bids to buy securities and to regulate company take-overs', in short Wertpapiererwerbs- und Übernahmegesetz (WpÜG), was passed on 16 November 2001 by the German Bundestag. For an overview see Schmidt and Prigge (2002).
12 It would be expected that, with majorities of this kind, the obligatory bid ruling of the take-over code would take effect. However, companies with controlling stakes accumulated before the take-over code came into force in 1995 – and that is the majority of the cases – are exempted from obligatory bids. This rule was incorporated in §35 of the new take-over regulation (WpÜG).

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