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The spatial distribution of capital and labour in the corporate governance of stock listed companies

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Abstract

In the varieties of capitalism literature, Germany is understood as a monolithic model of a coordinated market economy. This analysis shows how institutions for configuring capital and labour at the national level are implemented at state and regional level. By focussing on the labour side this article gives a contribution to the investor dominated shareholder value discussion. It identifies a spatial distinction between capital and labour and concludes a variation of German Models instead of one German Model.

Keywords:

Corporate Governance, Labour–Management Relations, Political Economy, Size and Spatial Distributions of Regional Economic Activity

JEL classification: G34, J53, P16, R12

Titel

Deutsches Modell oder deutsche Modelle?

Räumliche Unterschiede in der Börsennotierung und Arbeitnehmerrepräsentation in Deutschland

Zusammenfassung

In der Varieties-of-Capitalism-Literatur ist Deutschland ein klassisches Beispiel für eine koordinierte Marktwirtschaft. Die vorliegende Analyse zeigt, wie die nationalen institutionellen Größen Kapital und Arbeit auf Ebene der Bundesländer variieren. Dazu wird einerseits die räumliche Verteilung der börsennotierten Unternehmen für vier deutsche Leitindizes illustriert. Korrespondierend wird andererseits die Repräsentation der Arbeitnehmer in diesen Unternehmen mittels eines Index' veranschaulicht. Im Ergebnis zeigt sich eine Zweiteilung: entweder gibt es besonders viele Firmen mit einer eher geringen durchschnittlichen Arbeitnehmerrepräsentation oder eher wenige Firmen und dafür eine vergleichsweise hohe Verankerung der Arbeitnehmervertretung. Auf subnationaler Ebene gibt es daher eine starke Variation innerhalb des idealisierten homogenen deutschen Modells.

Schlüsselwörter:

Unternehmensführung, Arbeitgeber-Arbeitnehmer-Beziehungen, Politische Ökonomie, Räumliche Verteilung regionalökonomischer Aktivitäten

JEL Klassifikation: G34, J53, P16, R12

Contents

1. Introduction[1]

The 30 largest stock listed companies in Germany have 3.95 million employees in total with 1.58 at home and 2.37 abroad. These few companies have an essential impact on the economy, society and ecology and with that a certain responsibility in shaping life on earth. Picking up the debate about corporate governance in economic geography this paper adds a further puzzle to the discussion. It illustrates the spatial link between companies' relevance on the stock exchange and their level of labour representation in the corporate governance. Especially for Germany the legal constitution is specific due to representatives of employees in supervisory boards of companies with more than 500 (one third) and 2,000 employees (parity). Given this fact, it is worth investigating the question, of how – from a spatial perspective – stock exchange listings and codetermination are intertwined in Germany.

The article is structured as follows. Section two presents different conceptually derived effects of large companies to underline the importance of the research question. Section three adds arguments on why these companies have a crucial responsibility in diverse spheres and how corporate governance is influenced by institutional arrangements, especially for the German case where labour representatives are included in the supervisory boards. Section four introduces the empirical methodology and data. Section five illustrates the regional distribution of companies based on their stock exchange listing (investors' favourites) and codetermination options (workers' voice) and discusses the spatial interplay of both spheres. Section six concludes.

2. The manifold effects of large companies from a theoretical point of view

Companies are not just producers. They are embedded in spatially anchored systems of value creation and have varied effects on economy, society and ecology, which tend to increase with companies' size. Many studies have identified and specified the impact of firms in different spheres. From a regional perspective firms are crucial for employment, income, tax and stability (Maier & Tödtling 2006, p. 74), innovation, research and development (Malecki 1980, pp. 219ff.) and vocational training or employees' competence development (Estevez-Abe, Iversen & Soskice 2001, p. 170; Pilz & Li 2014, pp. 745ff.; Scholz 2016, pp. 104ff.). Furthermore they are part of value chains and affect suppliers, customers, competitors and other actors – both home and abroad (Sabel & Piore 1984, Schamp 1996). In configuring their frequently internationalized production networks, large companies play an important role and define diverse standards (Braun 2005, pp. 3ff.), and manage the globalisation of production-related knowledge as well as scientific-technical and R&D-related knowledge (Fuchs 2014, p. 64). From an organisational point of view, large companies have specific ways of organizing their business, for instance, by function (production, finance, marketing etc.) or by division (product A, product B etc.) (Chapman & Walker 1987, p. 101). Among other things, these structures are reasons for a frequent activity of large companies in mergers and acquisitions (UNCTAD 2016, p. 208, Zademach 2005, p. 12). Furthermore large companies have

1. I would like to thank the Hans-Böckler-Foundation for financial support for the project "Codetermination and a future-oriented corporate governance – Measurement of strength and influence through an Index of Codetermination (MB-ix)".

a societal and political relevance. Companies pay taxes and therefore influence the public budget on the national, state, county or municipality level (Blum, Jänchen & Lubk 2015, p. 397). To underline the dimension more abstractly, it can be found that the sales of the largest firms are higher than the gross income of whole countries. Therefore business leaders are well connected with elites in collective organisations, politics, administrations, science and other actors.

These diverse impacts of large companies have led to an inversion of thinking in the economic geography debate. Classical approaches analyse spatial characteristics and argue, sometimes in a strictly deterministic way, they are cause for companies' development. Based on the relational turn, these conceptualizations focus more on actors, their strategies and institutions (Bathelt & Glückler 2011; Storper &Walker 1989). They reverse the previous argument and assume that companies develop the spatial configuration in different dimensions. For example companies attract labour, infrastructure investments and R&D-agencies and therefore influence their spatial concentration or dispersion.

By including the diverse impacts of companies on spatial developments the research concludes a further qualitative difference depending on the structure of the companies. In particular the headquarters are disproportionate important because they make decisions for the whole company. Headquarters are characterized by a concentration of management functions, like coordination and supervision, and knowledge-based functions, like research and development or administration (Blum, Jänchen & Lubk 2015, p. 396; Maier & Tödtling 2006, pp. 71ff.). Because they attract these functions the headquarters pool staff with qualification and income above average – in addition to the fact that large employers pay generally higher wages than smaller ones (Bayard & Troske 1999; Brown & Medoff 1989; Hu 2003; Schmidt & Zimmermann 1991).

Table 1: Characteristics of German companies by size groups 2014

	Number of companies (share of sum in %)	**Number of employees (share of sum in %)**	**Turnover in mill. Euro (share of sum in %)**	**Turnover per employee in Euro**	**Gross investments in property, plant and equipment in mill. Euro (share of sum in %)**	**Companies with gross investments (share of absolute number of companies in %)**
Smallest companies: 0 to 9 employees and up to 2 mill. Euro turnover	2,052,170 (82.1)	5,419,218 (19.5)	402,890 (6.7)	74,345	26,133 (13.2)	794,703 (38.7)
Small companies: Up to 49 employees and up to 10 mill. Euro turnover and no smallest company	362,028 (14.5)	6,216,163 (22.4)	679,026 (11.3)	109,236	28,059 (14.1)	261,420 (72.2)
Medium-sized companies: Up to 249 employees and up to 50 mill. Euro turnover and no small company	66,786 (2.7)	5,277,795 (19.0)	872,762 (14.6)	165,365	33,005 (16.6)	55,176 (82.6)
Large companies: More than 249 employees or more than 50 mill. Euro turnover	16,688 (0.7)	10,867,921 (39.1)	4,028,726 (67.4)	370,699	111,532 (56.1)	14,783 (88.6)
All	2,497,672 (100.0)	27,781,097 (100.0)	5,983,404 (100.0)	215,377	198,729 (100.0)	1,126,081 (45.1)

Source: Statistisches Bundesamt 2016b.

These diverse theoretical arguments, which are only summarized here, indicate a high relevance of the large companies. To underline the economic effects Table 1 shows some characteristics of German companies grouped by their size. The majority of companies by number are smallest companies (82.1%); and the small and medium-sized (SME) companies employ 60.9% of workers (Söllner 2014, pp. 40ff.). The well-known German *Mittelstand* is important to note. However, the large companies have a crucial role too. They represent just 0.7% of the companies, but 39.1% of the employees, 67.4% of all turnovers, accompanied by the highest turnover rate per employee. 56.1% of gross investments are done by large companies and nearly 9 of 10 make gross investments, which are important for ensuring the companies' future and thereby jobs and long-term regional and national incomes. These basic structural facts underline the importance of the large companies in Germany, from a general economic point of view.

3. The responsibilities of large and stock listed companies

3.1. Corporate Governance

The above mentioned manifold impacts of companies underline the fact that firms are not just economic entities. They assume certain responsibilities that are inherent elements of corporate governance concepts. Corporate governance can be basically understood as "the study of power and influence over decision making within the corporation" (Aguilera & Jackson 2010, p. 487). The concept focuses on practices, structures and institutional arrangements that allocate power among different stakeholders and the companies (Benton 2017, pp. 661ff.; Blair 1995, p. 3). A more narrow interpretation of corporate governance highlights the investors' perspective by focusing on the interplay between shareholders, directors and managers (Davis 2005, p. 143). Corporate governance, for example, concretely affects the members of the management, their remuneration, the allocation of returns and the companies' mergers and acquisitions activities (Benton 2017, p. 662).

Although shareholders are just one group of stakeholders, the shareholder value model declares them the central group. From this classical Anglo-American point of view, the shareholders are the original founders and claimants of companies. They "have used their capital to hire employees and managers and to buy equipment and raw materials [...and] after the claims of other factors of production are satisfied shareholders get the rest [...] with empty pockets if the firm goes bankrupt [...or] unlimited profits when the firm does well" (Vitols 2011, p. 16). All information is taking into share prices and they reflect the long-term prospects of the firm and the company value. That corporations should "create shareholder value became managerial orthodoxy, taken for granted by investors, executives, and policymakers alike" (Davis 2005, p. 149). Additionally, the most senior and top-level managers of corporations are evaluated and compensated on the basis of stock market and share price performance (Benton 2017, p. 662).

Despite the overwhelming success of the shareholder value model it should be noted that there is a high variation of corporate governance regarding different dimensions. Corporate governance differs at spatial scales and therefore with the broader socioeconomic system in which it is embedded (Wójcik 2006, p. 643). The relevance of laws, regulations or sanctions varies a lot and some institutions are regulated and required by laws, while many others are voluntary or only implemented by adopting best practices (Aguilera & Jackson 2010, p. 487; Anand, Milne & Purda 2012, p. 76; Bauer, Braun & Clark 2008, p. 444). However, a crucial number of rules of corporate governance are made by the (global) investors or stock exchanges (Dixon 2010, p. 202; Gray 2011, pp. 2202ff.; Zademach 2009, pp. 697ff.). They define increasingly global standards, directly or indirectly by calling for transparency. Although transparency refers primarily to indicators of economic performance, an increasing number of investors and interested stakeholders are demanding further information about social or ecologic operations, like in sustainability reports.

Benton (2017, p. 662) links the prominence of the shareholder value model also in relation to the development of the agency theory in the academic discussion. This approach deals concretely with asymmetric information and hierarchical arrangements between principals (shareholders) and agents (managers) and therefore precisely reflects the shareholder value configuration. But, the ongoing scientific and political debate, especially in the context of the financial crisis 2008/09, called into question the imperative shareholder value. Some investors changed their investment focus and forced more transparency. Normative concepts were also altered or reframed by including ideas of sustainability. This means, for instance, that the company involves stakeholders in decision making, has a set of sustainability goals and a detailed strategy for achieving these goals. Or the company has an externally verifiable reporting system on both financial and nonfinancial (environmental, social, etc.) performance, ties a portion of executive remuneration to the achievement of sustainability goals, and is dominated by long-term responsible investors concerned not only with financial return but also with the social and environmental impacts of their investments (Vitols 2011, pp. 24ff.). Therefore, alternative concepts already exist and alter the traditional shareholder value model (Aguilera & Jackson 2010, p. 488). And taking into account the described varied influence of large companies from the second section, the overriding focus on the shareholders appears incomprehensible. In addition to this argument, the following section deals with the German case of corporate governance and specify further configurations that weaken the shareholder value dominance.

3.2. Corporatist Germany with spatially anchored codetermination

The previous section described the idea and guiding principle of maximizing shareholder value based on a perfect model of Anglo-American origin which primarily distinguishes between interests of shareholders and managers (Bauer, Braun & Clark 2008, p. 444; Wójcik 2006, pp. 641f.). But the common practiced formation of governing corporations is not isolated and varies at different spatial scales, especially at the national level (Aguilera & Jackson 2010, pp. 492ff.). At this national level extensive political decisions are made, for instance in labour market regulation, and national institutions have a high weighting and influence (Whitley 2005, p. 191). But there are differences in legal contexts, the political system, the education system, finance and industrial relations, which affect the configuration of corporate governance systems (Benton 2017, p. 665).

From a comparative point of view the varieties of capitalism approach makes a distinction between liberal market economies, e.g. U.K., and coordinated market economies, e.g. Germany (Hall & Soskice 2001, p. 8). One of the many characteristics of coordinated market economies is the importance of cooperative industrial relations by organized companies in employer associations and employees in unions. Accompanied by general welfare state formation the corporate governance system in Germany evolved (Hassel 1999, pp. 484ff.). It can be described in different ways but the following part deals in particular with how labour is formally represented in companies. In principle, there are two legal ways to represent the labour force vis-à-vis the employers.

The first way regulates the codetermination at establishment level via works councils, based on the Works Constitution Act of 1952 (*betriebliche Mitbestimmung*). A works council can be elected in companies with at least five employees and is committed to working together with the employers in a trusting and interactive way for the benefit of the employees and the company. The works council has graduated rights of codetermination, decreasing from social via personnel to economic matters (Müller-Jentsch 2011, p. 90ff.). Specific for this German type of labour representation at establishment level is the fact that in some cases the employer cannot act without the permission of the works council, for example, in questions of working time regulation. Yet, the implementation of a works council is voluntary and not every company has one, although it could have one. The larger the company, the more likely it is that a works council exists (Kißler, Greifenstein & Schneider 2011, p. 109ff.).

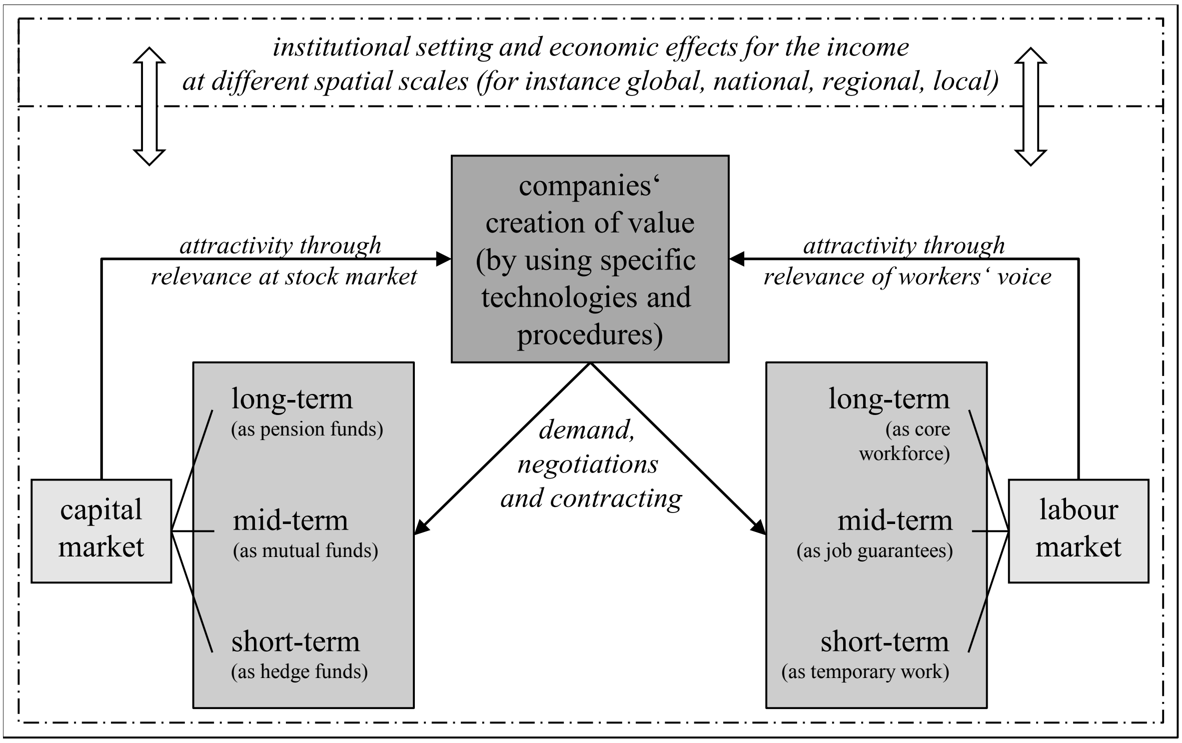
The second way of labour representation focuses on the companies' supervisory board, codetermination at board level (*Unternehmensmitbestimmung*) (Streeck 2004, p. 880). This type is based on three laws: The Coal and Steel Industry Codetermination Law of 1951 (*Montanmitbestimmungsgesetz*), the Industrial Constitution Law of 1952 (*Betriebsverfassungsgesetz)* and the Codetermination Law of 1976 (*Mitbestimmungsgesetz*). Corporations have a dualistic structure with the board of management (*Vorstand*), responsible for the leadership of the company, and the supervisory board (*Aufsichtsrat*), responsible for the control of the management board. The supervisory board is elected by the shareholders annual general meeting and by employees and unions if the company is codetermined. There are three main possibilities regarding the composition of the supervisory board: a) representatives of investors only, b) two thirds representatives of investors and one third of labour force (employees) and c) one half by representatives of investors and one half by representatives of labour force (employees and unions). In principle the type of codetermination at the board level is determined by the number of employees, which means no representation at the supervisory board if there is less than 500 employees, one-third employee representation if there is more than 500 and parity in the supervisory board if more than 2,000 employees (Hans-Böckler-Stiftung 2001, pp. 46ff.). The supervisory board is responsible for the appointment, dismissal and remuneration of the management board directly and monitors the strategic orientation of the company. Hence this body of representatives influences the companies' activities in different ways; that is, it influences the development of new technologies, implementation of organisational changes or mergers and acquisitions. This overarching function leads, in the case of codetermined supervisory boards, to a complementary strengthening of the workers' voice in addition to the codetermination at establishment level (Köstler, Müller & Sick 2013, p. 77). Whereas works councils represent the employees' special interests at plant level, the labour representatives in the supervisory boards can influence the overall and strategic corporate policy to promote innovations, secure jobs, foster sustainability and with that regional prosperity.

Based on that, codetermination in the boards as a national institution is linked to the regional implementation at the companies' headquarters. With the locational anchored variation of labour representation in the boards the implementation of *the* German Model differs spatially. The national level of the varieties of capitalism approach has a monolithic understanding and a strong focus on the institutional complementarities of the two poles of liberal and coordinated market economies (Bathelt & Gertler 2005, p. 2). The research has already established concepts without a strong national focus, like the sociological oriented business system approach (Karnøe 1999, Whitley 1992, 2005) or geographical oriented cluster concepts (Karlsson 2008, Voelzkow 2007). These concepts are more detailed but the business system approach focuses primarily on companies' organisational structures whereas cluster concepts usually concentrate on special sectors in single regions. Both concepts operate on a subnational level but offer a very little overall description of the coordination of capital and labour, which does the varieties of capitalism. Therefore this paper suggests combining both discussion lines to refine the monolithic varieties of capitalism approach and differentiates from a qualitative and spatial perspective.

3.3. Interplay of capital and labour within the German Model

Complementing existing works about corporate governance in the light of the shareholder value model, this paper wants to add a further piece of the puzzle – a stronger labour perspective. The crucial factors, capital and labour, are intertwined and immediately necessary for the companies, and for the regional economies too. Figure 1 shows this interplay.

Figure 1: Attractiveness of companies for capital and labour



Source: Own illustration.

The companies need capital from investors with different maturity dates as well as labour at different times and both sides are linked generally. For example, the development of new trains, e-cars, and power stations or the diffusion of fundamentally new distribution channels in the retailing sector requires long-term investors and a certain core staff. Merely establishing a new series of cars or implementing a new commercial product line is not that expensive and make both the investments and employment temporally predictable, which is secured by job and location guarantees. Finally, there are short-term financing deals for special projects as well as the usage of short-term employment to take for example seasonal variations into account. The companies try to fulfil their needs at the capital and labour market permanently in consideration to these different quantitative, qualitative and temporal requirements, which depend on the specific creation of value. They demand, negotiate and make contracts.

At the same time, investors and labour are interested in companies. From the investor's point of view, corporations are attractive if the invested money is protected and generates additional returns. From the employees perspective a company is attractive if the working conditions are good, pay is acceptable and the workers' voice is implemented in the companies' strategy and policy. Only by getting responsible investors and powerful workforce, the companies are able to create value effectively and efficiently.

Firms need capital and labour separately and together. The possibility of using a technology for production or offering services depends on both factors. Investments in new technologies or services require capital and skilled employees. By increasing their productivity, the firms are able to compensate the additional costs for capital investments and skill formation (Crouch, Finegold & Sako 1999, p. 122). In other words, a skilled and committed workforce offers an incentive to invest in capital stock because it guarantees that the investments are used completely and transforms high fixed costs into low unit costs. This allows the firms to increase their market share and returns (Abelshauser 1999, p. 231). From a German perspective, firms cannot compete globally through low prices. The institutional regime, with codetermination and strong unions, has forced the companies in the past to pursue a strategy with competing through quality (Thelen & Turner 1999, p. 204). But quality in production and services needs a skilled and motivated workforce and which is guaranteed by a representation of labour (Sorge 1999, p. 25). Generating returns require investments in productivity growth and this depends both on capital investments and labour force. Therefore, it is hard to increase the productivity by neglecting the labour force. Without the use of new technologies by the workforce to create new value, investments in capital stock are fruitless. Capital and labour are interlocked.

3.4. Research Question

Up to now, this paper has shown an overview regarding manifold effects of large companies on different spheres with highly relevant large corporations for regional economies. Although most companies try to concentrate their activities on operational business issues a certain responsibility is linked to their general impact. Firms are not isolated entities, they interact with different stakeholders. The composition of institutional setting and stakeholders determines the corporate governance. Generally, economic geography research should deal with corporate governance concepts more explicitly (Wójcik 2006, p. 640f.).

The German model is especially characterized by an organised configuration between employers and their associations and the labour force and unions – summarized as a coordinated market economy (Hall & Soskice 2001). One element in balancing the interests is labour representation in the supervisory boards of large stock companies. Despite this parity in the largest companies the recent debate has focused on the shareholder value model and therefore concentrated on the capital side and investors. For example Clark and Wójcik (2007, pp. 88ff.) have analysed the ownership concentration of German listed companies and find differences between the German states (*Bundesländer*). They thus conclude that there are regional trends towards weakening the coordinated market economy (Dixon 2010, p. 203). But, as already mentioned, many critics argue that a strong shareholder value orientation has some disadvantages, like short-term orientation, priority of management decision to push the share price, or instability of workers and growing wage inequality (Aguilera & Jackson 2010, p. 486, Benton 2017, p. 662). The analysis here broadens the discussion with the typical investors' view by including non-strictly economic indicators and considering the workers' voice. As a matter of course, large amounts of capital should be gathered to make elementary investments to ensure competitiveness. But at same time it should be bore in mind, that the most important stock listed companies represent some millions of employees home and abroad and therefore have a crucial role in maintaining stability of the economies and societies. This fact should be more integrated in conceptions of corporate governance.

The paper wants to fill two gaps. First, it wants to integrate the labour side in the corporate governance discussion more intensely. Second, it refines the national varieties of capitalism approach regionally to identify differences in the representation of capital and labour. The following questions are central: Is it possible to identify locations that are highly interesting for investors and that guarantee a high level of labour representation as well – or is it vice versa? Or is there a mixture of investors' favourites and workers' voice?

Looking from a higher socioeconomic point of view, it is important to know more about the location of these companies, which are relevant in both spheres, because they are able to meet the requirements of investors and the labour force, which may run contrary. From a regional economic perspective, these companies are highly relevant. If the companies, on the one hand, attract a high value at the stock market without a certain number of employees or without the ability to represent workers' voice, regional income will be limited. For example, this is the case in pure holding companies, which are highly relevant for the stock market but less so for regional labour markets. The chance to generate further effects for the regional employment, for instance through suppliers and business partners, is low. If the companies, on the other hand, have a great effect on the regional labour markets but low attractiveness for investors, the situation is similar. The companies are unable to make investments to establish new technologies, products or services. The opportunities to increase their productivity or grow substantially and sustainably are restricted and so are the prospects of having positive effects for the regional economies.

4. Empirical Specification

4.1. Measuring the investors' favourites

A certain number of German large companies are family-owned; these include retailers but also automotive suppliers or mechanical engineering firms. Some companies are state-owned or part of foreign corporations but many of the largest are listed at the stock exchange too (Forbes 2016, Die Welt 2016). The German stock market defines the prime standard and within the most important in the indices DAX (*Deutscher Aktienindex*, 30 companies), MDAX (medium-sized caps, 50 companies), SDAX (small caps, 50 companies) and the TecDAX (technology-orientend, 30 companies).

The main requirements for listing the companies in these indices are free-float market capitalization and stock market turnover in Germany (Deutsche Börse 2016b, p. 21). Founded on the assumption that enough free-floating shares exist (at least 10%), an extensive stock market turnover signalizes high interest on the part of investors. The prime standard represents the most attractive German listed companies. This work does not try to elaborate a further quantification of investors' favourites because stock listing is a key figure itself. For example, the market capitalization depends on share price, and the turnover rate is affected by monetary movements due to macroeconomic or fiscal developments on a global scale. It is hard to find a metric indicator that reflects a more long-term relevance of a share. Therefore this investigation uses the categorical differentiation into DAX, MDAX, SDAX and TecDAX at the reporting date 2015 December 31 and takes the assumption that the interest of investors is guaranteed by listing in the prime standard.

4.2. Measuring the workers' voice

Representation of labour and codetermination as social phenomena are influenced by diverse institutional arrangements and human interactions. It is not possible to find a single indicator for representation. To reflect the workers' voice, it is necessary to include different viewpoints and variables. From a methodological perspective, an index is suitable for including different variables. This allows a high complexity approach, and having an instrument which is manageably and therefore reduces complexity at the same time (Anand, Milne & Purda 2012, p. 76). By using an index the primary phenomenon is disassembled into portioned aspects. For these singled parts a concrete measureable indicator can be identified. Finally, all measured indicators are reassembled to reproduce the real main phenomenon. The resulting index value represents a complex social science phenomenon with only one measured value. By following this one number approach, it is possible to compare cases, like companies, directly or with other variables like indicators of companies' performance.

The newly developed index of codetermination (*Mitbestimmungsindex MB-ix*) quantifies and measures the anchoring of codetermination in stock listed German companies (Scholz & Vitols 2016). The MB-ix consists of six components, which include different aspects of representation of labour. The first component analyses the composition of the supervisory board by numbering and identifying the different mandates of the labour representatives. The second component focusses on the internal structure of the supervisory board by classifying the deputy chair, which is often filled by a labour representative. The third component reflects the existence and occupation of the board committees, which prepare decisions and meetings for the whole supervisory board. The fourth component integrates the level of internationalisation of employees and the existence of transnational labour representatives. The fifth component reflects the supervisory board influence, which is mainly determined by the legal form. Finally, the sixth component records the existence of a personnel director, who is independent from the Chief Executive Officer and Chief Financial Officer, to measure the relevance of the strategic personnel work in the investigated corporations. All six components form the MB-ix, in which components one to four, which represent more direct aspects, have influences of 20 percent and components five and six of 10 percent, as more indirect features. The MB-ix links the institutionally embedded instruments with the actors who define the instruments and implement practices. The MB-ix has a range between zero and 100. Zero reflects no representation of labour and 100 a completely fulfilled constellation of labour representation regarding the mentioned components.

4.3. Data

The database for this investigation consists of 160 stock listed companies in Germany, which are part of the stock market indices DAX, MDAX, SDAX and TecDAX as of 2015 December 31. The exact composition is defined and published by the German stock exchange (Deutsche Börse 2016a, pp. 3ff.). Based on the stock listing, the MB-ix values were calculated for all of these companies. The configurations were extracted from the annual reports or requested from the companies directly in rare cases. In total 1,679 mandates in the supervisory boards were recorded and analysed.

There are several reasons for selecting these companies. The main reason is the transparency of stock listed companies. Especially in Germany, there are many family-owned companies that are very restricted in publishing companies' information. From an empirical perspective, stock listing helps to get necessary information. Furthermore, codetermination at company level is linked to the legal form of a stock company (*Aktiengesellschaft AG*). Other legal forms like the limited or limited partnership do not imply the integration of labour representatives into the control body of companies. Additionally, stock listed companies represent a certain number of employees that are central for this work. The 160 companies generate an employment of approx. 5.4 million in the corporations in total and from that 2.2 million in Germany. Table 2 shows the differences of the size ratio depending on stock market index.

Table 2: Numbers of companies and employees by stock market index 2015

Stock market index	Number of companies	Number of employees	Number of employees per company
DAX	30	3,952,999	131,767
MDAX	50	1,058,057	21,161
SDAX	50	293,373	5,867
TECDAX	30	103,046	3,435
All	160	*5,407,475*	*33,797*

Source: Own investigation and calculation.

The German law defines concrete limits for labour representation. With more than 500 employees the companies have to have a one third labour representation in the supervisory board and with more than 2,000 employees a parity between representatives of capital and labour. As a first impression, the average numbers of employees per company indicates that in general most companies should have codetermination in the supervisory board: section six will analyse it more explicitly. The following section five illustrates the spatial distribution of the stock listed companies previously.

5. Results

5.1. Mapping the investors' favourites

By looking at the spatial distribution of the stock listed companies some remarkable characteristics can be seen (see Table 3 and Figure 2).

First of all, most of the companies are located in Bavaria, North Rhine-Westphalia, Hesse and Baden-Württemberg. At the same time there are no stock listed companies in the most Eastern and former GDR states, Mecklenburg-Western Pomerania, Saxony-Anhalt, Saxony and Brandenburg. The nearly total "lack of headquarters" in the Eastern states can be stressed.

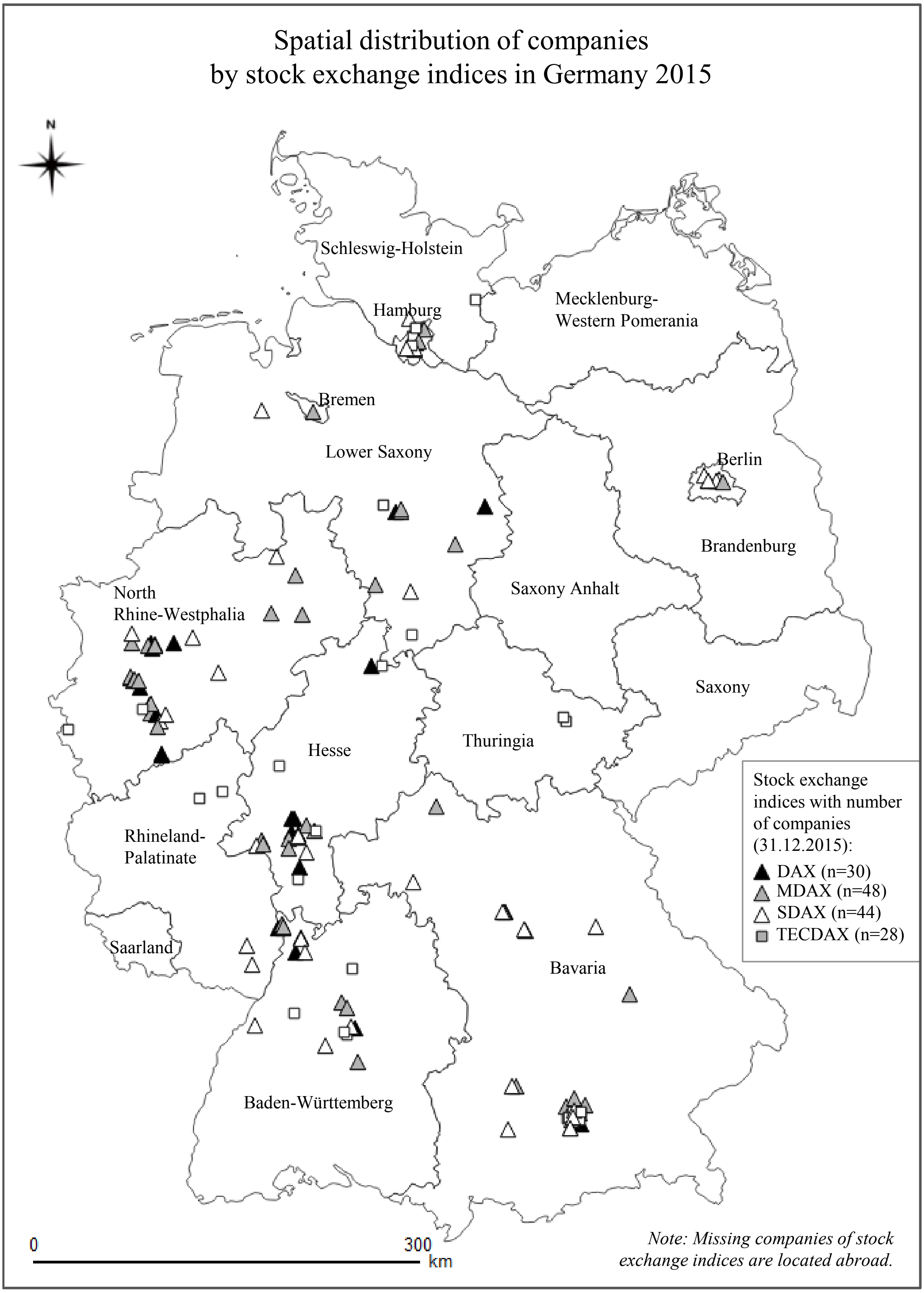
Table 3: Distribution of stock listed companies by state and cities, stock market index and location quotients 2015

State *(Bundesland)*	DAX	MDAX	SDAX	TECDAX	Number of companies	Number of companies (share in %)	Location quotient* on basis of number of companies per km² (only Germany)	Location quotient* on basis of number of companies per inhabitant (only Germany)	Location quotient* on basis of number of all companies (only Germany)
Baden-Württemberg	3	6	5	4	18	11.25	**1.20**	0.91	0.88
Bavaria	7	9	14	7	37	23.13	**1.25**	**1.58**	**1.38**
Berlin	0	2	5	0	7	4.38	**18.70**	**1.09**	0.99
Brandenburg	0	0	0	0	0	-	-	-	-
Bremen	0	1	0	0	1	0.63	**5.67**	0.82	0.88
Hamburg	1	5	4	4	14	8.75	**44.16**	**4.29**	**3.20**
Hesse	7	6	5	4	22	13.75	**2.48**	**1.95**	**1.87**
Lower Saxony	2	4	2	2	10	6.25	0.50	0.69	0.80
Mecklenb.-W. Pomerania	0	0	0	0	0	-	-	-	-
North Rhine-Westphalia	9	15	6	2	32	20.00	**2.24**	0.98	**1.03**
Rhineland-Palatinate	1	0	2	2	5	3.13	0.60	0.68	0.71
Saarland	0	0	0	0	0	-	-	-	-
Saxony	0	0	0	0	0	-	-	-	-
Saxony-Anhalt	0	0	0	0	0	-	-	-	-
Schleswig-Holstein	0	0	1	1	2	1.25	0.30	0.38	0.38
Thuringia	0	0	0	2	2	1.25	0.29	0.50	0.55
Germany	*30*	*48*	*44*	*28*	*150*	*93.75*	*1.00*	*1.00*	*1.00*
Abroad	*0*	*2*	*6*	*2*	*10*	*6.25*	-	-	-
All	*30*	*50*	*50*	*30*	*160*	*100.00*	-	-	-
Most important cities by number of companies									
Munich (Bavaria)	5	3	5	5	18	11.25	-	-	-
Hamburg	1	5	4	4	14	8.75	-	-	-
Frankfurt a. M. (Hesse)	2	2	3	0	7	4.38	-	-	-
Berlin	0	2	5	0	7	4.38	-	-	-
Dusseldorf (North R.-W.)	1	5	0	0	6	3.75	-	-	-
Essen (North R.-W.)	3	2	0	0	5	3.13	-	-	-
Cologne (North R.-W.)	1	2	1	1	5	3.13	-	-	-

*Location quotient = ((number of stock listed companies in state i)/(area or inhabitants or number of all companies in state i))/((150 stock listed companies in Germany)/(area or inhabitants or number of all companies in Germany)) (Data about area, inhabitants and number of all companies from Statistisches Bundesamt 2016a and Statistisches Bundesamt 2016c).

Source: Own investigation and calculation.

Figure 2: Spatial distribution of companies by stock exchange indices in Germany 2015



Source: Own illustration, based on Deutsche Börse 2016a.

Second, according to the four mentioned indices the DAX corporations are located primarily in North Rhine-Westphalia, Bavaria and Hesse, the medium sized MDAX corporations mainly in North Rhine-Westphalia and Bavaria, the small sized SDAX companies in Bavaria, North Rhine-Westphalia and abroad and the majority of the technology oriented TECDAX firms in Bavaria.

Third, the calculated location coefficients as relational measures state a further difference in distribution of companies. The coefficients measure whether the density of stock listed companies in the several states is higher (>1) or lower (<1) than the German average (=1) on the basis of area, inhabitants and all registered companies. A higher density in respect to all three coefficients can be found in Bavaria, Hamburg and Hesse. On the other end, Lower Saxony, Rhineland Palatinate, Schleswig Holstein and Thuringia have a much lower density of stock listed companies than the German average.

Fourth, regarding the cities it can be seen that Munich and Hamburg are the most important cities, which together gain 20 percent of all 160 companies. Companies located in these both cities are the focal centres of the prime standard investors.

Figure 2 additionally shows the spatial distribution of the 160 companies by the location of their headquarters. This map underlines the "empty East" on the one hand and the two main centres of Munich and Hamburg on the other hand. Apart from these extremes a certainly spread distribution of the other companies can be identified.

5.2. Mapping the workers' voice

Having examined the spatial distribution of the stock listed companies in the previous section, this section goes further and analyses the distribution of workers' voice (see Table 4 and Figure 3).

First, corresponding with the missing companies the calculation of labour representation in the Eastern states failed.

Second, Lower Saxony is overall the state with the highest labour force representation. The ratio of labour and capital representatives in the supervisory boards amounts to 46.9, whereas 50 would be a parity situation between both sides. 9 of 10 companies have labour representatives in the supervisory boards and their average MB-ix counts 71.1 points. Schleswig-Holstein and Thuringia also have high levels, but with much fewer companies. Furthermore the companies in North Rhine-Westphalia have a high level of labour representation too.

Third, a remarkably low level of labour representation is identified for the German capital Berlin. Only one out of seven stock listed companies has labour representatives in the supervisory board and hence the average MB-ix=6.19 points is very low.

Fourth, the situation in the states corresponds with the cities located within them. The companies in Dusseldorf, Essen and Cologne, all situated in North Rhine-Westphalia, have higher levels of labour representation than Munich, Frankfurt am Main and Hamburg or Berlin respectively.

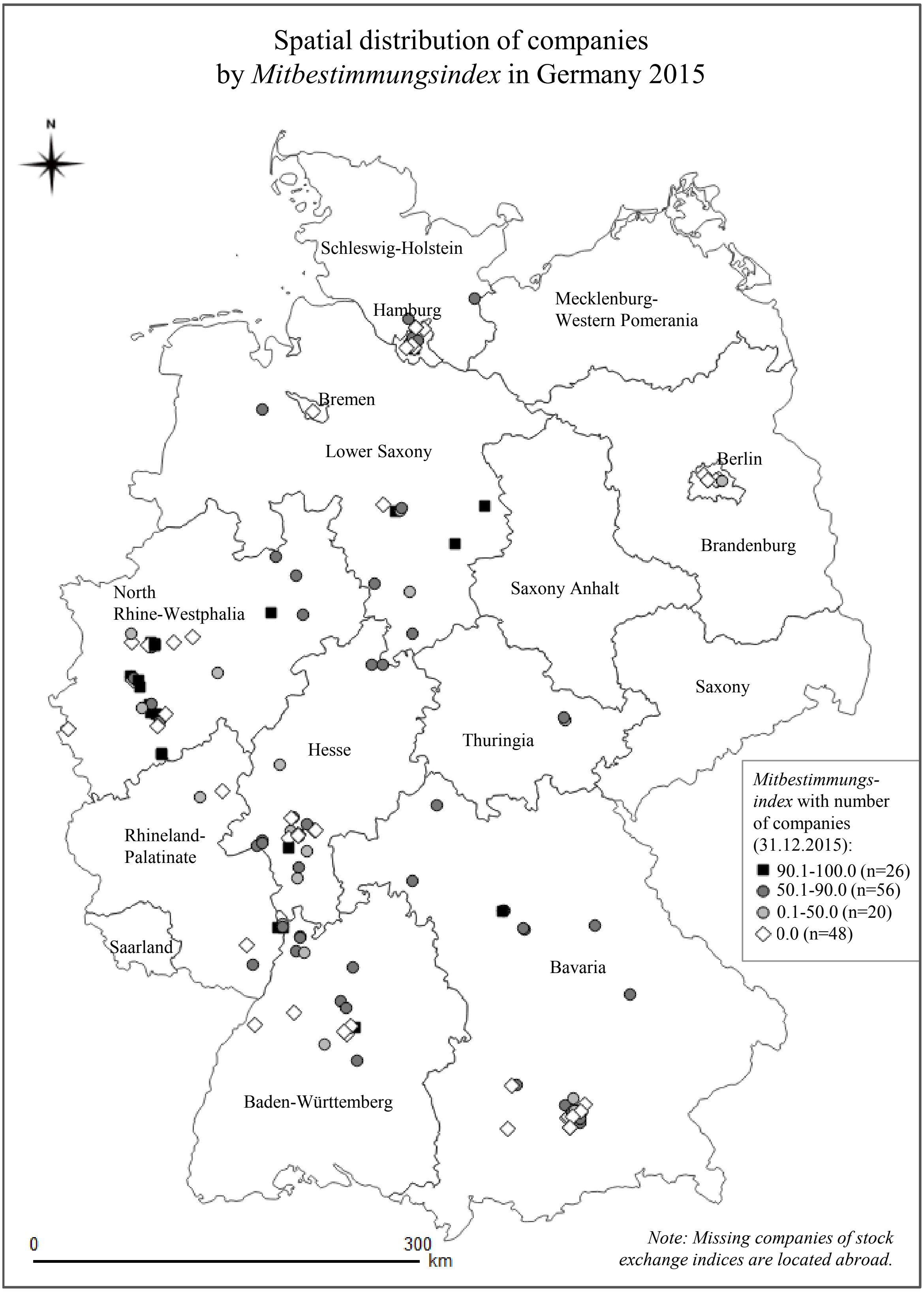
Table 4: Distribution of stock listed companies by state and cities, number of labour and capital representatives and codetermination 2015

State (Bundesland)	Number of labour representatives in supervisory boards	Number of capital representatives in supervisory boards	Number of all members in supervisory boards	Labour representatives in the supervisory boards (share in %)	MB-ix average	Number of companies with labour representatives in supervisory boards (share in %)	Number of companies
Baden-Württemberg	77	111	188	40.96	52.44	72.22	18
Bavaria	160	232	392	40.82	49.31	67.57	37
Berlin	3	39	42	7.14	6.19	14.29	7
Brandenburg	0	0	0	-	-	-	0
Bremen	0	3	3	0.00	0.00	0.00	1
Hamburg	40	87	127	31.50	40.37	50.00	14
Hesse	95	150	245	38.78	48.80	72.72	22
Lower Saxony	61	69	130	**46.92**	**71.10**	**90.00**	10
Mecklenb.-W. Pomerania	0	0	0	-	-	-	0
North Rhine-Westphalia	173	237	410	**42.20**	**62.99**	**75.00**	32
Rhineland-Palatinate	16	27	43	37.21	37.90	60.00	5
Saarland	0	0	0	-	-	-	0
Saxony	0	0	0	-	-	-	0
Saxony-Anhalt	0	0	0	-	-	-	0
Schleswig-Holstein	8	10	18	**44.44**	**70.00**	**100.00**	2
Thuringia	8	10	18	**44.44**	**61.43**	**100.00**	2
Germany	*641*	*975*	*1616*	*39.67*	*50.83*	*68.00*	*150*
Abroad	*0*	*63*	*63*	*0*	*0*	*0*	*10*
All	*641*	*1038*	*1679*	*38.18*	*47.68*	*63.75*	*160*
Most important cities by number of companies							
Munich (Bavaria)	88	119	207	42.51	52.73	72.22	18
Hamburg	40	87	127	31.50	40.37	50.00	14
Frankfurt a. M. (Hesse)	36	56	92	39.13	49.01	42.86	*7*
Berlin	3	39	42	7.14	6.19	14.29	7
Dusseldorf (North R.-W.)	38	44	82	**46.34**	**76.47**	**83.33**	6
Essen (North R.-W.)	44	44	88	**50.00**	**93.89**	**100.00**	5
Cologne (North R.-W.)	24	32	56	**42.86**	**64.72**	**80.00**	5

Source: Own investigation and calculation.

Figure 3 shows the spatial distribution of the 160 companies according to their MB-ix in classes. Like the distribution of the companies themselves, the workers' voice is spread as well, with the exception of Berlin. Remarkably there is no general distinction between urban and rural locations: instead, there is a mixture. Nevertheless, the following section combines the capital and labour view and discusses their interaction.

Figure 3: Spatial distribution of companies by *Mitbestimmungsindex* in Germany 2015

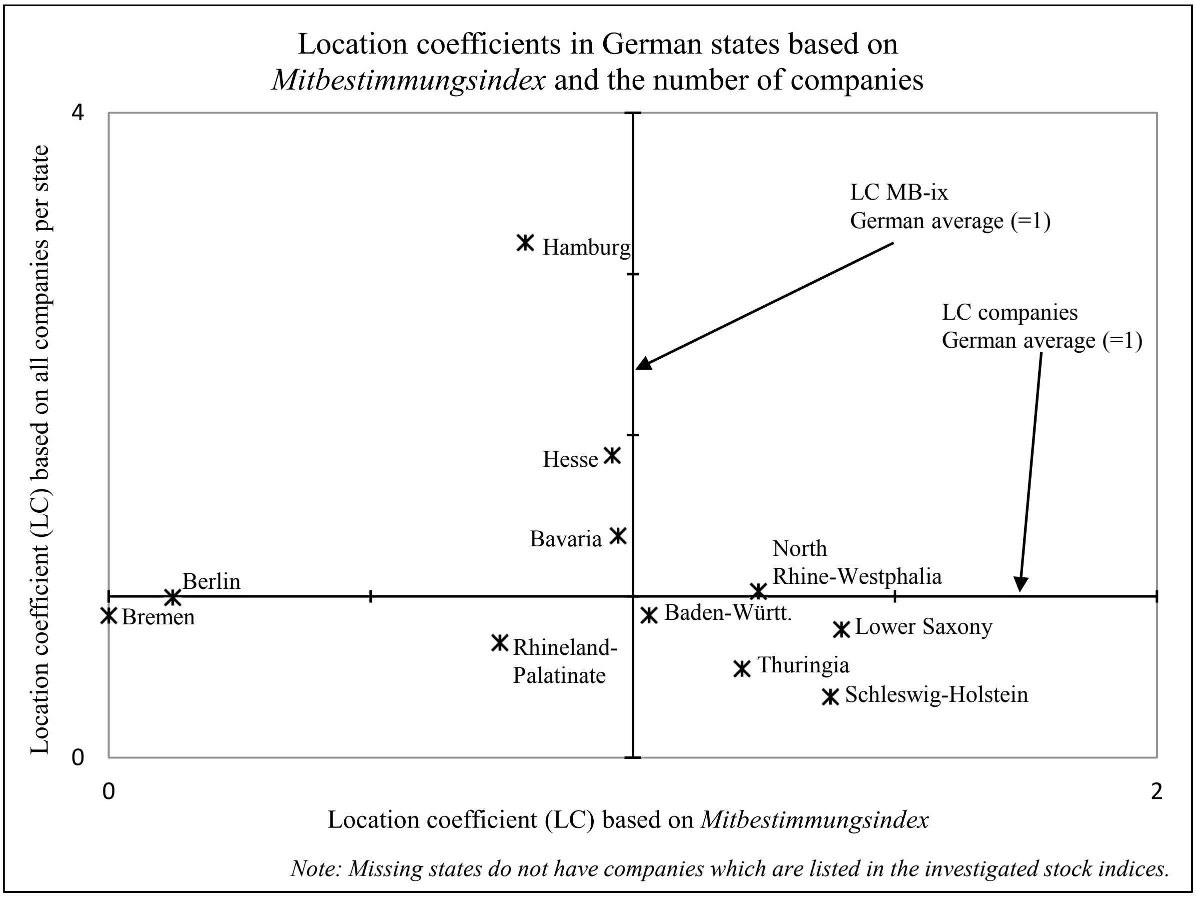


Source: Own illustration.

5.3. Spatial configuration of capital and labour

After analysing the both spheres separately, this section combines both factors on an aggregated state level. Figure 4 shows the interplay and identifies a tendency towards distinction. There are four fields with low or high levels of investors' interests and workers' voice in comparison to the national level. The first group of states, Berlin, Bremen and Rhineland-Palatinate, have a lower density of companies than the national average as well as a below-average level regarding labour representation. The second group are states with companies that are highly relevant for the stock market but with labour representation below the national average, namely Hamburg, Hesse and Bavaria. The third group of states is characterized by an underperforming number of companies but an above-average level of labour representation, namely Schleswig-Holstein, Thuringia, Lower Saxony and Baden-Württemberg. Fourth and finally North Rhine-Westphalia is the only state with an above-average number of companies and level of labour representation as well. Apart from North Rhine-Westphalia the most states attract either capital or labour.

Figure 4: Location coefficients in German states based on *Mitbestimmungsindex* and the number of companies



Source: Own calculation and illustration based on Table 3 and Table 4.

Certainly, this constellation has its origin in historical pathways influenced by long-term sectoral developments, technological inventions, political majorities and more. The reasons for this spatial distribution can be mainly derived from these facts. For example in North Rhine-Westphalia there are large companies of the "old economy", i.e. energy, chemistry and metal, or in Lower Saxony, there is the automotive sector; with a traditionally high relevance of codetermination and social partnership in these sectors. On the other hand, companies of the "new economy", i.e. technology oriented firms, are situated primarily in urban centres like Munich and Hamburg and they are much younger. Additionally, the political sphere is relevant too. In the southern states Bavaria and Baden-Württemberg traditionally the conservatives are having higher impact whereas the social democrats are stronger in North Rhine-Westphalia and Lower Saxony. In general it should be stressed that the configuration and rise of corporations as well as the system of codetermination depend on many influences which cannot be modelled or quantified easily. General causalities are hard to find and the developments are path dependent and historically contextualised.

However, the distinction between capital and labour is remarkable. The actors' interests, illustrated in Figure 1, can be hardly combined, which is an important result with regard to corporate governance. The possibilities to reconcile the interests of capital and labour simultaneously are limited. The findings conclude a distinction from a regional perspective: either many companies with low level of labour representation or fewer companies with high level of labour representation. But, further research should include a dynamic perspective. Because the investors' care reflects the stock market composition: corporations with weak growth should be switched by strong growing ones. The moderately growing ones are mostly old and large companies with a correspondingly high level of labour representation. The latter ones are mainly young and growing companies with a lower level of labour representation or none at all. Once again, the analysis shows the distinction between capital and labour. Otherwise more regions would combine high importance for investors and labour representatives as well.

6. Conclusion

How are stock exchange listing and codetermination spatially intertwined in Germany? While the most studies dealing with corporate governance argue from an investors' perspective and analyse the concentration of ownership, little empirical work has been done from a labour point of view. This paper adds the latter perspective to the present discussion. Whereas many studies focus on shareholder value, this paper suggests conceptually a shifting focus from shareholder value to stakeholder value. One most important stakeholder is the labour force, which this paper integrates into the scientific discussion. By operationalising workers' voice through a newly developed index, the work presents an effective instrument. A hand-collected special database recorded 1,679 mandates of all supervisory boards in 160 prime standard listed companies and combines different components into only one measured value (*Mitbestimmungsindex*). This one number approach is linked to the corporations' spatial distribution. Therefore the article analyses the investors' interests and the workers' voice of in Germany listed companies from a spatial point of view.

In absolute terms, most of stock listed companies are situated in Bavaria, North Rhine-Westphalia, Hesse, and Baden-Württemberg absolutely and in relation to area, inhabitants and all companies in Bavaria, Hamburg and Hesse. The main cities of headquarters are Munich and Hamburg. The highest level of labour representation can be found in the companies situated in Lower Saxony, followed by Schleswig-Holstein and Thuringia which have a small number of companies and North Rhine-Westphalia again. The companies in Dusseldorf, Essen and Cologne, all situated in North Rhine-Westphalia, have an extraordinary level of labour representation compared with other cities where a certain number of companies are headquartered. Finally, the paper identifies different possibilities between the capital side and representation of labour and concludes a difficult reconciliation of both at state level. Only one German state, namely North Rhine-Westphalia, is characterized by more prime standard listed companies and a higher level of labour representation than the German average simultaneously. From a corporate governance perspective this reflects the distinction between capital and labour and the difficulties in satisfying both spheres. From a regional perspective the paper concludes states with either many companies to the expense of labour representation or fewer companies for the benefit of labour representation.

Based on these findings it is somewhat difficult to claim that there is one German model, as the varieties of capitalism model does. This analysis has shown a spatial and qualitative difference of investors' interests and representation of labour. At the same time the study concluded that it is difficult to combine interests of both spheres. Therefore it can be shown a deviation from the overall German situation, with regions where many companies with low or missing codetermination and regions with a fewer number of companies but higher levels of codetermination. More modes of governance exist or in the varieties of capitalism approach a certain number of German models.

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