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## From the dual apprenticeship system to a dual labor market? The German high-skill equilibrium and the service economy

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Dual Labor Market? The German High-Skill  
Equilibrium and the Service Economy**

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June 2009

# **From the Dual Apprenticeship System to a Dual Labor Market? The German High-Skill Equilibrium and the Service Economy**

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Discussion Paper No. 4220  
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## ABSTRACT

### **From the Dual Apprenticeship System to a Dual Labor Market? The German High-Skill Equilibrium and the Service Economy\***

Different models of protection against labor market risks are associated with diverging models of economic performance. Historically established institutional complementarities between labor market regulation, unemployment protection, and vocational training tend to mirror specific national models of economic production. For example, the German dual apprenticeship system is a core feature of the corporatist model of “diversified quality production”. This, in turn, is supported via skills-protecting, earnings-related unemployment insurance, skills-oriented active labor market policies and strong dismissal protection so that long-term productive employment relationships become viable. The paper explores the connection between structural change and the development of skill creation in the German case with a particular focus on the difference between manufacturing and services as well as between different types of service sub-sectors. The paper takes manufacturing, a sector dominated by standard employment, as a reference point but mainly addresses different segments of the service economy: traditional ones (banking and insurance), new high-skill sectors (IT and the “creative economy”) and growing areas of low-skill services (hotels and restaurants, cleaning). We find that dynamic job creation in these segments of the service sector was possible due to a less regulated institutional environment.

JEL Classification: J31, J44, J24

Keywords: service sector, Germany, dual labor market, low-skilled work, atypical employment

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## Introduction

Historically established institutional complementarities between labor market regulation, unemployment protection and vocational training tend to mirror specific national models of economic production (e.g. Amable 2003, Boeri et al. 2003). The basic assumption of this literature is that there are mutually reinforcing relationships between different policy areas that stabilize each other. For example, the dual apprenticeship system in Germany is a core feature of the corporatist model of “diversified quality production” (Streeck 1992). This, in turn, is supported via skills-protecting, earnings-related unemployment insurance, skills-oriented active labor market policies and strong dismissal protection so that long-term productive employment relationships become viable. The notion of a comparative advantage that corresponds to a specific institutional arrangement of the labor market and skill creation is essential to the Varieties of Capitalism (VoC) approach (Estevez-Abe et al. 2001, Hall/Soskice 2001).

However, it is questionable whether this argument can capture the structural changes Germany and other coordinated market economies went through in the past years as it refers to a production model that has mainly been observed in manufacturing. Recently it has been argued that identifying national models (with uniform comparative advantages) neglects the actual heterogeneity of firm strategies within economies. Thus there are firms and sectors with production models that do not fit the institutional environment and which, therefore, defect from these institutions (Herrmann 2008, Lange 2009). Accordingly, if the complementarities between skill formation, comparative advantage and labor market institutions are analyzed on the macro level, significant differences across economic sectors are disregarded (Allen 2004). In the present article we take up this criticism and apply it to the explanation of change within the German economy, in particular the service sector.

Over the past years, the German labor market has been transformed thoroughly. Probably the most fundamental change concerns the growing dualization between standard employment and alternative contractual arrangements in atypical employment. We believe that this process can be explained by economic tertiarization and by the fact that services in many aspects differ from the ideal-typical production model that justifies non-market institutions in coordinated types of capitalism. For instance, the “trilemma of the service economy” (Iversen/Wren 1998) illustrates that this growing sector follows a completely different logic which in some aspects resembles the one of liberal market economies. As many services do not have much potential for increasing productivity, lowering prices is an important instrument to enable growth. Therefore, economies that choose not to rely on public sector expansion face strong pressure to allow for more wage inequality in order to enhance service

sector employment. This, in turn, seems to contradict the ideal-type German setting characterized by a rather egalitarian wage structure.

If the so called “high-skill equilibrium” (Finegold/Soskice 1988) with its complementarities between wage determination, production system, social protection and skill creation does not apply to large parts of the service economy, one would expect a more dynamic labor market in this sector to be associated with more general skills and a different institutional framework in terms of employment and social protection: higher job turnover, lower tenure, increased wage dispersion and more “atypical” workers outside the traditional institutional framework of the German standard employment relationship. In this respect, we expect the dynamic segment of the private service sector to be more dualized (in terms of skills and wages) than traditional and well-established services which are organized similar to manufacturing.

The paper explores the connection between structural change and the development of skill creation in the German case with a particular focus on the difference between manufacturing and services as well as between different types of service sub-sectors. We take manufacturing as a reference point but focus on different segments of the service economy: traditional ones (banking and insurance), new high-skill sectors (IT and the ‘creative economy’) and dynamic rather low-skill services (e.g. hotels and restaurants, call centers and cleaning).

### **High-skill vs. Low-skill Equilibrium**

Skills are a crucial element in the distinction between coordinated and liberal market economies made by the varieties of capitalism approach. Accordingly, the ideal-type ‘capitalisms’ demand different types of qualification to buttress their production model (Hall/Soskice 2001). Liberal market economies (LMEs) are bifurcated in this respect. On the one hand, they typically aim at a comparative advantage in price-competitive mass production. As the primary objective is to keep wages low, the production process is broken down into standardized tasks which can be performed without special qualification. On the other hand LMEs are also competitive in high-technology industries with large R&D input and radical innovation shifts. Here, general methodological knowledge is required in order to ensure workers’ adaptability to innovative technologies. Industries like biotechnology, IT and high-end services usually demand a university degree, i.e. strong human capital investment. LMEs encourage such investments, because returns to education are high. Due to decentralized bargaining, the wage structure is less compressed than in coordinated economies and higher education pays off in the labor market. Additionally, tertiary qualification creates general competences applicable to different industries and occupations. This includes ‘soft skills’ like the ability to communicate on a certain level and analytical knowledge which enables continuous learning. The implicit function of portable skills as an insurance against

labor market risks provides further incentives for human capital investments. In a context of dynamic labor markets with weak dismissal laws and low benefit levels 'employability' is a valuable asset as it prevents longer spells of unemployment.

A different logic applies to the export sectors in coordinated market economies (CMEs) where product differentiation and superior quality are preferred pathways to competitiveness. Typical goods in this area are chemicals, machinery, automobiles, or electronics. Accordingly, production in CMEs is more specialized on niche markets and oriented to specific customer needs than mass production in LMEs and requires workers with higher levels of craft skills. Innovations do not necessarily lead to product innovation via rapid technological change, but rather proceed through incremental progress. In this process, workers' experiences with the product and the expectation of customers play a crucial role. This is why CMEs heavily depend on tacit knowledge that is related to a specific production context. Such knowledge is created in a 'learning-by-doing process', i.e. mostly informal on-the-job training over a longer period (Harcourt/Wood 2007, Bassanini/Ernst 2002). The problem with firm- or industry-specific skills is that they are only partly transferable to different industries and occupations. Therefore, workers face a 'lock-in' situation: in case of dismissal, their investment in (specific) human capital has to be considered sunk costs. Thus, acquiring non-transferable skills in a liberal labor market with high turnover rates would be risky and irrational. To overcome this incentive problem, CMEs have to establish an arrangement of complementary institutions that protects skills against devaluation by unemployment. Dismissal protection reduces the probability of being laid off and fuels the expectation of a stable employment relationship that allows workers to benefit from their specific skills via internal labor markets and seniority wages. If a worker is nonetheless hit by unemployment, high benefit levels (at least temporarily) reduce pressure to work in an occupation where initial skills are worthless. Additionally, coordinated bargaining ensures that the market wage for an occupation does not drop drastically and that specific skills maintain their value (Estevez-Abe et al. 2001).

The self-reinforcing relationship between the dominant product market strategy, skill creation, social policy and industrial relations is seen as a "high-skill equilibrium" in CMEs as opposed to bifurcated or dualized LMEs, which in parts of the economy exhibit "low-skill equilibriums" (Finegold/Soskice 1988).

### **Vocational Education in Germany**

At the core of vocational education in Germany is the dual vocational training regime: apprentices receive a rather general school-based education (financed by the state) combined with three or four days per week of workplace-related training paid by the firm. There is a strong corporatist regulation of vocational training including binding occupational profiles as well as compulsory examinations and certified vocational degrees conferred by the responsible chamber of trade.

Standardization and comparability aim at creating industry-specific skills which allow for high mobility in occupational labor markets. However, the workplace-related component provides much flexibility for employers to integrate firm-specific elements into training. Compared not only to LMEs, but also to most CMEs that rely to a larger extent on school-based vocational education, Germany is usually considered a case with a high degree of skill specificity (Anderson/Hassel 2008, Culpepper 2007).

In a historical perspective, Germany appears as a perfect example for the institutional complementarities surrounding a specific skill regime. Thelen (2004) shows that the collectivist approach to vocational education still exhibits features that date back to the pre-WW1 and Weimar period. As at this time skill-intensive industries (especially engineering) faced increased competition by low-cost producers from abroad, many firms aspired comparative advantage in higher quality and specialization, which in turn required better and more specifically trained workers. The craft sector, which had been a prime supplier of vocational degrees, was not able to provide sufficient skills for the rapidly developing technologies applied in many industries. As a consequence, knowledge-intensive industries teamed up with unions to lay the foundation for a co-managed, standardized and firm-based system of vocational training that would provide the specific skills needed for quality-competitive goods. The corresponding strategy included the acceptance of a compressed wage structure via collective bargaining (which reduced disincentives to train, e.g. poaching), the creation of internal labor markets (with firm-level benefits to reward loyalty) and the voluntary coordination of employer interests (to achieve systematic and standardized training profiles) (Thelen 2004). Additionally, skill-intensive industry successfully lobbied for the introduction of unemployment insurance in 1927 which served as an implicit protection against devaluation of skills and thereby provided further incentives for specific human capital investment (Mares 2001).

These traditional institutions of a high-quality / high-skill equilibrium proved to be very stable and correspond with the foundations of what Streeck (1992) later has called “diversified quality production”: a novel production pattern in German manufacturing that combines the quality orientation and customization of small craft enterprises with the economies of scale of large-scale industrial production. In contrast to repetitive Taylorist tasks, diversified quality production is based on the application of sophisticated technology and requires qualified workers. It therefore depends on traditional non-market institutions which support skill investments. For example, high and equally distributed wage costs imply strong incentives for employers to increase all workers’ productivity by training. This effect is reinforced by German labor law that restricts ‘hiring-and-firing’ practices and strengthens internal labor markets instead. By granting works councils considerable influence on firms’ personnel policies, co-determination is another important element in this respect.



However, the content of training in diversified quality production is far less specific than depicted by the VoC literature. Quite to the contrary, it depends on skills that are “broad to the extent that they are polyvalent – that is, not functionally dedicated to any specific purpose or activity. The most important polyvalent skill is the general capacity to acquire more skills (Streeck 1992). Thus, besides industry or firm-specific skills, an apprenticeship in the German dual system does provide general skills as well. Even plant-based education is never entirely firm-specific, but it inevitably entails broad competences that at least apply to an entire industry. The employability achieved through training and the certification of vocational degrees leads to a high potential mobility, especially in occupational labor markets. The portability of skills in the German case exacerbates the poaching problem and raises the questions why firms should invest in training as providing a transferable education appears irrational as long as free riders can reap the benefits. This point illustrates that not only trainees but also firms need to rely on mechanisms which protect their investment and that the credible commitment to lifetime employment is in the mutual interest of both parties. Firm-level social policies and seniority wages can have this effect (Busemeyer 2009).

To sum up, the German apprenticeship system depends on historically grown complementarities in the political economy that help to overcome collective action dilemmas. Due to the institutionally buttressed orientation towards stable employment relationships, employers as well as employees have been willing to conduct long-term human capital investments without fearing sunk costs or poaching. Consequentially, for a long time German enterprises were able to train beyond short-term needs and to contribute to a pool of skilled workers as a ‘collective good’. However, in the past years the institutions of vocational training seem to have suffered a loss of their collectivist quality as can be seen from declining training ratios (Thelen/Busemeyer 2008).

### **The High-skill Equilibrium and the Service Economy**

The logic of the German training system developed around the needs and interest of manufacturing. Industrial producers promoted these institutions, which became important features of the high-skill equilibrium, in order to back up their distinct production model. This raises the question how structural change affects the overall functioning of the system. Thelen (2007) identifies the decline of manufacturing as one main reason for the current crisis of the dual apprenticeship system. While in Germany as in other mature economies employment growth is mainly achieved in services, this sector is far from providing as much training opportunities as production industries do. In 2007, only 28 percent of the firms in the service sector were engaged in training as opposed to 44 percent in manufacturing (Frei/Janik 2008). How can the diverging incidence of firm-based apprenticeship across sectors be explained? There is reason to believe that several

characteristics of service work lead to different skill needs and contribute to a separate logic outside the traditional high-skill equilibrium.

First of all, services rarely deal with durable products which would require long job experience with a particular good and tacit knowledge as it is the case in diversified quality production. Many service jobs are not tied to a specific context of production, where, for instance, a special machine is to be handled. With some degree of simplification one could argue that as most tasks can be performed independent of a special location, equipment or a well-attuned team, the required knowledge is more transferable across employers.

An important variable explaining differences is firm size. Services differ essentially from capital-intensive manufacturing by lacking significant economies of scale or increasing returns. Fixed costs are typically lower than in manufacturing (where investment in a production infrastructure is necessary) and work is very often not an input, but the output itself. In many services, size is not that advantageous. As a consequence, a considerable proportion of services can be (and is) performed by single entrepreneurs. This in turn means that in services a larger share of employment has to bear the immediate entrepreneurial risk of an economic activity.

Another variable is the gender bias of service sector employment. While in male dominated manufacturing interrupted work biographies play a minor role, the high likelihood of pregnancy is a disincentive (for employers as well as female workers) to invest in firm-specific skills. This problem is exacerbated if insufficient child care provisions favor the labor market exit of young parents. Service sector employment that relies on female employees, therefore, is restricted in developing strategies based on long-term employment (Gottschall/Shire 2008).

In order to make statements beyond these general considerations, it is necessary to distinguish between different skill levels within the heterogeneous service sector. The first group is characterized by very little skill demands, and employment usually requires not more than brief on-the-job training. In these simple labor-intensive services, qualification can help raise productivity only to a limited degree. Since employers are primarily interested in keeping labor costs down, there are no incentives to invest in employees' human capital. As a consequence, there is a tendency towards 'Taylorization' in low-skill service jobs. For example, in retailing and call centers, work is usually decomposed into standardized operations that do not require much training (Lehndorff/Voss-Dahm 2005). Here, the basic logic clearly deviates from diversified quality production as the main priority is to achieve price competitiveness. Concerning front-line services with direct customer contact, the key competence lies in soft or social skills such as the ability to communicate, politeness, reliability and punctuality. These skills are not related to a specific employer, occupation or industry but maintain their value in various activities. Thus, a considerable part of the service sector – including jobs in hotels

and restaurants, call centers, retailing, personal services and cleaning – does not require many skills at all or demands very general skills.

The situation is somewhat different in high-skill services. For instance, in consulting, the IT industry or ‘creative’ occupations, education plays a major role - not so much in terms of specific skills, but in form of methodological knowledge that enables adaptability. In contrast to the traditional German production model, such services exhibit radical innovation shifts. To keep pace with this dynamic, the ability to learn is an essential competence which is usually acquired by general education on the tertiary level. Another distinct feature of high-skill services is project orientation. In many occupations (such as consulting), work is typically organized in temporary projects. This brings along a constant change in the contents, the team, the customers and the tools employees work with. This type of work organization implies a high degree of flexibility and leads to the accumulation of broad competences rather than narrowly defined specific skills.

Taking these characteristics of work into consideration, one has to regard the service sector as being significantly different from manufacturing which usually serves as a reference point in the analysis of the German model. However, a third group of ‘traditional’ services, comprising, for example, employment in banks, insurance companies and public administration, has more similarities with this logic. Office clerks and health services with intermediate skill level fall into this category as well. In many areas of public administration, trainees receive specific education which is hardly valuable outside bureaucracy. Accordingly, lifetime employment (not only for civil servants) is an important perspective when choosing such a career. In banks and insurance companies, one could argue that employees need large firm and industry-specific knowledge as financial products can be quite complex. Radical innovations in these products occur more rarely than for example in IT services, although they frequently take place when new legislation has to be adopted (e.g. private pension schemes in Germany). Accordingly, the education of clerks in financial intermediation typically is more general than in manufacturing, and an upper secondary school degree is usually required. But notwithstanding the somewhat more theoretical orientation, skills acquisition in this segment largely resembles the logic of diversified quality production (long-term employment combined with occupational skills acquired in largely workplace-related training). However, in financial services and the public sector this model has come under pressure, too, since, on the one hand, competition has increased due to the entry of additional, sometimes foreign competitors in the aftermath of privatization, outsourcing of some tasks and the associated decline in bargaining coverage or uniformity of wage setting, and, on the other hand, growing automatization and self-service elements which reduces labor input.

By and large, the service sector exhibits a great deal of heterogeneity in terms of skill demands, work organization and innovative dynamism. While some traditional service occupations are more or less compatible with the ideal-type institutional setting of a CME, many others contradict it. Bearing in mind the

bifurcated structure with low-skill, taylorized jobs on the one hand and knowledge-intensive, innovative work on the other, one could argue that these occupations rather feature characteristics of liberal systems. The argument is supported by the tendency to shift entrepreneurial risks onto workers, which means a reinforcement of the market logic. The different skill demands in manufacturing and services therefore lead to diverging expectations about labor market outcomes in both sectors. We expect that the institutional complementarities typical for a CME do not hold for major segments of the service economy. Assuming that some CME service sub-sectors resemble LMEs could have a significant impact on at least four variables:

*Skill specificity:* We can assume that in the ‘new’ service economy firm- or industry-specific skills are crowded out by more general ones. This involves more theoretical content, higher required school degrees and an expansion of school-based training. Personal investment in employability should tend to increase including higher initial education (preferably on the tertiary level) and continuous updating of skills via life-long learning. However, at the same time, we could expect low-skilled services to emerge that operate with only rudimentary job-related training. In such occupations, employers are assumed to avoid the expensive dual system and to use brief on-the-job training or short courses instead.

*Job stability:* In a production model that can do well without specific skills, institutionally sheltered long-term employment relationships become dispensable. Workers that acquire general skills trade their narrow job security for a broader employment security and gain a great deal of mobility across occupations which they might use to improve their income situation. Evidently, mobility is also high for jobs in which skill demands are very limited. On the other hand, employers not concerned with the loss of specific human capital face high incentives to adapt their workforce to business cycles or to increase staff turnover in order to secure the inflow of ‘fresh’ knowledge. In this way, we would expect the concerned occupations to exhibit higher staff turnover and lower job tenure.

*Wage dispersion:* A compressed wage structure contradicts large investments in skills since returns to education are reduced. This could, for instance, affect the decision to invest in a university degree. Also, employment in occupations which – according to their productivity – lie below the lower end of the wage scale is hampered. Institutions of collective wage determination therefore will have a perverse effect, if an industry depends on either unskilled workers or university graduates. Accordingly, more general skills in some service occupations should go along with more dispersed wages and lower collective bargaining coverage.

*Incidence of standard employment:* In Germany, strongly regulated standard employment provides a high degree of job security. Due to strict dismissal protection, permanent employment contracts serve the needs of diversity quality protection very well, but are less compatible with the flexibility requirements in most services. As employers in the service sector are less willing to grant the

privileges of relatively expensive standard employment, one can expect to observe a higher share of atypical employment such as temporary contracts, marginal jobs, and freelance.

**Table 1: Expected Outcomes in Manufacturing and Service Sectors**

Categories	Expected outcome for				Typical occupations
	Skills	Job Stability	Wages	Employment	
<b>Manufacturing</b>	Specific	High	Compressed	Standard	Metal and electrical workers, engineers
<b>Traditional Services</b>	Specific/general	High	Compressed	Standard	Banking and insurance, health and social services
<b>High-skill Services</b>	General	Low	Dispersed	Non-standard	Consulting, IT sector, creative industries
<b>Low-skill Services</b>	Low	Low	Low	Non-standard	Beauty care, hotels and restaurants, cleaning, call centers

## Methodology

To analyze the variables of interest (skill profiles, job stability, wage dispersion and types of employment) the study draws on quantitative data from the German Socio-Economic Panel (GSOEP), which provides appropriate information on all the variables in question. While a breakdown by industries or occupations is possible, the rather small number of cases (approximately 12.000 employed persons in 2007) requires a high level of aggregation. Unfortunately, this hampers the analysis of small occupational groups.

As it is the aim of the study to analyze differences between services and manufacturing as well as between different types of services, occupations have been selected that feature typical characteristics of the broad categories shown in table 1. The occupational approach is preferable to a comparison of whole (sub) sectors as the latter are too heterogeneous and tend to exhibit inconsistent results. For the sake of sufficient case numbers, the size of an occupational group had to be taken into consideration when selecting cases. Another criterion has been the dynamics in terms of employment growth as presented in table 2. Especially the business-oriented services (IT, financial intermediation, consulting), but also consumer-oriented ones (hotels, restaurants, beauty care, cleaning) and social services (health, social) have contributed massively to employment growth in Germany. Data depicted in table 2 shows that both in absolute figures and in shares of employment, health and social services (about 16%), but in particular business- and consumer-oriented services (16 and 17% respectively) as well as a heterogeneous cluster of ‘other services’ has expanded significantly over the last two decades. Typical occupations of diversified quality production (workers in the field of metal, machinery, electronics and engineers) have been selected as a reference. By now, manufacturing only represents a declining share of less than 20 percent of total employment.

**Table 2: Employment Growth in Manufacturing and Services**

Sectors	Industries	Employment in thousands (share of total employment)			Absolute change 1991- 2007
		1991	2000	2007	
<b>Manufacturing</b>	Food, textiles, metal, machinery, chemicals, vehicles	10 591 (27%)	8 109 (21%)	7 542 (19%)	- 3 049
<b>Distributive Services</b>	Wholesale and retail trade, repair of goods & vehicles, transport, telecommunications	8 090 (21%)	8 211 (21%)	8 137 (21%)	+ 47
<b>Public Administration</b>	Administration, defense, social insurance	3 204 (8%)	2 857 (7%)	2 652 (7%)	- 552
<b>Health &amp; Social Services</b>	Education, health care, social services	4 653 (12%)	5 818 (15%)	6 500 (16%)	+ 1 847
<b>Business-oriented Services</b>	Banking, insurance, real estate, IT, R&D, consulting	3 736 (10%)	5 802 (15%)	6 828 (17%)	+ 3 092
<b>Consumer-oriented Services</b>	Hotels and restaurants, private households	1 724 (5%)	2 262 (6%)	2 530 (6%)	+ 806
<b>Other Services</b>	For example culture, sport, entertainment, media, art, representation of interests, laundry, beauty care	1 563 (4%)	1 955 (5%)	2 154 (5%)	+ 591

Source: Arbeitskreis Erwerbstätigenrechnung des Bundes und der Länder

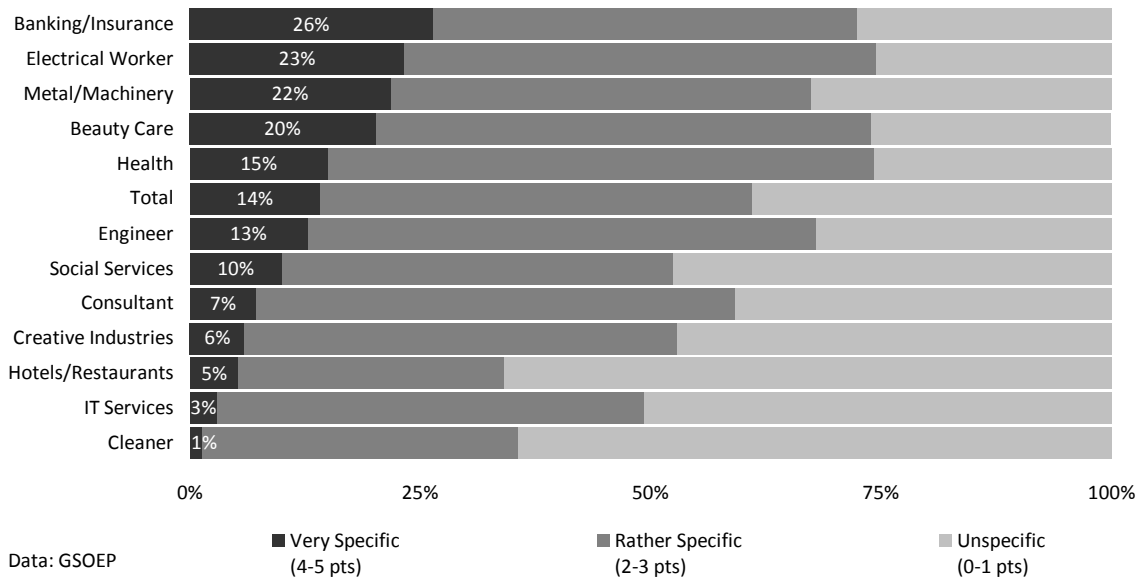
## Skill Profiles

While various ways to measure skill levels are well established (e.g. the highest vocational degree obtained), the concept of ‘skill specificity’ is rather difficult to quantify. The literature offers several indicators which, however, suffer from a lack of comparable data and therefore remain rough approximations. For instance, the share of vocational training in secondary education (Estevez-Abe et al. 2001) or the proportion of a cohort in tertiary vocational training (Culpepper 2007) have been used to capture the specificity of qualifications at the national level. As a micro-level alternative, Herrmann (2008) suggests a more sophisticated measure based on interviews with human resource managers. Her composite indicator comprises three criteria: average job tenure, the employment of former apprentices and the provision of job-related continuous training by the employer. While data availability makes it difficult to use this kind of indicator for large international comparisons, it seems to be appropriate for a case study of German industries based on national data. We therefore used information from an additional module on vocational education in the 2004 GSOEP wave to reconstruct this specificity indicator, however, with significant modifications. The three criteria are translated in the following way:

To start with, the scores for tenure follow Herrmann's conception<sup>2</sup> where one point is given for job duration between four and seven years and two points for eight years or more. The underlying assumption is that only in the course of a long period of work with one employer specific skills can be accumulated. The second criterion, employment of former trainees, is more difficult to translate as GSOEP does not provide information whether participants still work for the firm they were trained in. As a substitute, the question if the participant works in the occupation trained for is used. However, before interpreting these figures it should be noted that this question measures specificity at the industry level instead of firm-specific skills. Workers educated in the dual system who stayed in the occupation trained for receive two points. If workers were educated in school-based education or combined an apprenticeship with an upper secondary school degree only one point is given. This is based on the assumption that training in full-time vocational schools is in principle more general than the firm-based alternative as trainees carry a larger fraction of the costs themselves and therefore demand a broader skill set (Anderson/Hassel 2008). Apprentices with 'Abitur' (university entrance diploma) also possess more general skills which serve as a basic qualification for many jobs and thereby enhance labor market mobility. Workers with tertiary education or employed outside the occupation initially trained for receive no points. As opposed to Herrmann's version, two points can be obtained for this criterion. This seems more reasonable in the German case, where decent initial training plays a major role in providing skills while – in contrast to countries with weaker initial education – life-long learning is underdeveloped. In this system it is rather unlikely that career changers acquire more specific skills through on-the-job training than graduates of an apprenticeship in their original occupation. Accordingly, for the third criterion (specific on-the-job training) individuals can only receive one point. Here, the GSOEP question from the 2004 wave is used: "To what extent could you use the newly acquired skills [from further professional education] if you got a new job in a different company?" Employees that attended at least one course provided by the employer in the past three years and answered to this question with "not at all" or "only to a limited extent" receive one point. Unfortunately, the formulation of the question only aims at firm specificity and does not allow differentiation between truly general and industry-specific contents, respectively.

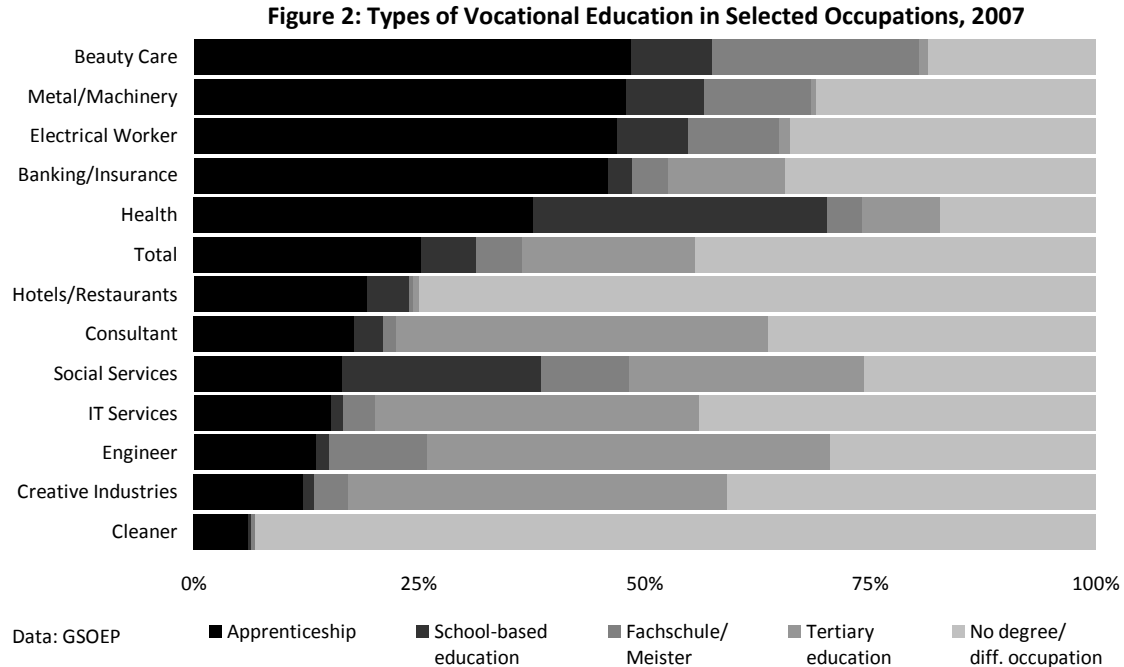
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<sup>2</sup> Herrmann's indicator ranges from 0 (general qualification) to 5 (very specific qualification). For job tenure above seven years, she assigns two points, from four to seven years one point, and below four years zero. Companies that offer vocational training and also employ former trainees receive a further point. In the last criterion, two points are given to firms that provide firm-specific on-the-job training to more than fifty percent of the staff, one point for industry-specific training, and zero points for general or no training.

**Figure 1: Specificity Indicator for Selected Occupations, 2004**

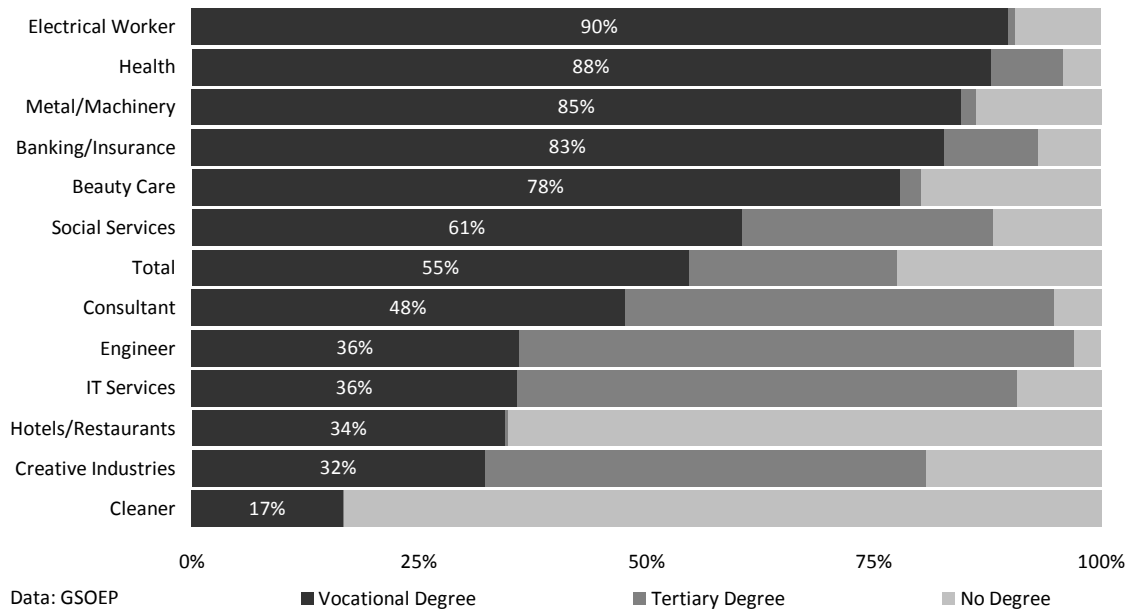
The three criteria add up to a specificity indicator ranging from zero (no specificity) to five (high specificity). One should note that in this version low scores can not be equated with general skills, but could also mean the absence of any skills. Figure 1 presents the results for selected occupations. By and large, the anticipated results can be confirmed. The most specific skill profiles are found in occupations of the manufacturing sector and in traditional services. The latter, represented by bank and insurance clerks, even have the largest fraction of very specific profiles. This can be ascribed to the greater importance of continuing specific on-the-job training compared to manufacturing. As expected, most service occupations are found at the lower end of the distribution because they either demand rather general skills (creative industries, consulting, IT) or because the skill level in general is very low (hotel and restaurants, cleaning). Somewhat surprising is the ranking of hairdressers and cosmeticians (beauty care), which lie above the average in terms of specificity. The figures reflect that these occupations do require vocational training (see also figure 2 and 3), but that this training evidently has a very limited value in the general labor market. Apart from that, a high training share can also stem from cost considerations as apprentices receive lower wages than full-time workers. The findings presented below indicate that graduates in beauty care tend stay in their occupation, but often run their own businesses.





The qualification profiles become even more conclusive when type and level of education are included. Figure 2 presents the highest vocational degrees obtained, differentiating between secondary training (in the dual apprenticeship system or vocational schools), university education (comprising colleges of applied sciences) and the lack of a certified qualification, which includes workers who graduated in a different occupation than the one they are employed in. ‘Fachschulen’ and ‘Meisterprüfung’ (master craftsman certificate) constitute a fourth category of post-secondary non-tertiary education which requires completed vocational training. Graduates acquire the right to run their own craft business or the qualification for a leading position in industry and other areas.

The dual apprenticeship system has its largest importance in manufacturing and traditional service occupations. Bank and insurance clerks differ in so far as those who combine apprenticeship with an ‘Abitur’ outnumber the ones without (25 percent of all workers as opposed to five and six percent of metal and electrical workers, respectively). Secondary training is also strongly pronounced in health-related and social occupations, however, with larger shares of school-based forms. Both, workplace and school-based training are significantly less relevant in the rest of the services. As expected, the low-skill segment (cleaning, hotels and restaurants) provides a large proportion of jobs that are suitable for workers not trained in these occupations. In high-end services (and engineering) training is crowded out by university education, concerning for example around 40 percent of all employees in creative industries and consulting. The overall image is confirmed if workers are asked which skill level is required for the position they currently hold (figure 3).

**Figure 3: Required Degree in Selected Occupations, 2007**

To sum up, the quantitative analysis of skill profiles revealed a clear divide along the expected lines. In terms of skill levels and specificity, manufacturing and some traditional services appear to be still compatible with the typical German employment system. “New” services, however, are characterized by a diverging logic, depending either on individualized human capital formation or unskilled labor.

## Job Tenure

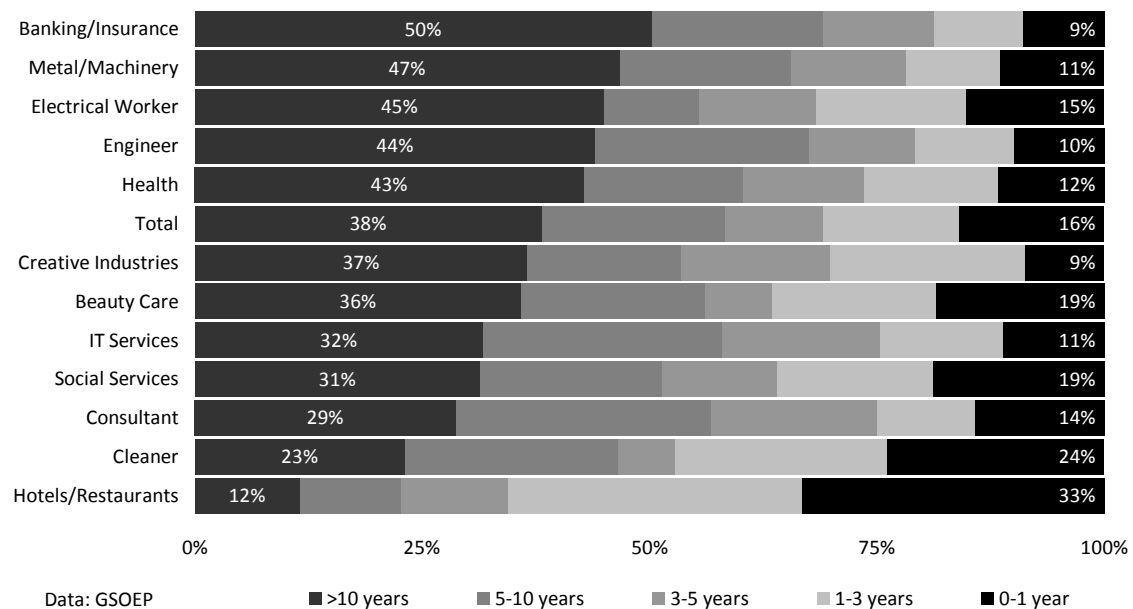
As pointed out above, the time spent with one employer is a crucial difference between diverging capitalist models as it is strongly related to patterns in innovation and the type of comparative advantage in production. But as figure 4 illustrates, there are also large sectoral differences within one economy in regard to job tenure.

It comes as no surprise that most occupations characterized by a rather high degree of specificity also have a large share of long-term employment relationships (defined as more than ten years of tenure). This is true for financial intermediation (50 percent), manufacturing (about 45 percent), and for health services (43 percent). Somewhat puzzling is the different composition of tenure intervals for engineers and consultants which have quite similar skill profiles (figure 1 to 3). A possible explanation is that engineers, even with high general employability after tertiary education, tend to stay with one employer as the industry’s organization (with compressed wages and good career prospects in internal labor markets)

disfavors ‘job hopping’. Contrary to employers in manufacturing, who are interested in stability, large consulting firms deliberately encourage high turnover. Following the ‘up-or-out principle’, employees in an early career stage have to prove their capability in work intensive projects. Performance is tightly monitored and, if agreed-upon objectives are not achieved, employment is terminated quickly. The resulting high turnover serves the interest of the firm since it provides a mechanism to select the most capable personnel and secures the inflow of highly motivated workers for the demanding project work. Former employees frequently change to potential customers and thereby contribute to a valuable network for customer acquisition. At the same time, this model is quite attractive to employees as the work experience in changing projects is of very general nature and contributes to external employability. Therefore, work in a prestigious consulting firm (even if it is short) is considered a stepping stone to excellent business jobs (Rudolph/Rothe 2007).

On the basis of the results presented in figure 4, one has to conclude that there are considerable differences between occupations in terms of turnover - with service occupations showing a general tendency towards more dynamism. Such a pattern is strongly pronounced in the low-productivity services such as cleaning and restaurants which both feature high shares of workers with extremely low tenure. Besides the seasonal bias in the latter case, this is to be explained by a limited willingness of employers to maintain low-educated staff across cyclical downturns and by defection from labor market institutions that secure stable employment.

**Figure 4: Job Tenure Intervals in Selected Occupations, 2007**



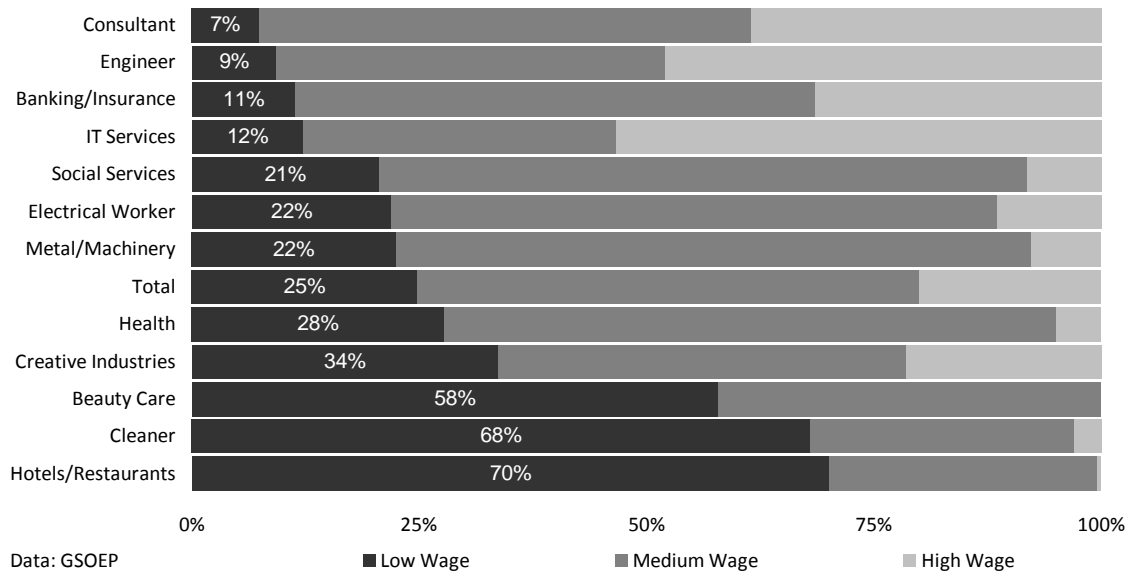
## Wage structure

The low dispersion of wages, buttressed by coordinated wage setting, is another hallmark of the traditional German model. However, in the past decades there has been a constant decline of union membership and bargaining coverage with structural change being a major explanatory factor (Addison et al. 2007). Accordingly, the scope of collective agreements and the reliance on cheap labor differs largely across sectors. This is illustrated by figures for West Germany from 2007: while in financial intermediation only 10 percent of all employees were not covered by an agreement, this applied to 25 percent in metal-working, 47 percent in trade and 57 percent in business-related services (Ellguth/Kohaut 2008). The reason for this divergence can be found in adverse conditions for trade union activities that characterize many service industries: a large share of small enterprises (which generally exhibit a lower coverage in Germany), a heterogeneous composition of the workforce, non-standard forms of work organization (e.g. freelance) and dynamic employment patterns. As a result, unionization is markedly higher in manufacturing than in the service sector (Dølvik/Waddington 2005). The institutional diversity is mirrored in considerable differences across industries when it comes to wage compression. After Germany has been one of the least unequal economies of the world until the mid-nineties, the past fifteen years witnessed a drastic change in this respect. One reason for this development is the expansion of low-paid work which also goes back to the politically promoted growth of a secondary tier in the labor market (Rueda/King 2008, Bosch/Kalina 2008).

Figure 5 presents a measure for the distribution of wages, i.e. the incidence of low and high-pay<sup>3</sup>. While the data partly reflects skill levels (since university graduates in engineering evidently tend to earn higher wages), it also reveals differences between the familiar clusters. A rather homogenous distribution with a big fraction of medium-wage earners can be observed in the group with classic services and manufacturing (between 60 and 70 percent). The egalitarian wage structure in health and social services expresses a traditionally high share of employment in the public sector or in publicly funded welfare institutions following the public sector's remuneration policy. However, the figures do not capture the total share of low-paid work in these industries, as outsourcing has drastically reduced the statistical weight of simple activities. For instance, many hospitals have contracted out auxiliary services such as cleaning, cafeterias, or laundry (Jaehrling 2008).

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<sup>3</sup> Low-pay is commonly understood as a wage that lies below a threshold of 67 percent of the median. High wages are defined as lying above the 150 percent median level. To avoid a part-time bias, figures refer to (gross) hourly wages.

**Figure 5: Wage Structure in Selected Occupations, 2007**

An example of a rather polarized wage structure is given by the IT sector. Here, medium wages only account for 33 percent whereas high-wage earners make up more than 50 and low-wage earners 12 percent. To a lesser extent this applies to the creative sector, too. Despite rather high skill levels, low pay is a widespread phenomenon, but at the same time there is a considerable group with high earnings (21 percent).

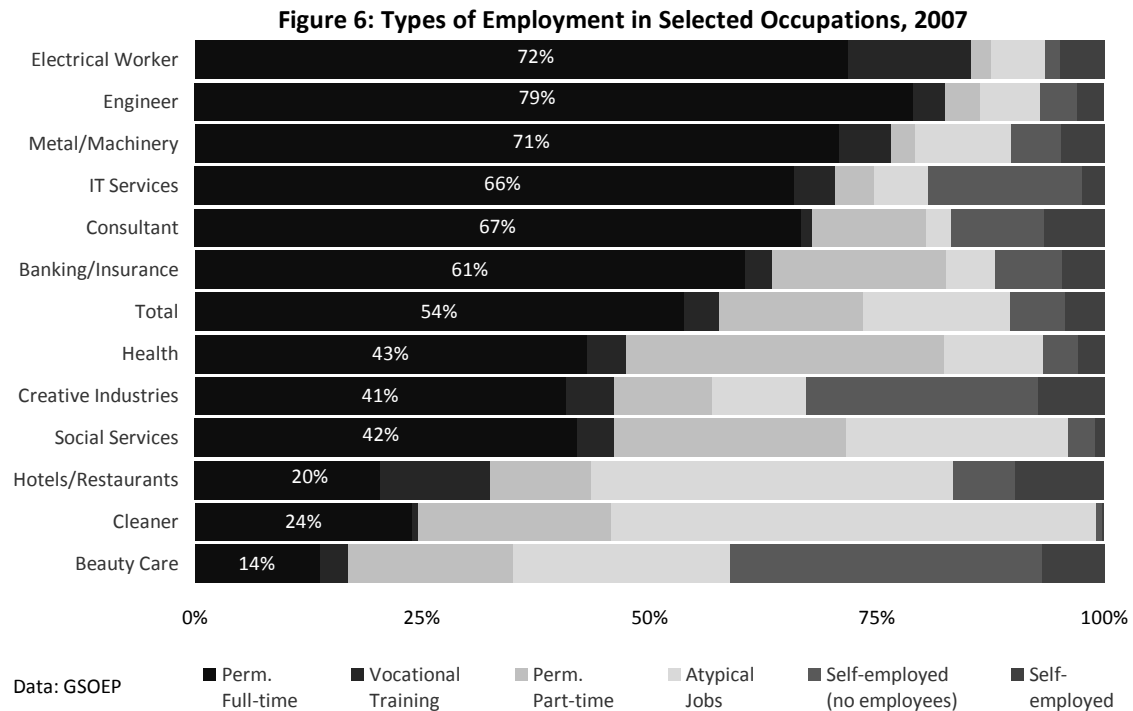
Three occupations stand out in terms of low pay, which first of all is to be explained by low productivity: beauty care, cleaning and hotels and restaurants. Pay in cleaning corresponds to earnings equality (due to outsourcing) in the health sector, since cost pressure for contractors is translated into low wages. Although there is a statutory minimum wage for cleaners (7,87 € per hour gross in the West and 6,36 € in the East), it lies below the threshold applied in figure 5.

## Types of Employment

In Germany, permanent full-time workers traditionally have a privileged status. Such an employment contract provides relatively high job stability, generous provisions in terms of holidays and working-time, access to earning-related social insurance benefits, and - in many occupations - collectively defined minimum wages. Above, we explained why this institutional arrangement, usually referred to as the “Normalarbeitsverhältnis” (Mückenberger 1985), contributes to the comparative advantage of diversified quality production. However, it should have become clear that this only applies to some parts of the service economy. Employers that do not depend on certain skills and a long-term employment

relationship should be reluctant to accept the high costs a permanent contract implies. Thus, entrepreneurs that are interested in a comparative advantage untypical for CMEs (price-competitiveness or radical innovation) can be expected to defect from standard employment (Herrmann 2008).

Over the past years, there has been a massive expansion of legal opportunities for such defection in Germany. This comprises the liberalization of agency work, temporary contracts and marginal jobs (Eichhorst/Marx 2009). These types of employment provide more external flexibility (as dismissal protection is circumvented) or are simply cheaper (as social insurance contributions are reduced). Another form of non-standard work is self-employment. Although not necessarily ‘precarious’, self-employment (and especially freelance) is a way to shift entrepreneurial risks directly onto workers. This problem is exacerbated by limited social protection of freelancers. As opposed to universalism in Scandinavia, there is only selective access for some occupational groups to social insurance in Germany (Schulze Buschoff 2007).



In accordance with the theoretical considerations the industries analyzed show a strongly varying incidence of standard and non-standard work (figure 6). As expected, the three occupations representing manufacturing are ranked in the top when it comes to the share of permanent full-time contracts. A typical pattern for this sector is the combination of a stable core workforce with a marginal group of agency workers who provide the external flexibility to cope with production peaks (Hohendanner/Bellmann 2006), but also act as a secondary tier of cheap labor. For occupations in manufacturing this can not be analyzed in our sample as the

group of atypical workers (fixed-term contracts, temporary agency work, marginal jobs and internships) is too small for further decomposition. The share of atypical jobs is even smaller in the high-skill service segment, however, with a larger proportion of part-time and / or self-employment. In the IT sector, a considerable part of the workforce (17 percent) is self-employed without employees. If permanent part-time is considered as regular work in a broader sense, health services (35 percent) and to a lesser extent social services (26 percent) move up in the ranking.

Low-skill service jobs differ significantly from the rest of the sample. Here, standard employment plays a comparatively small role while atypical jobs are widespread. In hotels and restaurants, only one fifth of the workforce holds a standard job compared to 25 percent marginal and 40 percent total atypical employment. Again, the figures possibly even underestimate the real incidence of non-standard work due to outsourcing of simple tasks like room-keeping. Additionally, in small hotels apprentices (with a surprisingly high share of 12 percent) are often not trained to stay within the company but serve as a source of cheap labor (Wagner 2004). In cleaning, where the majority holds atypical jobs, the situation is even more extreme. Here, marginal employment alone accounts for 44 percent of the workforce. Only a minority of hairdressers and cosmeticians works in permanent full-time jobs while the share of self-employed (predominantly without employees) exceeds 40 percent and is the highest in the sample.

The group of occupations characterized as creative industries is special in so far as it combines high skill levels with a low incidence of regular employment. Much work in this field is carried out by self-employed without staff (25 percent), possibly because the very specialized services offered are hardly compatible with dependent employment (such as artistic ones) or because competition for limited jobs is tough (e.g. journalism). The resulting employment pattern is paradigmatic for the changing nature of work in new service occupations where employees are increasingly exposed to short-term market pressures. One frequently reported consequence is the flexibilization of working time, including extensive night and weekend work. As we could show, the dispersion of earnings among 'creatives' is relatively high. Finally, the self-employed status implies the need for private social protection - but for groups with low and volatile incomes (e.g. artists) this is difficult to fund at an appropriate level (Mundelius 2009).

Table 3 summarizes some core features of the analyzed occupations. It points to marked difference with regard to the female share in the sub-segments ranging from 6 to 12 percent in manufacturing occupations (which exhibited above-the-average pay, tenure and standard employment shares) to more than 80 percent in beauty care, health and social services as well as cleaning. These occupations tend to have larger shares of employees with low wages, non-standard jobs and low tenure. The prominent role of public employment reduces the low-pay risk in health and social services, however.

**Table 3: Female, Public and Standard Employment, Average Tenure and Low-Wage Share by Occupation, 2007**

	Share of female employment in %	Share of public employment in %	Average tenure in years	Share of permanent full-time workers in %	Low-pay share in %
Beauty Care	90	2	8,2	14	58
Health	88	37	10,4	43	28
Social Services	84	57	8,2	42	21
Cleaner	82	23	6,1	24	68
Hotels/Restaurants	76	5	4,0	20	70
Creative Industries	63	24	9,0	41	34
Consultant	51	10	8,6	67	7
Total	49	25	10,0	54	25
Banks/Insurances	46	25	12,4	61	11
IT Services	23	11	8,6	66	12
Engineer	23	16	11,1	79	9
Metal/Machinery	12	6	11,3	71	22
Electrical Worker	6	9	11,1	72	22

Source: GSOEP.

**Conclusion: The Dualized Logic of Service Sector Employment**

Analyzing sub-sectors of private services in Germany reveals a threefold structure: a) traditional medium-skill services, b) high-skill services and c) low-skill services.

The first group basically applies the logic of the standard employment relationship. This is based on long tenure, high collective bargaining coverage and a large share of full-time and part-time open-ended contracts for employees with a dual apprenticeship or a higher degree. Thus, the sector is modeled quite similar to manufacturing so that wage compression is rather high. It is, however, not particularly dynamic with regard to its share in overall service employment and may even decline in the aftermath of the current crisis. In sectors such as banking, higher automation and stronger competition by foreign companies may result in a declining share in total service employment and a less standardized structure of jobs.

Both segments of the service economy that show stronger job creation dynamism are much less oriented towards vocational training and standard employment. On the one hand, new high-skill services tend to require high professional skills and a large share of labor with a tertiary degree. Vocational training is of rather limited importance in these sectors and mostly restricted to routine tasks such as business administration although recent years saw the creation of new apprenticeship courses designed to catch up with the dynamic development in this sector. With the consolidation of the IT business, for example, the vocational training share



tends to increase. With respect to employment conditions, the media and creative jobs as well as IT are characterized by a rather low share of standard employment relationships and a notable share of very small firms, self-employed without employees (freelancers), interns and trainees. This also means a low coverage by collective agreements, shorter tenure and a wider dispersion of wages and income. While some self-employed and employees in IT, advertising, media and creative professions have earnings significantly above the average, there is also a notable group with low income – in particular if self-employed in media and other creative or artistic areas are concerned. Individual labor market and earnings potentials depend heavily on individual reputation and employability, i.e. the capacity to cope with a dynamic and volatile environment characterized by project work. This requires in particular social skills, networks and continuous adult learning. Public employment, if it exists in these areas, plays a peculiar role. First, it is associated with relatively high and stable remuneration (Mundelius 2009). Second, public sector jobs in cultural activities and education show a marked cleavage between open-ended contracts with long tenure on the one hand and a high share of fixed-term employment on the other. For the latter there is a tendency to have chains of temporary contracts so that the transition to a standard job appears rather difficult. Hence, a high level of general skills often acquired via tertiary education coincides with a rather polarized structure of employment.

Besides IT, media and other creative activities, the most dynamic part of service sector employment is the wide range of personal and social services. Leaving public employment apart, one can observe a growing segment of private services with lower skills requirements, low bargaining coverage and correspondingly a larger share of low pay. One segment of labor-intensive private services therefore exhibits a low-skill/low-pay equilibrium. This holds for example for call centers, cleaning, hotels and restaurants. These are occupations where part-time, marginal employment (Minijobs), but also temporary agency work feature prominently. If collective agreements exist, they usually provide only low minimum pay levels for some employees. Minijobs, due to the gross for net principle applied for earnings up to 400 EUR per month, are associated with lower hourly wages as are jobs held by working unemployed who rely on means-tested in-work benefits. Hence, public regulations opened up a low-wage segment of service workers. Here, employment tends to be more volatile than in other services. With respect to the qualification requirements, these sectors tend to recruit staff with less than upper secondary education. They also exhibit a larger share of employees qualified for other occupations or (re)entering the labor market after phases of unemployment or inactivity. Training is basically limited to short, often firm- or task-specific ad-hoc courses and further informal learning on the job.

The comparative sectoral analysis confirms the criticism that institutional heterogeneity within economies is larger than suggested by the VoC literature. Manufacturing and services essentially differ in terms of skill needs and work organization. As the ideal-type comparative advantage of diversified quality

production obviously does not apply to the most dynamic parts of the service economy, it is not surprising that these segments developed beyond the established institutional framework of the German production and employment model. Given specific features of work in the service sector, these jobs could only be created outside of the institutional corset of the core of the German labor market. This holds for public regulatory provisions such as dismissal protection, social insurance as well as for areas regulated by collective agreements, in particular wages and working time. An important prerequisite for this development has been the creation of flexible employment opportunities that allow for the defection from traditional institutions. The liberalization of fixed-term contracts, agency work, Minijobs, and eased access to self-employment facilitated the emergence of a dynamic private service sector. This came at the price of a more heterogeneous institutional environment and growing inequality in the German labor market.

**Table 4: Interactions between training, employment and labor market institutions**

	<b>Manufac- turing</b>	<b>Traditional services</b>	<b>New high-skill services</b>	<b>New low-skill services</b>
<b>Main examples</b>	Metal working, engineering	banking, insurance, public administration	IT, media, creative economy	Cleaning, call centers, agency work
<b>Skills formation</b>	Sectoral/firm-specific		General, professional skills, often tertiary education	Rather ad hoc, general
<b>Vocational training share</b>	High		Low (except for routine/administrative tasks + increasing after consolidation of the sector)	
<b>Lifelong learning</b>	Rather limited		Personal investment in employability	Rather informal, on the job
<b>Employment protection</b>	Core element, large share of open ended contracts after apprenticeship		Limited applicability	
<b>Tenure</b>	Rather high		Rather low, pool of self-employed	Rather low
<b>Wage setting</b>	Mainly through elaborated sectoral collective agreements		Individual contracts, some basic sectoral agreements	
<b>Wage dispersion</b>	compressed		Rather high, volatile	Rather high
<b>Share of atypical jobs</b>	Low		High (fixed-term jobs, interns, trainees, free lancers)	High (often part-time, Minijobs, fixed-term)
<b>Mode of flexibility</b>	Mainly internal		Mainly external	
<b>Employment regime</b>	Dual apprentice ship model in manufacturing and traditional services		Dualized dynamic private services with either high or low general skills	

## Outlook

The changing structure of the German economy with the long-term shift from employment in manufacturing to service sector jobs has a direct and fundamental impact on the employment system and the character of work. Given the strong expansion of new segments of services, the range of the standard employment relationship and vocational training which were typical for the German CME shrinks and gives way to a more polarized and liberal employment regime. This is characterized by stronger emphasis on external flexibility, general skills and a more dispersed wage structure due to the dualism between high skill and low skill services and a heavy reliance on flexible jobs and wages not set by collective bargaining. Established patterns of qualification and work are less relevant in this realm as job creation mainly occurs outside of the traditional regulatory environment. The more these sectors grow, the less the classical employment regime with dual apprenticeships will be representative for the whole of the German labor market. An important implication of our analysis, therefore, is that in coordinated market economies the increasing share of private services can foster a gradual transition towards a more liberal model.

The process of change described in this paper very much resembles what Streeck and Thelen (2005) have called “differential growth” and “layering”. With respect to the foreseeable future we can expect a further decline or stagnation of industry-like traditional services and a continuous expansion of new services both at the top and the bottom of the wage and income distribution but also in terms of employment and income security. This trend is intact even in the current crisis – and, in fact, the crisis may even accelerate structural change which will be associated with a stronger polarization of working conditions. Given the low bargaining coverage and the limited presence of trade union in both the high skilled and the low skilled private services, it comes as no surprise that calls for binding minimum wages in private services either by way of a general statutory minimum wage or an extension of collectively agreed wages have become stronger recently. In the area of social policy, reliance on minimum income protection is likely to become more important as self-employed, but also flexible workers are either not covered by social insurance or lack substantial unemployment benefit or pension entitlements due to interrupted careers or phases of low income. This generates the need to make social protection more mobility-friendly and more uniform across different types of employment. This will certainly be associated with stronger reliance on tax-funded and means-tested schemes. However, overly strict re-regulation of the flexible, but dynamic segments of the service sector would destroy their job creation potential. Appropriate forms of protection should be designed cautiously in order not to undermine the basic dynamics of these occupations. Hence, there will either be more heterogeneous jobs or only few jobs.

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