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Abstract

In the Employment Guidelines for the year 2000, the European Commission stressed the need to develop a policy framework in order to fully exploit the employment potential of the service sector. This concern is especially related to Germany for its massive service gap compared to Anglo-Saxon (United States, United Kingdom) and Scandinavian countries (Denmark, Sweden) in general, and in personal and business services in particular. The focus of this study is to understand the theoretical basis of the dynamic of employment growth in services and to identify especially the determinants that foster the growth of business services and the creation of jobs in personal services in Germany. The paper starts therefore with an extensive literature review on service employment with a particular focus on business and personal services and on the German debate.

For the empirical analysis, the study uses the variations in the structure and dynamics of employment in 11 agglomerated areas in West-Germany in the period of 1977 to 1998. As far as *business services* are concerned, the empirical analysis supports the concept of the interactive nature of knowledge intensive sector within business services and knowledge intensive manufacturing industries. A corollary feature is the strong correlation between the skill level of the regional labour force and regional employment growth, especially related to export-oriented services and business services. Knowledge intensive business services are still concentrated in the agglomerated areas. On the other hand, large-scale internal labour markets in manufacturing, located so far mostly in metropolitan areas, are transformed into network labour markets. In concordance with the location theory, we find a consistent pattern of relative employment losses in agglomerated areas due to a weakening of centripetal forces (linkages, thick markets, knowledge spillovers and other pure externalities) and a strengthening of centrifugal forces (increasing prices of immobile factors, land rent and commuting, congestion and other diseconomies).

As far as *personal services* are concerned, the study confirms the argument that the service society provides a path for women into the system of gainful labour market work. This changes the form in which the female labour potential is organised but hardly the content. Thus, regions with high share of personal or social services have a higher female labour force participation and vice versa. Demand for personal services rises with qualification, especially with the skill level of women. Thus, we find higher service employment rates in regions with high skill levels, a pattern that correlates with agglomeration since the skill and income level in these regions is higher than in rural areas.

The paper argues that one of the most important determinants of successful adjustment to 'globalisation' are information and communication networks. They are the crucial levers to enhance productivity in business services and knowledge intensive industries with likely spill-over to personal services. The reason is that information networks increase their efficiency with rising numbers of participants, probably exponentially. The existence and public support of such networks explains regional differences. Overall, the results justify the extension of the "industrial-district" to the *"service-industrial-district"* hypothesis.

Zusammenfassung

In den beschäftigungspolitischen Leitlinien der Europäischen Kommission für 2000 wird die Notwendigkeit zur Schaffung politischer Rahmenbedingungen für die volle Ausschöpfung des Beschäftigungspotentials des Dienstleistungssektors hervorgehoben. Gerade für Deutschland, wo im Vergleich zu den Vereinigten Staaten und Großbritannien, aber auch im Vergleich zu skandinavischen Staaten wie Dänemark und Schweden, eine erhebliche Dienstleistungslücke herrscht, ist diese Einschätzung der Europäischen Kommission von großer Relevanz. Die Dienstleistungslücke betrifft insbesondere die Bereiche der unternehmens- und personennahen Dienstleistungen. Im Zentrum der Studie stehen die theoretischen Grundlagen der Beschäftigungsdynamik im Dienstleistungssektor und die Identifizierung jener Faktoren, die speziell das Wachstum unternehmensnaher Dienstleistungen und die Arbeitsplatzschaffung im Bereich personennaher Dienstleistungen fördern. Die Studie beginnt deshalb mit einem ausführlichen Literaturüberblick zur Dienstleistungsbeschäftigung mit Schwerpunkt auf die deutsche Debatte.

Die empirische Analyse basiert auf dem Vergleich der Beschäftigtenstruktur und -dynamik von 11 Ballungsregionen in Westdeutschland im Zeitraum von 1977 bis 1998. Bezogen auf *unternehmensnahe Dienstleistungen* wird die These einer intensiven Interaktion zwischen wissensintensiven unternehmensnahen Dienstleistungen und wissensintensiven Industriezweigen gestützt. Charakteristisch ist der enge Zusammenhang zwischen regionaler Qualifikationsstruktur und regionalem Beschäftigungswachstum, speziell bezogen auf exportorientierte und unternehmensnahe Dienstleistungen. Ballungsregionen bzw. große funktional integrierte Arbeitsmärkte zeichnen sich immer noch durch eine hohe Konzentration wissensintensiver unternehmensnaher Dienstleistungen aus. Gleichzeitig sind in den dort angesiedelten Unternehmen Auslagerungsprozesse ehemals intern erbrachter Dienstleistungen zu verzeichnen, wodurch es zur Transformation unternehmensinterner Arbeitsmärkte in jetzt regionale Netzwerk-Arbeitsmärkte kommt. Im Durchschnitt aller Ballungsregionen fielen, in Übereinstimmung mit den Aussagen der (klassischen) Standorttheorie, die Beschäftigungsverluste höher aus als in den übrigen Regionen. Das heißt, die zentripetalen Kräfte, bestehend aus schnellen Kontaktmöglichkeiten, Marktnähe, Fühlungsvorteilen (‚know-how spillovers') und anderen (positiven) externen Effekten werden von zentrifugalen Kräften, bewirkt durch steigende Preise für Immobilien und Grundstücke, durch Pendeln, Verkehrsprobleme und ähnliches, zunehmend überlagert.

Bezogen auf *personennahe Dienstleistungen* stützen die Ergebnisse der Studie jenes Argument, wonach „Dienstleistungsgesellschaften" Frauen den Weg in das Erwerbssystem öffnen. Demzufolge wiesen Regionen mit einem hohen Anteil an personennahen und sozialen Dienstleistungen auch einen höheren Anteil von beschäftigten Frauen auf und umgekehrt. Die Nachfrage nach personennahen Dienstleistungen steigt mit der Qualifikation, insbesondere mit dem Ausbildungsniveau der Frauen. Folglich nimmt die Beschäftigungsquote in Dienstleistungen mit steigendem Qualifikationsniveau zu und korreliert mit den Ballungsräumen, in denen Qualifikations- und Einkommensniveau höher sind als in den übrigen, eher ländlich strukturierten Regionen.

Die Studie kommt zu dem Schluss, dass Informations- und Kommunikationsnetzwerke die wichtigsten Faktoren für eine erfolgreiche Anpassung an Globalisierungsprozesse darstellen. Derartige Netzwerke sind der entscheidende Hebel für die Produktivitätssteigerung in unternehmensnahen Dienstleistungen und wissensintensiven Industriezweigen. Ursache hierfür ist, dass der Effekt informeller Netzwerke mit steigender Teilnehmerzahl wächst, wahrscheinlich sogar exponentiell. Durch die Existenz und öffentliche Unterstützung derartiger Netzwerke finden regionale Unterschiede eine Erklärung. Insgesamt betrachtet rechtfertigen die Resultate eine Erweiterung der „industrial-district" zur „*service-industrial-district*"-Hypothese.

Content

1. The Determining Power of Regions for Job Creation

The objective of this study is a specific contribution to identify the determinants of employment in business services and personal services. As research strategy we use the variations in the structure and dynamics of regional employment within Germany in the period of 1977 to 1998. The observation of great differences in employment or unemployment performance at this level is not a German specificity; it can be found within other member states of the European Union as well as in the United States and Japan. The German case, however, is interesting for its massive service gap compared to Anglo-Saxon (United States, United Kingdom) and Scandinavian countries (Denmark, Sweden) in general, and in personal and business services in particular (Freeman and Schettkat 1999).

In neo-classical economics, the regional dimension plays no genuine role in the search for universal rules. In the new institutional economics, however, regions became at least instrumentally interesting as cases of variation to test hypotheses related to institutions of wage formation. A prominent case is the 'wage curve' which forecasts on the basis of bargaining theory or efficiency wage theory a persistent negative relationship between regional unemployment rates and wages. An elasticity of –0.1 was found and confirmed for several countries which means that a doubling of the regional unemployment rate leads to 10 percent lower average wages (Blanchflower and Oswald 1994). Although the 'iron law' of the wage curve is still contested (Blien 1996), the policy message is clear: If such regional unemployment equilibria exist, they can only be tackled by changing the institutional setting of regional actors. The likelihood of such disequilibria is confirmed by studies which show that inter-regional employment or unemployment variations can largely be explained by regional specific (i.e. cultural, institutional and political) factors.[1]

Comparative sociology, so far, relied almost completely on national regimes to explain differences in the performance of service employment. An example is the widely quoted typology of welfare state regimes by Esping-Andersen (1990) who relates job performance to the degree of commodification. National regimes with a high degree of commodification, which means the extent to which income security is directly linked to labour market participation (private or public) will have higher job performance than countries in which the state provides social security to certain status groups independent of market income. Since we find, nevertheless, enormous differences of job performance within the same national regimes, implementation of

[1] See, for example, de Kooning and Mosley 2000; Clark 1998; Miegel, Grünewald and Grüske 1991.

national regulatory frameworks or additional institutional factors must be taken into account to explain these variations.

There are, therefore, plausible reasons to start with two assumptions: First, the capacity of wages to regulate labour markets is restricted, either due to behavioural limits (e.g. in information, spatial mobility, competition) or due to social norms or objectives (e.g. fair wages, equal opportunity, minimum income guarantee). Second, there is relative autonomy of regional actors from framework conditions at the national level. This is not to deny the determination power of national institutional frameworks, but to exploit a neglected source of variation which gains increasing plausibility considering the globalisation process. This process favours or fosters network relations which operate between markets (wage regulation) and hierarchies (state regulation). They flourish usually in a specific regional context which is not restricted to national boundaries (Castells 1996, Genosko 1999).

The epistemological argument for these assumptions is based on the insight of evolutionary theory that formalised institutional rules always lag behind informal institutional arrangements (Boulding 1978). The same institutional rules or games can be played differently, depending on resources, capabilities, learning processes and cultures. Institutions are always both: effective barriers but also challenges to be overcome or circumvented. In addition, Germany is a Federal State in which the 16 'Länder' have not only their own cultural traditions but also considerable political discretion to shape their economic and social systems; especially education is subject to the 'Länderhoheit' (sovereignty), and social assistance (including often many long-term unemployed as clients) is under the genuine responsibility of the municipalities. Finally, the assumption is widespread that agglomerated areas, especially metropolitan cities, are heading the process of social and structural change; thus, drawing attention to these particular type of regions may provide hints about the future of work, especially service jobs (Sassen 1991).

Most of our empirical analysis, therefore, will concentrate on a systematic comparison of 'winners' and 'losers' among the 11 largest agglomerated areas in West-Germany. These regions are technically based on the aggregation of public employment service districts and constitute functionally integrated labour markets. They cover about 50 percent of the total employment population in West-Germany. Due to their very specific problems related to the reunification after 1989, East-German regions and Berlin were not included in this study. The non-agglomerated areas in West-Germany serve as a case of reference for the agglomerated areas.

The structure of the paper is organised as follows: We start from the obligatory 'classics' and develop hypotheses based on a review of recent literature on business and personal services (section 2); the hypotheses are then tested with German data and compared with results of other literature using regional variations (section 3); and finally the results are discussed and policy conclusions are drawn (section 4).

2. Theoretical Notes and Observations on the Service Gap

The notion of post-industrial society (Bell 1975) is linked to the "Three-Sector-Hypothesis" (Fourastié 1969 [1954]). It predicts an evolutionary process from employment in agriculture to manufacturing and finally to services. The driving forces in this theory are prices based on productivity and demand based on hierarchical needs. It is important to note here, that according to this theory – and against the mainstream of neo-classical economy – it is not supply and demand that drive that evolutionary process but social and technical innovation. Innovation induces growth in capital and labour productivity, a corresponding long-term decline of prices and therefore an increase in real income. Information and knowledge bring forward technical innovations first in the agricultural production, where prices fall and cause a saturation of needs and demand for 'higher' durable goods (Fourastié and Schneider 1989). Innovation shifts towards manufacturing, taylorist and fordist production increase productivity in this sector, prices fall and demand as well as employment increases until a relative degree of saturation is reached (so-called Verdoon's law). Demand, then, shifts towards 'higher' services. The further increasing purchasing power through (further) falling prices of primary and secondary goods can be used to buy services whose prices remain stagnant or even rise since productivity gains in this sector remain restricted.

According to Fourastié, service employment can rise as long as the motor of technological innovations drives further productivity gains in the primary and secondary sectors. Thus, the basic message for politicians was clear from this story: Induce and support technological innovation as far as possible so that society can afford to pay for services. Because Fourastié believed in technical progress, he optimistically predicted that at the end of the 20th century – which we just have passed – about 80 percent of the labour force would be employed in the tertiary sector, and only 10 percent in the primary (agriculture) and the secondary (industry) sector respectively. Compared with other speculations that often turned out to be crazy in a few years later, this prediction of almost 50 years ago fits quite well the reality and seems therefore well founded. However, there are three stylised facts that require reflection and fine tuning or revision of the theory. First, agricultural employment declined even faster and more drastically

than predicted; second, the reverse is true for manufacturing employment which is still at a double level as predicted, in some countries – notably in Germany – even more; and, third, service employment in some countries and in many regions could not compensate for the loss of jobs in the primary and secondary sectors so that mass unemployment there is persistent.

Before we turn to the special case of Germany, we briefly mention three strings of argument which temper Fourastié's optimism without going into details or into a critical discussion of these approaches. First, services can also – to some extent – be transformed through innovation into (secondary) manufactured goods plus self-servicing if one thinks of typewriters (now PC's), cars or washing machines (Gershuny 1983). Second, since self-servicing and consumption of services require time, and since individual time budgets are chronically restricted, expectations of job miracles in services should be bashed (Scharpf 1990). Third, there is the well-known theory of cost-disease which predicts that – due to the impossibility of productivity gains and due to the link of service wages to secondary wages – prices of many highly valued services, especially cultural and personal services, will rise to such an extent that many people cannot afford any longer to buy these services (Baumol 1967).[2]

Why, now, is there a service gap in Germany? And which (further) theories can help us to understand the deviations from the core prediction of Fourastié? The following deliberation about these questions will concentrate on the recent German debate.

2.1 The Service Gap I: The Case of Personal Services in Germany

In international comparison, three stylised employment regimes can be distinguished (Schmid 1992, 1993): *First*, regimes in which wages are paid in accordance with productivity or market value; that is, high-productivity jobs pay accordingly higher wages, while low-productivity jobs (especially in the service sector) pay accordingly lower wages; targeted welfare payments or kinds of negative income taxes provide social protection at the last resort. This is the Anglo-Saxon model in which private (tertiary) service jobs compensate for the loss of manufacturing (secondary) jobs. *Second*, regimes in which every job should guarantee a socially adequate income; in the private sphere, this guarantee is implemented by minimum wages or family components of wages; jobs in the social sphere are created by the state and financed from tax revenue or other contributions. This is the Scandinavian model in which public service

[2] See Tronti et al. 2000 for an extensive discussion and critic of this theory.

jobs take over the compensatory function for the historic decline of the secondary sector. *Third*, regimes in which new jobs with low productivity (especially in the service sector) are not subsidised due to a high skill, high productivity and corresponding high wages strategy on the one hand, and non-interventionist employment policy on the other hand. Low skill, less productive tasks are left largely to the informal sector or private households to supply society with these services. Germany comes close to this model. It 'combines […] the weaknesses of the American and the Swedish models. We have almost as few workers in private services as Sweden and exactly as few workers in the public sector as the United States' (Zukunftskommission 1998, p. 242).

2.1.1 Doubts about the Empirical Evidence of the Service Gap

Empirical estimates concerning the size of the service gap vary, in some cases considerably, depending on the approach chosen (whether sectoral or functional) and the classification and measuring method applied. Some authors use potential values derived from 'U.S. structures' to determine the size of the service gap. Klös (1997) arrived at an employment potential totalling 6.8 million jobs on the basis of job density in the tertiary sector (persons in employment per 1,000 inhabitants). Following 'U.S. structures', 3.8 million of these jobs (distributive and household-related services) would be suitable for the so-called low skilled. The employment gap resulting from the *minimum wage* is somewhere in the region of 4.7 to 9.5 million, according to Klös, jobs that by definition would largely be on offer to low-skilled workers. Sesselmeier et al. (1996), on the other hand (but likewise basing their calculations on the employment structure in the United States), identified an employment potential of 2.8 million in Germany's 'low-wage sector'.

Haisken-DeNew et al. (1996), by contrast, challenge the existence of a *quantitative* service gap on the basis of the share of services in total employment. Cornetz and Schäfer (1998), using the same micro-data sources as Haisken-DeNew et al. (USA: Current Population Survey; Germany: Socio-Economic Panel) but a modified approach, arrived at a different result. The Otto-Blume-Institute in Cologne and the German Institute for Economy in Berlin (Schupp et al. 1997) hint to the underreporting of marginal jobs below the 630 DM threshold ('geringfügige Beschäftigung' not liable to social security contributions). They argue that a proper account of these (mostly) low-wage jobs would largely close the gap between the U.S. and Germany.[3] On the other

[3] In fact, the recent official adjustment of employment figures by the Federal Agency of Statistics (Statistisches Bundesamt) added about 2 million more employees (from a reported 34 million to 36 million, i.e. an increase of about 6 %!), mostly related to a more precise account of marginal jobs.

hand it is clear that such a threshold creates disincentives for employers to hire people in the range between this threshold and jobs with the full social security threshold which is at 15 hours regular weekly working time with an average monthly gross wage of about 1,200 Mark. Regular part-time jobs between the 630 Mark threshold and 15 hours, practically between 10 and 15 hours, are heavily underrepresented.[4]

2.1.2 Under-developed Household-related Services

The German discussion about the insufficiently tapped employment potential of personal services is focusing on 'potentials for new services geared towards demand from private households' (Weinkopf 1999, p. 195). According to the literature, this potential consists in particular of *household-related* services (Albach 1989) or *domestic* services (Europäische Kommission 1995), which are understood to include both material services or housekeeping – such as shopping, preparation of meals, care of clothing and living quarters – and personal services, in so far as the latter are related to the supervision and care of persons living in the household or who are associated with the family.[5] Given that these activities have been carried out to date largely in the form of (unpaid) *housework* (Meyer 1997), the hope that new employment potentials can be tapped is based on the assumption of increasing efficiency through the commercialisation and professionalisation of this informal housework (Kommission 1997). The European Commission (Europäische Kommission 1995) traces the (assumed) willingness to replace housework by external market-conforming services back to structural changes in society: to the ageing of the population, the increased labour force participation of women, the reductions in working time, the higher levels of education, and to urbanisation. These 'elementary activities' (SOFI 1999) or

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[4] See the box about the so-called 630 Mark jobs in Germany in Appendix 1.

[5] The classification 'household-*related* services' is not used consistently in the literature. In order to distinguish such services from enterprise-related services, all services availed of by private individuals are categorised either as household-related (Albach 1989) or as personal services (Schettkat 1996). Häußermann and Siebel (1995) differentiate between household-related services, personal services and consumer-oriented services. The European Commission (Europäische Kommission 1995) subsumes domestic services (in addition to childcare, new information and communications services, assistance for young people in difficulties and integration services) under the generic term 'services for daily life'. Given that it is impossible to clearly differentiate household-related services on the basis of the official statistics, the areas of trade, hotels and restaurants, the public service, and social and personal services, for example (according to the OECD Labour Force Statistics), are classified as *services that benefit domestic turnover* (cf. Zukunftskommission 1998).

'elementary services' (Kommission 1997) are believed to constitute the potential jobs for the low skilled (Klös 1997; Zukunftskommission 1998).[6]

Another aspect of the current debate concerns the term 'services or service areas that are *associated with the household*' (Deitelhoff 1999; Evers 1999). This aspect is linked to concepts favouring a return of employment policy to the communal level (SOFI 1999) or the exploitation of the local dimensions to development and employment (Europäische Kommission 1995). The types of enterprise and employment discussed in this context range from 'household-related small businesses' and 'private households as service enterprises' (Albach 1989) through local employment initiatives – understood as sponsors of 'strategies for new household-related services and provisions that have a community orientation, are business entities and seek to satisfy individual needs' (Evers 1999, p. 108) – to an employment sector called 'services for private households' which is liable for social insurance contributions (Weinkopf 1996, 1997).

Gries and Birk (1999), on the other hand, trace the service gap back to the employment deficit in Germany in the financial sector compared to the U.S. and find no particular development shortfalls in the 'low-wage sector' or in personal services. The ifo-institute in Munich comes also to the conclusion that the R&D-activities in service specific information technologies (for management, administration, design, financing and marketing) are very weak in Germany (Faust et al. 1999). They stress, however, also the point that the 'tertiarisation' of German manufacturing industries is far more proceeded as official statistics seems to show. These observations are worthwhile to be examined more closely now in theoretical terms.

2.2 The Service Gap II: The Case of Business Services in Germany

Business services[7], in very general terms, are services that enterprises carry out (primarily) for other enterprises. The current debate is focused – not only in Germany – on so-called knowledge-intensive services (software and data-processing, financial services, legal, economic and technical consulting, advertising and marketing). The

[6] Because the current employment policy proposals concerning exploitation of the employment potential of services are related almost exclusively to this area, these concepts in particular will be presented in the following.

[7] Other terms in the literature are „producer services" or "production oriented services", and in the German literature „unternehmensnahe Dienstleistungen" or „produktionsorientierte Dienstleistungen". In a more narrow sense, production oriented services relate only to services for business in manufacturing (tangible) products. In the following, however, we use the more general term including services to businesses in the service sector, e.g. advertisement for banks or private insurance companies.

conceptual basis for the term "knowledge-intensive" is the assumption that the "codification of theoretical knowledge" (Bell 1999, p. XXXIX) is the essential distinguishing feature of "post-industrial society". The starting point for inventions, innovations and their diffusion (with positive employment effects) is not empirically inductive, but theoretically deductive knowledge. In other word, a significant feature of the path leading to a (theory-based) knowledge society will be interaction, or innovative milieus, between knowledge-intensive services and knowledge-intensive industrial sectors.[8]

Estimates regarding the employment effects of an expansion in business or producer services vary considerably. While researchers looking at the USA (Hummel 1999) speak of a hugely untapped employment potential, others (Baethge 1999) point to the large potential for rationalisation in information and communications technologies (in connection with their continued expansion) and in modern services (by virtue of their increasing geographical autonomy and tradability). Moreover, the employment trends within the business-service sector are by no means found to be identical. Employment is rising in some branches while it falls in others (SOFI 1999). Overall, the growth of business services has a much wider margin of fluctuation than that of the manufacturing sector. Kaiser and Voß (1999) suspect, in the light of the continuing significance of personnel costs, that service firms offering business services react (and can react) more flexibly to demand fluctuations because the costs of high personnel fluctuation are lower for them than for industrial enterprises, where there is a higher degree of regulation. According to Licht et al. (1997), most business-service firms in Germany nonetheless expect positive employment trends in the coming years, or at least they plan to employ more personnel. However, the positive expectations for employment expressly exclude workers without a vocational qualification. What are the driving forces which foster business services?

2.2.1 Interaction Between Employment in Industry and in Business Services

Proponents of the *supply theory* believe that the growth of the service sector is the result of increasing competitive pressure forcing industrial enterprises to offer high-quality products, into which increasingly diverse services then flow (development, design, marketing, customer support, etc.). The traditional value-added chain is seen to be turning into a value-added alliance: because few enterprises today are able to efficiently carry out all value-added activities, the importance of a value-added alliance or co-

[8] In operative terms, we will measure "knowledge-intensive industries" later on by an above-average share of employees with an academic qualification and/or above-average expenditure on product and process innovation (see chapter 3).

operative value-added systems (networks) is increasing. The result is that fewer value-added operations are being carried out in enterprises, and processes are being outsourced because they can be accomplished by specialised service firms with better know-how and at a lower cost. The decision as to which services can be provided internally and which bought on the market (or rather, which services are outsourced) depends on the costs ensuing for the enterprise. The advantages of external services are not only the expertise and the higher degree of flexibility offered by private service firms, but also the fact that enterprises that purchase external services are not subject, in this case, to regulations regarding dismissal, working time and co-determination. The competitive pressure of external suppliers, in addition, might reduces prices without affecting quality. All this taken together reduces the cost of the person-hours for external compared to internal services. The proponents of this approach logically conclude that the relatively low diffusion of services in the Federal Republic of Germany, compared to the USA, for example, is due to the high degree of regulation (for instance under labour law), which also applies to the service sector characterised by a majority of small and medium sized enterprises. The strong dynamic observed nonetheless in business services is due to the existence of a functioning market in this sector (Albach 1989b), which would thrive even more, according to the supply theorists, if there were further deregulation.

There is disagreement in the discussion as to whether the process of outsourcing influences employment trends and as to whether failure to outsource results in a competitive disadvantage on international markets. One reason is that the shortcomings of current statistical data on business services prevent quantitatively accurate conclusions. According to Schimmelpfennig (1999), utilisation of internal services in the manufacturing sector actually increased between 1984 and 1995, outsourcing notwithstanding. This corresponds with an American study of the 1970's and 1980's showing that outsourcing or "the unbundling explanation accounts for a very small portion of the recent employment growth of producer services industries" (Tschetter 1987:31). This study explained the bulk of the growth dynamics in business services by new services related to changes in final demand and to changes in production due to new information technologies. So, if outsourcing occurs, it is related to new services rather than to internal restructuring that would largely turn out as a zero sum game in terms of employment.

For Häußermann and Siebel (1995), sectoral tertiarisation (due to outsourcing) is to an extent no more than a statistical artefact; thus, differences in the sectoral structure of employment should not necessarily be interpreted as an indication that services are less important. By contrast, Strambach (1997) believes that the lower degree of outsourcing is evidence of an institutional weakness in the German economic model: spin-off

processes require greater individual economic efficiency in the now independent service firms, while at the same time they increase efficiency in the enterprises that have divested (theory of interaction). The interaction theory expresses the idea that rationalisation and innovation in industry have spillover effects for production-related services (especially high-quality services), which in turn improve the competitiveness of the manufacturing sector. According to the extended interaction theory, spillover effects are also generated within the service sector itself. In other words, these enterprises not only function as demanders of technical and product innovations, but themselves also generate such innovations (Wyckoff 1996). The institutional weakness in the area of business services is also seen to manifest itself in a lack of competitiveness on international markets. An increase in service exports would lead to domestic employment gains in the same way as a substitution of imported services by services produced at home (Hild et al. 1999). This assessment seems to be supported by the facts: while the USA is achieving an international trade surplus of over US-$ 50 billion in knowledge-intensive services, in 1998 Germany had a trade deficit of DM 62 billion in this sector.[9]

We need to ask whether the trade deficit is an indication of a decline in Germany's innovative strength (Zukunftskommission 1998) or whether it expresses a different profile of innovative strengths: "The decisive difference between Germany and the USA and Great Britain is thus not the less evident high-tech sector, but the smaller [in sectoral terms – author's note] service sector" (BMBF 1999: 42). Demand- and supply-based theoretical approaches are not perforce mutually exclusive, rather they demonstrate the multi-dimensionality of services. This complexity is embraced by approaches that combine the demand and supply aspects, which assume the existence of a positive feedback effect: processes of rationalisation and adjustment to changing competitive conditions result in increased demand for services, which in turn guarantee efficient industrial production. This also means that increased utilisation of services by industry does not necessarily prevent growing interaction between industrial and service enterprises (*interaction theory*), rather the two can be parallel processes (O'Farell 1995). The interaction theory is also supported by the innovation hypothesis, according to which industrial demand for input is the driving force behind structural change.[10]

[9] The negative German trade balance is primarily due to the fact that Germany is still "world champion" in tourist travel (a service import), but the above assessment still applies when travel is excluded from the equation.

[10] On balance, industrial enterprises purchased around DM 250 billion worth of input from business-service firms in 1997. Measured as an overall share of gross value added, the significance of this input alliance between industry and service firms has increased considerably in recent years. While the manufacturing sector's share of GDP (without input) was 34.9 % and the share including input was 35.6 % in 1978, the two values had diverged sharply by 1993: 25.8 % and 31.7 % respectively. In other words, the degree of

Related to the interaction theory is the term "*hybrid products*" which refers to manufactured products including a set of client oriented services before or after the production or during the use of the product. 'Hybrid products' take into account changing or rising consumer demands. Client wish more and more to buy "problem solving" systems and not only individual products (Bullinger 1998, Ganz 1999).

2.2.2 Business Services and Regions

The *theory of interaction* is supported by the many contributions to discussions about "industrial districts" and "local economic networks".[11] These approaches incorporate the levels of political and economic actors, institutional structure and region-specific economic cultures in order to interpret regional differences.[12] The success of such "industrial districts" is seen above all in the specific (regional) mix of industrial and service enterprises, which exert reciprocal and positive feedback effects and grow stronger on the basis of a cumulative process.[13] On this view, business services are considered extremely significant as catalysts of structural change (Kilper et al. 1994; Brusco 1992; Läpple 1994; Begg 1993). "Innovative milieus" or "innovative networks" represent a relatively recent approach (on Germany, see, for example, Beise et al. 1998; Läpple 1989; Ronneberger 1992). What these approaches have in common is the question as to which factors give rise to conditions that foster innovation, and the regional approach (milieu) is combined with the actor approach (network) to provide an answer. The network consists of regionally based public and private R&D institutions, political actors and enterprises that maintain successful – both formal and informal – network relationships at the regional level. Innovative networks or milieus are also supported by the outsourcing approach: by reducing their value-added activities, industrial enterprises become more dependent on a network of types of co-operation that have as their objective expansion and diversification of the production and service programme (Sauer and Döhl 1994). In a sense, these concepts tie in with the term

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interpenetration between industry and business services has increased. For the year 2000, the manufacturing sector's share of GDP (including input) is expected to be 32 %, against only 23 % without input (see DaimlerChrysler Services 1999).

[11] Exemplified by essays in Pyke and Sengenberger (1992), Camagni (1991) and Häußermann (1992); for an overview Genosko (1999).

[12] This is also the framework or point of reference for political intervention and regulation. A summary of the scientific debate can be found in Heinze and Schmid (1994).

[13] However, the possibility of a "negative spiral" also exists (Grabher 1994: 65). This is the case, for example, in the Ruhr Valley, which was long considered the classic example of an "industrial district", but has now become a crisis zone because of entrenched and one-sided economic structures and adherence to traditional practices despite changed conditions on the world market. The endogenous potential in the area must now be exploited to develop new production networks (Kilper et al. 1994).

"industrial atmosphere" coined by Marshall (cf. Ronneberger 1992) – in connection with his theory of industrial districts – which today can be translated as "innovative atmosphere".

As regards the spatial effects of employment development, two theoretical approaches are relevant here (Lichtblau and Rhein 1993). It is assumed in the more recent *location theory* that industrial conurbations have exploratory advantages over peripheral or rural regions and can thus evolve more dynamically. This is explained by the (positive) external effects that are generated when many enterprises belonging to the same sector or technology domain are in geographical proximity, and by the development of specific human capital, a particular infrastructure and informal networks. By contrast, the *factor equalisation theory* (the old location theory) sees regions converging because, compared to the dynamic centres, costs (wages, rent, etc.) are lower and because there are increasing bottlenecks (transport, lack of qualified manpower, etc.) in the high-density areas, so that enterprises are increasingly locating in the less dense regions. An intervening factor is the political constitution. In Germany one can speak of a polycentric distribution of innovation potential, which is a considerably different situation to that in the USA, but also that in France, Italy and Great Britain (Beise et al. 1999). This polycentric distribution of the innovation potential is mainly a consequence of Germany's federal structure, which has the effect of a much more balanced distribution of universities and publicly funded non-university institutions than in other industrialised countries (Beise et al. 1998). However, despite this relatively balanced regional distribution, it is above all the urban agglomerations, and especially those in the federal states of Baden-Württemberg, Bavaria and Hesse as well as in the city states (in eastern Germany, Dresden), that have an above-average concentration of research-intensive branches of industry and thus also an above-average potential for outsourcing. Therefore, one could argue that business services still need the exploratory advantages of the conurbation, or that within the business service sector there exist different types of (spatial) dependencies on industry,[14] or also that one conurbation can be more attractive for certain business services than another (Begg 1993). The notable preference of multi-media companies in Germany for core cities

[14] Brake (1994: 483) has elaborated a rule of thumb on this issue: the less routine involved and the more complex the co-operation, the more central are the locations of business services. What are meant here in particular are knowledge-intensive business services such as financial services and enterprise consultancy. While new information and communications technologies in principle allow decoupling from locations, a spatial (global) distribution of production plants, offices, branches, etc., requires centralised management functions and increases the demand for highly specialised services for complex organisations (Sassen 1991, 1993). The close proximity of such services is described as an indication of a kind of just-in-time cooperation (Brake 1993).

appears to confirm this dependency (Beise et al. 1998; on Hamburg, see Gornig et al. 1999)[15].

The advocates of the "global regions" concept believe that it is primarily the regions that have to compete internationally with globally active enterprises. While this idea contradicts the theory of the "location-free" economy, at the same time it provides further support for the theory of polarisation or hierarchisation of spatial development (Döhl and Sauer 1992; Häußermann and Siebel 1995). Regions with efficient and internationally oriented service firms and industrial manufacturers will be among the winners in the globalisation process, while the risk potential for regions with little human capital and with only regionally oriented enterprises is already very large and will continue to increase (Zart and Huege 1999).

The conclusions for political action derived from this theory are very diverse. On the one hand, there are calls for further deregulation, which would allow the regions to adapt to the new locational requirements of globally active enterprises; on the other hand, new concepts for structural policy in the regions, in the sense of a performance-based regional policy, are demanded (Lammers 1999), which, unlike regional policy to date (targeted at reducing geographical disparities), would accept regional differences or even further reinforce them. The alleged decline of political influence is refuted not least by the concept of innovative networks and milieus, which refers precisely to the increased need for co-operation on the part of the political actors. Target-oriented policies and public-private-interaction is required in particular, given the structural changes described, in the development of a long-term infrastructure for lifelong vocational training and education (Lennartz 1999; Reissert and Schmid 1999).

To sum up: The key argument to be tested is that – proper policies and favourable context conditions given – Verdoon's Law might work in business services and in some of the (industrialised) personal services, whereas Baumol's cost disease seems to hold for the rest of the personal services. In the case of business services, it would be the ability of the region to foster "service-industrial" districts through an innovative milieu or interactive networks of key actors in local communities and through a high level (quantitatively and qualitatively) of training and education. In the case of personal services (which, of course, would also benefit from a prosperous sector of business services), three (alternative) solutions are available in principle: First, the allowance of large wage spreads possibly leads to more jobs in low-wage services. However, this possibility is widely incompatible with the German constitutional framework of liberal

[15] "Multi-media" is assigned the role of a leading key technology which makes the distinction between industry and service obsolete. In the multi-media sector numerous product innovations overlap with process innovations (e.g. telework).

corporatism and social security because it leads to poverty for substantial segments of low-skill persons. Nevertheless, even acknowledging the limits of path-dependency (the 'German model'), there is still untapped adjustment capacity and adjustment need in the wage formation process to which we turn briefly in the policy conclusions (see also Schmid 2000). Second, the state as employer (of the last resort) may create more service jobs. Fiscal constraints, however, are limiting this option which, in addition, will only be successful if new public employment will be decentralised and organised by modern management principles (management by objectives, accountability etc). The third option is an active industrial and labour market policy through support of innovations and through training or selective wage subsidies (or combinations of transfers and wage income). With respect to the second and third alternatives, there is already relatively high regional discretion despite central regulations concerning unemployment insurance and employment promotion.[16]

3. Structure and Dynamics of Service Employment in German Regions

We start with general trends of regional employment dynamics in Germany from 1977 to 1998, and turn then to special items and puzzles for explanation. As we already remarked in the methodological introduction of the contribution, the internal view on German regions and their variations might counterbalance to some extent the general view of Germany as an "over-industrialised" and "under-serviced" country. Even if this might be true on a very general level, regional or locational specifics (of which there are many in a federal system like Germany) can provide insights into relationships which countervail general tendencies. This expectation seems all the more justified under the assumption that "globalisation" leads to higher competition between regions and rewards regional innovations deviating from national trends. We concentrate on West-Germany (without Berlin) to abstract from the very special development in East-Germany; interaction of these two parts since 1989, of course, has to be acknowledged.

[16] See Schmid, Speckesser and Hilbert 2000 as well as Mosley and Schütz 2000 who − on the basis of aggregate impact analysis and implementation studies − found considerable regional variance of active labour market policy even holding constant unemployment rates. They found also that training and long-term wage subsidies contribute significantly to reduce long-term unemployment.

3.1 General Trends of Employment

Before starting to present the results, the reader should be aware of some special features of our data base. The figures presented in the following are based on the employment statistics ('Beschäftigtenstatistik') of the Federal Employment Service ('Bundesanstalt für Arbeit').[17] This data include only employees in "regular jobs", i.e. employees who have to pay contributions to the social insurance system (unemployment insurance, health insurance, old age insurance). This means that occasional jobs, part-time jobs under the threshold of 15 hours, the self employed and free professionals as well as the civil servants are not included. Thus, unfortunately, the service sector is underrepresented, especially the so-called low-wage sector. The disadvantage of this data may not be so severe if one assumes a reasonably high correlation of "regular employment" and employment not covered by the obligatory social security system. However, the possible displacement of regular jobs by "irregular jobs" (especially occasional jobs, precarious part-time jobs or feigned self-employed) cannot be taken into account, but should be kept in mind in interpreting the data. The data we are using are not individual data but data aggregated at the level of the 181 employment office districts in Germany. Finally, the data are not representing flows but stocks at one point of time in the respective year, at June 30 which is the seasonally least affected month.

(1) Our first observation is, that the overall employment performance for West-Germany was not as bad as often quoted: The loss of 1.6 million jobs mostly in industry (manufacturing) was overcompensated by 3.8 million additional jobs in the services, a growth rate of 44 %. Thus, Germany is on the march in the service economy – now with a share of 59 % of service employment in 1998. Interesting to note, however, is that knowledge intensive (manufacturing) industries lost in employment, too (Table 1, 2 and Figure 1).

(2) If we split the period in the pre-unification (1977-89) and the post-unification period (1989-98), we see a slightly lower growth dynamic in services in the recent period, but literally a breakdown in industrial employment, especially in knowledge intensive industries. This indicates a failure of adjustment to "globalisation" and a loss in competitiveness (Figures 2 and 3).

(3) The collapse in manufacturing was regionally unbalanced; mainly agglomerated areas were affected and not compensated by higher growth in service employment (Figure 4, 5). In terms of location theory or of economic geography, the consistent

[17] This is a good occasion, of course, to thank the 'Bundesanstalt für Arbeit' for providing the data.

pattern of relative employment losses in agglomerated areas has to be interpreted in the way that *centripetal forces* (linkages, thick markets, knowledge spillovers and other pure externalities) have weakened, and that *centrifugal forces* (immobile factors, land rent and commuting, congestion and other diseconomies) have strengthened or remained constant (Fujita et al 1999: 346). A first possible conclusion from this observation could be that services in general, and the dynamic services in particular rely less on local specific externalities than manufacturing. A second conclusion is, that centrifugal forces relevant for manufacturing became stronger, for instance rising real estate costs, transport costs and labour costs. For our research question - namely the search for favourable conditions to create more service jobs - the specification of changing externalities (weakening centripetal and increasing centrifugal forces) and the way, some agglomerated areas could stem against this general trend, is most interesting.

(4) Although widely known in the meantime, the concrete evidence with respect to the *gender impact* is still astonishing: Two thirds of the new (and mostly service) jobs have been taken up by women. The overall growth rate of women's employment during this period of only 21 years (1977-98) was 27.2 % whereas men's employment almost stagnated (1.5 % growth). In the agglomerated areas, the growth dynamic was considerably smaller than in the non-agglomerated areas (probably also a base-effect), men's employment even declined. During the last decade, however, the overall growth dynamic in services declined and women were especially affected (Table 3 and 4; Figure 6 and 7).

(5) In a functional break down of the services into five categories (business, distribution, consumption, social, governmental), we see rocketing growth rates in social services and business services as a consistent pattern over the whole period.[18] Furthermore, the dynamics of business services surpasses social services during the last decade. Among the other service branches, we observe moderate increases in distribution (retailing, transport), consumer and government services, the latter turning into negative rates of growth in the recent period. As expected in theory, knowledge intensive services contribute most to the growth in business services. If we divide services in the dual categories of domestic trade oriented services and export oriented services, we see, that export oriented services increased a bit more than overall services but they still make up a relatively small share of total services (1977: 20.1 %; 1998: 23.6 %); they concentrate clearly in agglomerated areas (1998: 27 %) (Table 1, Figure 8 and 9).

[18] For a specification of these aggregated branches see Appendix 2.

(6) The gender impact of the categorical split of services also does not come as a surprise: about 80 % of the employment growth for women is related to domestic trade services, the rest (20 %) to export oriented services; men's proportion in export oriented services is about 40 %. In terms the five functional categories, every second woman found her job in social services. However, women share also the same proportion of job gains in business services, and among the business services they even gained weight in the knowledge intensive sector where they are now in the majority, especially in non-agglomerated areas. If one accepts the share of service employment as indicator for modernisation, the agglomerated areas are leading the development indeed: 81 % of women work now in services (against 75 % in non-agglomerated areas), and the corresponding figures for men are 51 % (against 39 %). Women are now in the majority in the service sector as a whole (57 % in 1998) with an increasing tendency, especially in the non-agglomerated areas. The main factor, however, contributing to this trend, was the drastic decline of men's employment in government services during the last decade whereas women's employment still increased in this sector (Table 3, 4). Within our five functional categories of services, women are now underrepresented only in the distributive services. In the dual categorical split, however, women are still in the minority (44 %) in the export oriented services (but gaining considerably) and in the majority in domestic trade oriented services (61 %) (Table 5, 6, 7; Figure 10, 11). A first and tentative interpretation of these patterns is that women's over-proportional gain in service employment is related first to their traditional proximity to the (rising) service activities, second to their (still) relatively lower wages compared to men, and third to their greater willingness to accept flexible employment relationships related to the new jobs, for instance part-time or fix-term contracts.

(7) Apart from the generally lower growth dynamics in services of agglomerated areas, the regional pattern is relatively balanced. Most noticeable is the lower capacity of agglomerated areas to create simple service jobs which is indicated, for instance, by the considerably lower growth rate of domestic trade oriented services compared to non-agglomerated areas. We assume, however, that this reflects the lack of marginal jobs ("630-Mark jobs"; see Appendix 1) which are not counted in the statistics used here and which are very likely concentrated in agglomerated areas. Also "black work" or the illegal informal sector is growing in Germany and probably concentrated in the cities. Thus, the observed pattern of a relatively low employment dynamics in agglomerated areas can to some extent be interpreted as a substitution of regular employment relationships through informal or even illegal employment.

(8) If we go a bit more in the details concerning the knowledge intensive sectors, we see heavy losses in the machine tool and the electric/electronic industries (Germany's

supporting pillars of manufacturing), and within the services we observe failures in financing and insurance jobs but also a lack of dynamics in the engineering services. The main pillars in Germany's knowledge intensive business services are counselling, marketing and advertising services. Export oriented services increased a bit more than overall services but they still make up a relatively small share of total services (1977: 20.1 %; 1998: 23.6 %); they concentrate clearly in agglomerated areas (1998: 27 %).

3.2 The Influence of Sectoral Branches on Regional Employment

In the next step we look at some simple linear correlations on the basis of the 12 largest agglomerated areas (and taking the non-agglomerated areas as a contrasting case).[19] The aim is to identify interesting patterns as first glance hints on the determinants of the regional employment dynamics.

(9) There is a longstanding debate on the linkage between manufacturing and services. Even if manufacturing employment (here "industry") is declining due to productivity effects, according to the "base-multiplier-analysis" ("export-base-theory") a competitive core of export oriented industries is crucial for a sustaining regional economy. The exporting industries or services are multiplying employment because many services or intermediate industrial goods are required as inputs to the manufacturing industry. In the extended version of interaction theory we have argued that high quality services are required to keep competitiveness in the industry. This linkage or complementarity hypothesis is confirmed by the strong correlation between industry and total employment (Figure 12, 13) and between industry and services in particular (Figure 14, 15) However, the correlation deteriorates and supports the argument that the regional service economy becomes more and more independent from industrial development. At this level of observation it cannot be decided whether export-oriented services replace export-oriented industries, or whether heavy outsourcing and corresponding downsizing of industrial production lies behind the eroding correlation or even the negative correlation between industry and services most recently.

(10) Also the interaction theory seems – at first glance – be refuted in the recent period. During the eighties, business services and industry were still positively correlated, but the relationship reversed during the nineties and became negative, supporting now more

[19] These areas have been composed by the aggregation of employment office districts ("Arbeitsamtsbezirke") which build functionally integrated labour markets; for details of this procedure see Albrecht/Schmid (1985). For the specification of these functionally integrated labour markets (agglomerated areas) see Appendix 3.

the outsourcing theory or the theory of relative autonomy of services (Figure 16, 17). We have, however, to be careful with the interpretation because some of the break-down in the relationship may be due to the impact of the recession 1992/3 which affected heavily manufacturing whereas services seem to be less sensitive to business cycles. All together, however, there are indications that 'globalisation' and the information or communication technology weakens the spatial ties between manufacturing production and services, especially business services which interact more and more globally.

(11) On the other hand, the extended interaction theory is clearly confirmed by the fact that the overall employment dynamics depends heavily on the existence of the combined knowledge intensive services and knowledge intensive industries in the region. The correlation is quite strong (1977-89: r = 0.62) and becomes even stronger (1989-98: r = 0.70) (Figure 18, 19).

(12) The globalisation (or de-linkage) theory is also confirmed by the fact that all other correlations between specific branches and overall employment dynamic become much weaker in the recent period. For instance the strong correlation between export oriented services and overall employment growth r = 0.74 (1977-89) fell down to a level of r = 0.10 (1989-98).

3.3 Structural and Locational Determinants of Service Employment

A shift-share-analysis can reveal to what extent a favourable regional development is due to "structural" or to "locational" determinants.[20] "Structural" determinants reflect the composition of branches corresponding to the overall development of the economy, and "locational" determinants hint on specific characteristics of the region. These specifics can be changes in the "geo-strategical-location" of the region (e.g. belonging to the "European Banana") or – and most interesting for us – in institutional arrangements or explicit policies. A positive structural component of growth indicates that the region was favoured by the overall service development, whereas a negative structural component of growth indicates an unfavourable mix of services. A positive locational component of growth reflects some hidden institutional or geo-political factors and just good luck, and a negative locational component indicates institutional or political failure or just bad luck. We turn now to the results of the shift-share-analysis

[20] The shift-share analysis refers only to service employment; the same analysis with overall employment came to almost the same results with some changes in the ranking of regions.

on the basis of agglomerated areas contrasted to the (one case) non-agglomerated areas (see Table 8, 9, 10).

(13) Although agglomerated areas were favoured by the mix of services (structural effect), their strong negative locational effect hints to the main reasons for the low or modest employment performance. The hypothetical employment growth of 46,9 % (between 1977-98) was only reached by 82 percent (38,7 % realised growth rate); such a strong negative locational effects indicates adjustment failures or bad luck. On the other hand, the non-agglomerated areas could compensate their lower structural advantage to some extent by locational specifics.

(14) The break down of the period shows that the negative locational factor for the agglomerated regions remained constant but the positive structural effect declined drastically. In other words: the recent relative decline in the employment performance of the agglomerated areas is mainly due to structural effects and not to a worsening of locational effects.

(15) The figures, however, show drastic differences in the locational effect. Some cities (and their immediate environment) have even positive locational effects (Nuremberg and Rhein/Neckar) during the 80's, and some cities have consistent high negative effects, especially Hamburg and Bremen. The differences in the rankings (1977-89, 1989-98) indicate also interesting changes: Cologne and Hanover performed in the 90's relatively better than in the 80's when Munich and Stuttgart seemed to be model regions. Nuremberg is a consistently high performer. We will come back later on to speculate about the hidden "institutional" factors or possible changes in the "geo-political arena".[21]

(16) The much stronger correlations between the locational effect and total effect (equal to total employment growth) compared to the correlations between structural effect and total effect indicate that there is more homogeneity between the agglomerated areas with respect to the structural component than with respect to the locational factors (Figure 20, 21, 22, 23). In other words: To get further insight into the determinants of regional employment performance, we have to look more closely to the locational than to the structural effects.

[21] About the 'Model Baden-Wurttemberg' compared with the region of Massachusetts see Sabel et al. (1991).

3.4 Employment Rates and Sectoral Mix

Approaching the difficult question of the "hidden determinants" behind the locational effect, one way is to look at the relationship between employment rates and changing sectoral mix.[22] The employment rate here is defined as the number of actually employed persons in the region as a percent of the total population (residents) in the respective region. This indicator, thus, does not measure labour force participation but the work-place intensity of a region relative to the number of its population. Nevertheless, it can be taken as a measure of performance indicating both regional attractiveness and social integration through gainful employment (Schmid, Schütz and Speckesser 2000). The employment rates vary between 26.7 and 43.5 percent (mean = 36.2 percent) in the agglomerated regions. Due to the attraction for commuters from "rural zones", these rates are higher in agglomerated areas than in the non-agglomerated areas, although the difference diminished during the period of observation. In the following, we compare the three regions with the highest (Düsseldorf, München, Stuttgart) and the two regions with the lowest employment rates (Essen and Bremen).

(17) The first observation are some commonalties between high performers but also different sectoral mixes related especially to industries (the "secondary" sector). Stuttgart is a case with still high rates of manufacturing whereas the high employment rate of Düsseldorf and especially Munich can be traced back mainly to high rates in services. However it is important to note that even Düsseldorf and Munich have still employment shares in (manufacturing) industries which are not far below the national level. The commonalties relate to knowledge intensive business services and domestic trade oriented services, whereas other business services, distribution and export oriented services (high in Düsseldorf) and consumer or social services (high especially in Munich) vary considerably among the regions (Table 11 and Figures 24, 25).

(18) The low performing regions of Essen and Bremen were traditional mono-centred areas (ship-building and fishing in Bremen, mining and steel industry in Essen)[23] whose break down could not be compensated by modern industries or business services. Thus, both regions have meanwhile not only a tremendous low rate of industrial employment but also below averages in modern services, and they meet only average standards in social and household-related services (Table 12 and Figures 26-27).

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[22] We intend to go deeper into this question in follow ups of this report.

[23] Especially the agglomerated area Essen (one of the largest cities in the "Ruhrgebiet") is an example for the decline of a once prosperous industrialised areas. These – in a life-cycle analogy – "old" industrialised areas are the "victims of an early form of division of labour" (Steiner 1985: 396).

(19) Some first-hand simple statistical relationships provide hints for explaining the high or low performance of regions. We find a significant negative correlation between employment rate and share of social services (r = -0.45), and a strong positive correlation between employment rate and share of business services (r = 0.65) as well as a strong correlation between employment rate and the combined knowledge intensive industries and services (r = 0.56); the relationship between employment rate and knowledge intensive business services is even stronger (r = 0.70). In all three cases, the three selected high performers have top scores whereas the two low performers (Bremen and Essen) fall even under the expected values of the regression line (Figures 28-30).

(20) To sum up this section: High performance in terms of the employment rate can be connected with at least two production clusters. The agglomerated area of Stuttgart is still characterised by a dynamic manufacturing sector connected with both knowledge intensive industries and (to a lesser extent) with knowledge intensive business services. The other two high performers (Munich and Düsseldorf) are focused on services but still have a substantial and polyvalent industrial core. Within services, there are clearly knowledge intensive business services which are the driving motor of the employment dynamics, and knowledge intensive industries are also strong. Both service sectors are not well developed in the low performing areas of Bremen and Essen. This can be interpreted as a strong indication for the overall importance of knowledge for a sustainable regional employment dynamics. In other words: New service jobs are created especially in regions in which knowledge intensive services and knowledge intensive industries interact. Especially in Munich and Stuttgart (with Nuremberg and Frankfurt closely approaching these areas), we find the characteristic elements of "innovative clusters" (Simmie and Sennett 1999): Of the seven knowledge intensive industries, five were over-represented in Munich, and four in Stuttgart; of the four knowledge intensive business services, four were over-represented in Stuttgart, three in Munich, and two in Düsseldorf (with an exceptional high share of public relations and advertisement (Table 13 and 14).

4. Summary Discussion of the Results and Policy Conclusions

The following final section summarises and discusses the main results of the empirical study in the light of the theoretical framework (4.1). Since the service gap in Germany is mainly related to the so-called low-skill sector of personal and domestic services (at least in the public opinion from inside and outside Germany), we take-up this discussion in more detail (4.2), provide our own view on this issue (4.3), and finish with policy recommendations (4.4).

4.1 Evidence on Business and Personal Services from Germany

The most important result related to *business services* is the interactive nature of knowledge intensive sector within business services and knowledge intensive (manufacturing) industries. Whereas the overall nexus between industries and services declines, this nexus is the crucial explaining determinant for a positive and sustainable employment dynamics. This means, that the manufacturing of products (the so-called secondary sector) remains crucial, but these products contain more and more service elements or are closely connected with them ('hybrid products'). A corollary feature is the strong correlation between the skill level of the regional labour force and the regional employment growth, especially related to export-oriented services and business services.

In terms of the spatial impact we found that high-skill and export oriented services and knowledge intensive industries are still concentrated in agglomerated areas. However, there are indications that they move more and more at the periphery of these agglomerations. Low-skill services seem to locate more and more either in the centre of agglomerated areas[24] or at the rural periphery. On the other hand, large-scale internal labour markets in manufacturing, located so far mostly in agglomerated areas, are transformed into network labour markets. The headquarters and skill-intensive manufacturing parts of those industries may remain in the agglomerations but semi-skilled and low-skilled production is moving to low-wage regions or to the proximity of the (foreign) sales markets. This is the reason why especially agglomerated areas were confronted with dramatic job losses in industries. Only those regions could compensate this loss which were able to establish interactive networks of knowledge intensive services and industries.

The interaction between knowledge intensive services and industries has also spillovers into other domains. Increasing demand in service intensive manufacturing goods leads to a parallel development (positive correlation) of employment in industries and services; this creates higher income and thereby higher demand for personal services thus creating a virtuous circle (as well as a vicious circle in regions in which the industrial core loses the foothold). Interactive services may also reverse the conventional product cycle: originally intermediate services turn out to become (exportable) service goods such as software packages, management and expert systems. Exporting services require still personal interaction, i.e. personal presence on the (foreign) markets, thereby language and communication capabilities. The culture of

[24] Which we cannot test with the kind of data we have; see the box on "630-Mark-Jobs" in Appendix 1.

mobility is crucial for competitive advantages in high skill services; this is a further explanation for the strong correlation between skill level and export oriented services.

There is a strong correlation between high cost industry and high cost services; this might, as a paradox, improve the competitiveness of exporting manufacturing ("made in Germany"), but diminish the competitiveness of (high skill) services which require a low-cost regime due to international competition, for instance by cheap computer specialists in Poland or India. As far as this relationship works, the correlation between manufacturing and knowledge intensive services is eroding; we found some indication for this happening.

One of the most important determinants of successful adjustment to 'globalisation' are information and communication networks. They are the crucial lever to increase productivity in business services and knowledge intensive industries with likely spill-over to personal services. The reason is that information networks increase their efficiency with rising numbers of participants, probably exponentially. The existence and public support of such networks explains regional differences. We were not able to test this assumption explicitly; however, the strong correlation of "locational factors" ('Standortfaktoren') with the overall employment dynamics can be taken as an indicator; and anecdotal evidence from case study material confirms this expectation. Thus, taken the main results relating to business services together, there is justification to extend the "industrial-district-hypothesis" by the *"service-industry-district-hypothesis"*.

As far as *personal services* are concerned, the main result to be reported is the confirmation that the road in the service society is the road of women into the system of gainful labour market work. This road of professionalisation changes the form in which the female labour potential is organised but hardly the contents; thus, regions with high (personal or social) services have a higher female labour force participation and vice versa; this relationship is especially pronounced in the large cities, i.e. in the agglomerated areas. A corollary to this finding is that demand for commercialised and professional personal services rises with qualification, especially with the skill level of women. Thus, we find higher service employment rates in regions with high skill levels, a pattern that correlates with agglomeration since the skill and income level in these regions is higher than in rural areas.[25]

Wage subsidies for low-wage personal services combined with social innovations such as service centres or services agencies induce sustainable social service employment in regions. Regions with high expenditure on public work creation or with

[25] Especially to these aspects, follow-up studies will have to complement the present evidence with more precise information for which data are missing for the time being.

high expenditure on wage subsidies have, ceteris paribus, higher employment rates and higher increases in (household-related) social services than regions with lower expenditure (Figure 31).[26]

The spatial impact of personal services can be hypothesised in the following way: There are two models of organising many of these services (see also 4.3): First by industrialising service functions plus self-servicing (the "inward-shift thesis", e.g. Gershuny 1983), second by large wage differentials that make buying services affordable (the "outward-shift thesis", e.g. Esping-Andersen 1999). The industrialisation process of services substitutes high cost services by highly sophisticated durable goods combined with self-service (car driving, using washing machines, videos, personal computers, home trainers, sauna equipment, 'haute cuisine' facilities); this kind of self-servicing requires both increasing household income through rising labour force participation of women and time. The alternative model would be to use cheap personal services (of taxi drivers or public transport personal, of washing and ironing saloons, of cinemas, of consumer / counselling / tax advising / banking services, of fitness centres and of restaurants); this service model requires less free time but even higher household income through full time work to afford buying the services.[27]

4.2 Curing the Service Gap by Wages or Consumer Subsidies?

In theory, the high employment effectiveness of the elementary services sector (especially for the low skilled) is often explained by the fact that such services usually require little knowledge or capital (Kommission 1997) as well as by the fact that, being geared towards the domestic market, they are not subject to productivity pressure and foreign competition (because they usually offer locally delivered and locally consumed services) (Zukunftskommission 1998). In a way this line of argument follows up the ‘three-sector theory’ postulated by Fourastié (1969). While the contrasting theory of ‘cost disease’ (Baumol 1967) is increasingly being called into question in connection with the spread of new information and communication technologies and in particular with respect to enterprise-related services, a cost reduction via increased productivity still appears out of the question for the majority of household-related services.[28]

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[26] See Spee and Schmid 1995; to be tested for recent periods in follow-up studies.

[27] The expectation, that the second model is more common in agglomerated areas than in non-agglomerated areas would be confirmed by the lower rate of part-time work of women (if controlled for the sectoral structure), and by the higher rate of consumer and distributional services in agglomerated areas.

[28] See Tronti et al. (2000); Albach 1989; Baumol et al. 1985; Schettkat 1996.

Support for the *Anglo-Saxon* model of a wider wage spread, as recommended by the Commission of the Free States of Bavaria and Saxony (Kommission 1997), remains the exception to date in the German debate, reference being made to the related high social follow-up costs (Semmler 1998; Werner 1997). Likewise, the Scandinavian model is to be excluded as a possible solution in view of the anticipated political opposition to the tax implications (Scharpf 1998). There is, therefore, an increased debate recently about – so to speak – a middle road between the two possibilities, namely the creation of a *formal* (i.e. state-regulated and state-subsidised) low-wage sector. Two possibilities for an expansion of the *legal* demand for elementary services are being discussed: reduction of wage costs by means of *employee wage subsidies* and/or public support for consumption via *consumer subsidies*.[29]

The debate is focusing on three types of employee wage subsidies. First, the *combination wage model* ('Kombilohn') (cf. Bäcker and Hanesch 1997; Becker 1998; Dreger et al. 1998; Gerster and Deubel 1999; Kaltenborn 1998; Vierling 1998) provides for a reduction in labour taxes for recipients of a welfare benefit who have extra earnings from employment. Second, under the *income allowance model* (Scharpf 1993, 1994), gross hourly wages of up to DM 15 would be increased by degressive subsidies. Third, the *reduced social contributions model* (Schreiner 1997; Zukunftskommission 1998) represents a combination of increased net incomes for workers and reduced gross wage costs for employers: up to an hourly wage of DM 10, compulsory social contributions are borne by the state alone; the subsidy is then degressively reduced (up to an hourly wage of DM 18).

The range of the three models, that is, the target group reach (and the related volume of the subsidy), varies considerably. Scharpf's model has the widest range because it does not involve a means test; thus, the household situation of the beneficiary has no influence on the rate of income allowance. The combination wage model has the shortest range because beneficiaries must already be in receipt of a welfare benefit; at the same time, the basis of calculation is determined by way of a means test (unemployment assistance, social assistance) and the amount of the tax-financed additional income granted thus depends more on the household situation. Different estimation procedures are used to determine additional employment effects.

[29] The third possibility is wage subsidies for employers. Because this form of wage-cost subsidy is not specifically relevant to the question of the low-wage sector, it will not be detailed here. In contrast to wage subsidies for employers, employee wage subsidies would be granted, as a rule, for an unlimited period and, with the exception of the combination wage model, the restriction of the subsidy to only difficult-to-place unemployed would be lifted. Spermann (1999) points out that wage subsidies for employers (cf. Snower 1997) would yield lower employment effects because of the associated higher transaction costs and stigmatisation effects.

Employment effects can be derived from potential values[30] or using model calculations based on demand and supply elasticities. The latter approach yields considerably lower employment effects.[31]

Another proposed strategy of stimulating job creation in low-skill services is the support of effective demand from private households for such services through *'consumer subsidies'*. In Germany this option is represented by the *tax model* introduced in 1989.[32] The employment effect expected on the part of policy-makers was 100,000 insured jobs in the area of private households (cf. Munz 1996).[33] In 1997 the tax deduction was raised to DM 18,000, the restrictions on eligibility were lifted and a so-called 'household chequebook' (*service cheque*) was introduced. This type of service cheque is a more restrictive option – it ultimately only certifies to the finance authorities the entitlement to claim a tax benefit – than the service-cheque or coupon models (Finger 1997). The employment effects hoped for on the part of policy-makers fluctuated between 500,000 and 600,000 persons (cf. Müller-Siebrands 1999). By the end of 1998, however, only 8,449 household cheques had been used (cf. Sommer 1999).[34]

The weak employment effect to date of this tax model is primarily traced back to the fact that this instrument is only advantageous for households with a very high income and in considerable need of assistance. This criticism was the departure point for the *transfer model* for service cheques or coupons proposed by the German Social

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[30] Bellmann (1998) and Seewald (1999) calculate the manpower potential that can be tapped among recipients of social assistance through combination wage models as being around one million, or two thirds of the total beneficiaries.

[31] Kaltenborn (1998) and ZEW (1998) arrived at additional employment effects in the region of 17,000 to 18,000 persons on the basis of the combination wage model. The corresponding labour market effect for the state of Saxony-Anhalt has been estimated at 2.4 percent of all social assistance beneficiaries (cf. Dreger et al. 1998). As regards the model involving a degressive subsidy towards social insurance contributions, Bender et al. (1999) have calculated additional employment amounting to a total of 140,000 persons. The cost of each additional job would amount to around DM 80,000 per annum (cf. Schupp et al. 1999).

[32] Under this model, families with at least two children (at least one aged under ten), lone parents with at least one child aged under ten and families with persons requiring care are entitled to a tax deduction of up to DM 12,000 for the costs of domestic personnel.

[33] In 1989 the number of insured employees in the area of private households was 32,000; this figure had risen to 34,000 by 1997 (cf. Bittner and Weinkopf 1999).

[34] Finger (1997) estimated the employment effect of this model at around 14,000 full-time jobs. Munz (1996) arrived at an employment effect of around 130,000 (on condition that the tax deduction be raised to DM 24,000) or 180,000 if there were no ceiling at all on the deductible amount.

Democratic Party (Schreiner 1997).[35] The service coupons are to be used to pay for corresponding services from service agencies; private households are not liable for any employer obligations. The expected employment effects range from 330,000 (Finger 1997) to 700,000 full-time jobs (Schreiner 1997). Schettkat and Fuchs estimate an employment effect in Germany of around 170,000 full-time jobs on the basis of 50% co-financing of care of invalids (aged 70 and over) via service cheques, while the same financing model would result in the creation of 214,000 full-time jobs in the area of childcare (cited in Europäische Kommission 1995).

The care insurance ('Pflegeversicherung') introduced in Germany in 1994 can also be interpreted as a consumer subsidy model in the area of care services. Under this model, a maximum of DM 2,800 per month for material care services (payment of outpatient services) or (the choice is voluntary) a maximum of DM 1,300 per month care allowance (compensation for related extra expenditure on the part of the person providing care) is made available. Although up to 150,000 additional jobs were expected in outpatient care, the actual employment growth in this area was around 70,000, including 20,000 low-skilled workers (Pabst 1999). The difference between the predicted and actual employment effect is due to the fact that 84 % of the total of 1.2 million persons requiring care preferred the care allowance to material services. The option to choose was certainly politically desired in the sense that it represented recognition of and (pension) insurance for care provided within the family (Evers 1995) and was also availed of, despite the notable difference to the monetary value of the material services.

4.3 Evaluation of the Present Discussion

The discussion presented here so far has essentially pointed out the substantial discrepancy between estimated employment potentials in low-wage or personal service jobs and actual exploitation to date. Before turning to policy proposals, some reflections on the causes of this discrepancy are required. Contrary to the thesis of an *outward* shift of production, a range of authors supports the thesis of an increasing *inward* shift of production into private households. Falling output prices and rising wage rates for working women favour the substitution of time-intensive household production by capital-intensive household technologies (Ott 1998). However, Meyer (1997) maintains that this substitution – in conjunction with a tax system that favours the 'wife-at-home' model – also reinforces the trend towards a *self-service economy*, which in turn makes

[35] Under this model, households (with at least one child aged under 14 or one person requiring care and aged at least 80) receive service cheques to the value of DM 1,200 per annum (and an additional DM 600 per additional person).

the idea of delegating household services to third parties seem unattractive. Schweitzer (1995) believes that the preconditions for the welfare-based shift of production into private households will be increasingly called into question in the future in view of the erosion of the standard employment relationship based on the "breadwinner model". The trend towards a shift of production into households, however, might be reinforced through the rise of precarious jobs and long-term unemployment, while home or individual work would become more significant as a source of livelihood.

Another obstacle to the establishment of a *formal* low-wage sector is the existence of an *informal* low-wage sector, estimated for Germany at around 1.4 million employees in the area of private households (Ochs 1999) and confirming corresponding job creation potentials in this domain calculated by various authors (cf. Albach 1989). 2.8 million households regularly employ a domestic help, while 1.5 million households do so periodically (Schupp et al. 1997). In other words, more than every tenth private household in Germany avails of such services.[36] At present the formal low-wage sector is unable to compete – either on the supply or the demand side – with the informal sector because of the prevailing price discrepancies.[37] If the 'elementary activities' sector is discussed only as an alternative to public services in this area, it can be implied that an insufficient supply of public services (especially in childcare) is often the basis for the establishment of an informal low-wage sector, which in turn becomes a limiting factor for the regulated low-wage sector.[38]

On the other hand, if one looks at the sector only as an alternative to the informal employment sector, the only strategy for establishing a formal sector is the path of price competition via publicly subsidised low prices or a reduction of the legally guaranteed minimum income. The latter path is more 'economical', but it is not certain whether a corresponding demand would follow, because demand elasticity in this area is not only determined by prices but also and to an equal degree by the quality and the 'image' of the services (Zukunft im Zentrum 1999b). The removal of these qualitative reservations

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[36] To compare: there are currently 62 service agencies in Germany with 1,047 employees and 3,571 customers. Three quarters of these agencies have received or are receiving publicly funded project support, while 95 percent have availed or are availing of wage-cost subsidies (cf. Zukunft im Zentrum 1999a).

[37] The average (contribution-free) hourly wage paid in the informal service sector is between DM 15 and DM 25 (Odierna 1995). Service agencies charge their customers an average of DM 23 an hour, while the gross wage paid to their employees is an average DM 15 an hour (cf. Zukunft im Zentrum 1999a). This discrepancy results, among other things, from paid holiday leave for the employees, continued pay in the event of illness and provision of training measures.

[38] Consequently, the co-existence of a trend towards a shift of services into the household and an increasing supply of services on the 'grey' labour market is not necessarily a contradiction.

is linked in turn to the recruitment of suitable employees, which is prevented by the low wage incentives.

At the same time, the problem of a *qualitative* service gap, said to limit the quantitative demand for services, is also being pointed out. New and qualified fields of employment are said to be found in the integration of care and supervision services with housekeeping and maintenance work on domestic technology and the home ('associated services'), in the interface between new information and communication technologies and private households (*home information technologies*), in advisory services, and in the areas of culture and leisure (Bopp 1996; Meyer et al. 1999; Mundorf 1999; SOFI 1999). This path would also be more in line with the opinion that Germany's employment problems are not primarily caused by a gap in elementary services, but are rather the result of a gap in high-quality, knowledge-intensive and enterprise-related services (Gries and Birk 1999; Semmler 1998; Werner 1997; Freeman and Schettkat 1999). The definition and elaboration of these new fields of employment will be an important task for further research in the area of household-related services.

The insufficient exploitation of the employment potential of household-related services is generally recognised. What remains controversial are the ways and means of tapping this potential. The criticisms made as regards the creation or expansion of the low-wage sector are the following:

- Substitution effects between 'regular' and subsidised jobs and resulting deadweight effects can be expected (Bäcker and Hanesch 1997; Becker 1998; Bofinger and Fasshauer 1998; ZEW 1998), while the incentive to invest in human capital would decline (Schettkat 1996).

- Because these services are availed of largely by high-income households, public subsidisation of such employment relationships would have a regressive distribution effect (SOFI 1999).

- As regards the effect on the level of unemployment, it should also be noted that these measures would probably increase the labour market participation of persons who had previously not sought work (Bender et al. 1999; Schupp et al. 1999).

Despite these objections, however, some authors also recognise the fact that a wider wage spread would increase the demand for household-related services and at the same time improve the employment prospects of less competitive male and female workers. A wider spread of gross wages could be compensated by easing the contributions burden via increased funding of the social insurance system from tax revenue (Bender et

al. 1999; Bofinger and Fasshauer 1998; Walwei 1998). We find this argument convincing in as far the general contribution level to social security could be reduced if some current expenditure not directly related with social insurance (such as for adult training, German immigrants from Eastern Europe) would be financed from the general state budget. There is surprisingly little discussion about support for the supply side by means of a reduction in or exemption from liability for VAT (Zukunft im Zentrum 1999a), although this would entail much less intervention into the taxation, contributions and wage systems. The Council of the European Union has also recently suggested, as a step towards more employment-friendly taxation systems, that the VAT rate should be reduced for labour-intensive services (Europäische Kommission 1999). Our study hints to a further support for this proposal: To the extent that a favourable tax structure enhances the professionalisation of household-related services, prices will fall in the long run and psychological barriers of buying such services would decline.[39]

4.4 Policy Recommendations

Our study suggests mainly two pathways to increase the job potential in services: improving the competitiveness of high quality and export oriented business services, and relieving the cost burden for personal or labour intensive services. As regard to the first pathway, competitiveness of business services can mainly be improved through innovation and increased productivity. The most promising policy orientations that correspond to the results of our study are the cultivation of innovative milieus or networks at the regional level. However, the concentration on business services is too narrow. A related but often neglected path for fostering services are specialised high quality and high skill personal services in education, health, culture and tourism. Through the digital revolution (information and communication technology), these (personal) services become more and more tradable or can attract 'service tourism' (foreign students, clients for special health or body treatments, consumers of cultural events etc). In addition, as our study has confirmed, product innovation in manufacturing is still an option and a promising orientation for industrial policy, e.g. solar-energy or bio-technology.

[39] A model project in Berlin turned out quite successful: The Agency "INHOUSE" (PRIVATINSTITUT HOGAN) is training and employing personal managers, care managers, event managers and 'butlers' who offer professional services to private households in terms of care for children, handicapped or elderly; house keeping or maintenance or administration; organising festivities; private secretarial work; garden work etc. The agency is now independent from public support and employing 16 persons on a permanent basis or on the basis of a guaranteed monthly honorarium, paying an hourly salary between 23 and 30 DM (on average higher than informal services of this kind); for further information see Hogan 1999.

The effective governance of networks is still not well understood. Four lessons appear, however, widespread consensus in reviews of network literature: *First*, most effective regional networks are voluntary private enterprise networks in which policy makers have a very limited role to play. The most important support of such networks is indirect through provision of 'hard-ware' infrastructure (e.g. excellent transport and communication networks) and 'soft-ware' infrastructure (e.g. skilled and competent labour force, information clearing). *Second*, some effective regional networks are public-private-partnerships in which regional governments or municipalities enter as co-financiers and, therefore, as important bargaining partners. City contracts, regional pacts or target specific associations (in which local or regional governments are members) are common elements in successful public-private-partnerships. *Third*, policy makers can play an important role as "gatekeepers" or moderators in the formation of regional networks. This follows from the reflexive use and transmission of knowledge as the core of information or knowledge society. Knowledge of knowledge requires translators or interpreters of information. In playing the role as "moderators", local or regional governments take over an entrepreneurial role which indirectly may lead to new jobs in new service markets. *Fourth*, networks are no panacea. Conventional strategies of economic policy (setting proper market frameworks and compensating obvious market failures) and social policy (setting proper frameworks of social security and equal opportunity policies) are still required.

The second path for fostering personnel or labour intensive services is the extension of basic income support to persons with low earnings capacities and the professionalisation of household-related services. Several routes are open to stimulate (low skill) personal services. However, the general strategy is clear: a widening of the wage spread combined with various ways of wage subsidies, income policy or tax differentiation. The route to be selected should be left to the individual employment regimes in the European Union’s member states taking into consideration path dependency and slow learning capacities of institutional routines. In the German context, the start-up support of local agencies providing home-related services, the employment friendly differentiation of non-wage costs (especially employers contributions to social security), and a differentiation of VAT are probably most promising in terms of effectiveness and political feasibility.

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Appendix 1: Marginal Jobs in Germany

Box 1: Service Jobs Outside the Regular Labour Market in Germany ("630-Mark-Jobs")

This form of contract, valid until the end of 1998, meant that the employee was, according to law, registered by the employer, who had to report all details to the chamber of trade, but the employee was only allowed to work for less than 630 Mark a month (321 Euro) and not for more than 19 hours a week. This was not "black" jobs. They were legal but did not count in the employment statistics because the persons were not regular employees. This was and is still to some extent a special German variation of low wage jobs excluded from the social insurance. No payments were made to the obligatory social insurance, no tax was paid by the employee. The employer paid a low "headtax" for each contract. The offers by the public employment service (PES) could be used as these persons were not registered as employed with full rights and duties, nor as unemployed.

These particular job facilities were at their introduction originally meant for students and pensioners, but were not restricted to these groups. So there has been a steady increase of these jobs in very many areas such as restaurants, hospitals, air bases, retail shops and so on. Between 1992 and 1997 a rise of this type of contract of 80 % was registered. It is easy to see why. Employers could avoid paying the high labour costs, the social costs and neglect other rights the employees have in regular contracts. In 1997, a total of 5.5 million such contracts were signed (about 15 % of total active labour force). The women made up 90 % of these. 28 % of those with such contracts worked in households, 18 % in retail sales, 15 % in industrial trades, 10 % in the restaurant and business cleaning services. But such contracts were also used in teaching institutions (e.g. in the "Volkshochschulen" or private schools), or as personnel attached to private medical doctors and dentists, to welfare organisations, newspaper delivery, or to private hospitals. In the households of 1997, a total of 1.4 Million such domestic jobs were registered. This does not include those who work privately without any registered contract at all, i.e. black500,000 to 1 million households are estimated to employ persons in such a way, without any formal regulations or a contract. The agreement is totally private on both sides, but it hints also at the shadowy existence of a great many household services (Fölster 1999).

The new government now in power (since October 1998) has, as a first step, turned the tax obligation of the employer into social security contributions (12 % to the pension system, 10 % to the health insurance); in order to receive full entitlements from the pension system, employees have to contribute in addition 7,5 %. The reason for this (hotly contested) decision was to avoid the increasing substitution of full-time work (underlying social security contributions) through "630-Mark" jobs; non-regular 630 Mark jobs up to two months or 50 working days the year (seasonal jobs) are still completely exempt from social security contributions. The impact of these legal changes is not yet clear. First hand evidence, however, shows that neither the fears (dramatic decline of these jobs) nor the hopes (drastic increase of regular low-wage jobs) were realised.

Appendix 2: Classification of Industries and Services

Knowledge intensive industries/business Services	Industries/Services with a large concentration of professional occupations. Professional occupations include such jobs as engineers, computer scientists, natural scientists, physician, lawyers, architects.
Knowledge intensive industries [1]	Chemical industry, Machinery, Motor vehicles and equipment, Aircraft and parts, Electrical engineering, Precision mechanics/Optics, Office machine/Data processing equipment
Knowledge intensive business services [2]	Financial services, Legal services, Management Services, Engineering and architectural services, Research and testing services, Advertising
Other business services	Services to buildings, Rental services, Business associations, Mailing, reproduction and stenographic services, Miscellaneous business services
Distribution services	Wholesale and Retail Trade, Transportation; Communication
Consumer services	Hotels and other lodging places, Restaurants, Beauty shops, Entertainment, Media, Publishing houses, Photographic studios, Individual and family services
Social services	Child care *and Senior* services, Educational services, Health services, Civic and social associations
Government services	Public administration, Social insurance
Domestic trade oriented services	Other business Services, Retail Trade, Consumer, Social and Government services.
Export oriented services	Knowledge intensive business services, Transportation, Communication
Household-related services	Wholesale and Retail Trade, Consumer Services, Child care and Senior services

1) Total employment share of engineering and science technicians occupations in manufacturing in West-Germany (1995): 2.7 %; chemical industry: 6.0 %; machinery: 6.1 %; motor vehicles: 3.5 %; aircraft: 16.3 %; electrical engineering: 9.5 %; precision mechanics and optics: 3.1 %; office machines and data processing equipment: 11.9 % (see BMBF 1996).
2) Total employment share of people with university education in West-Germany (without public sector; 1995): 6.5 %; financial services: 7.8 %; legal and management services: 30.5 %; engineering, architectural, research and testing services: 37.7 %; advertising: 20.4 % (see BMBF 1996; 1997).

Appendix 3: Agglomerated Areas in West-Germany

Name of the Agglomerated Areas	**The following Employment Office Districts ('Arbeitsamtsbezirke') are included:**
Hamburg	Hamburg, Bad Oldesloe, Elmshorn, Lüneburg
Bremen	Bremen, Bremerhaven, Oldenburg, Verden
Hanover	Hanover, Celle, Hameln, Nienburg
Essen	Essen, Bochum, Gelsenkirchen, Oberhausen
Düsseldorf	Düsseldorf, Wuppertal
Cologne	Cologne, Bergisch Gladbach, Bonn, Brühl, Düren, Solingen
Frankfurt/Main	Frankfurt/Main, Darmstadt, Hanau, Offenbach, Wiesbaden
Rhine-Neckar	Heidelberg, Ludwigshafen, Mannheim, Neustadt
Stuttgart	Stuttgart, Göppingen, Ludwigsburg. Waiblingen
Nuremberg	Nuremberg, Bamberg, Weißenburg
Munich	Munich, Freising, Rosenheim

Appendix 4: Tables and Figures

Table 1: Changes in Employment in West-Germany 1977-98 (%)[1]

	West-Germany	Agglomerated Areas	Non-agglomerated Areas
Job Loss	-8.5	-11.5	-6.3
Additional Jobs	19.8	19.3	20.5
Balance (total)	11.3	7.8	14.2
Proportion from Women of			
Job Loss	31.3	29.9	33.2
Additional Jobs	64.3	59.9	67.8
Balance (total)	91.7	108.5	83.8
Relation[2]	2.32	1.68	3.36
Job Loss	100	100	100
Agriculture/Mining	9.0	0.1	21.9
Knowledge intensive Industries	15.8	20.2	9.5
Other Industries	62.6	66.1	57.2
Construction	12.6	13.6	11.4
Additional Jobs			
Services	100	100	100
Business Services	36.4	45.5	29.0
Knowledge intensive Services	21.7	27.1	17.4
Finance and Insurance	5.7	6.2	5.3
Other Business Services	14.7	18.4	11.6
Distribution Services	14.4	9.8	18.2
Consumer Services	5.9	6.4	5.5
Social Services	42.3	38.0	45.9
Government Services	1.0	0.3	1.4
Services	100	100	100
Domestic trade oriented Services	74.1	69.2	78.2
Export oriented Services	25.9	30.8	21.8

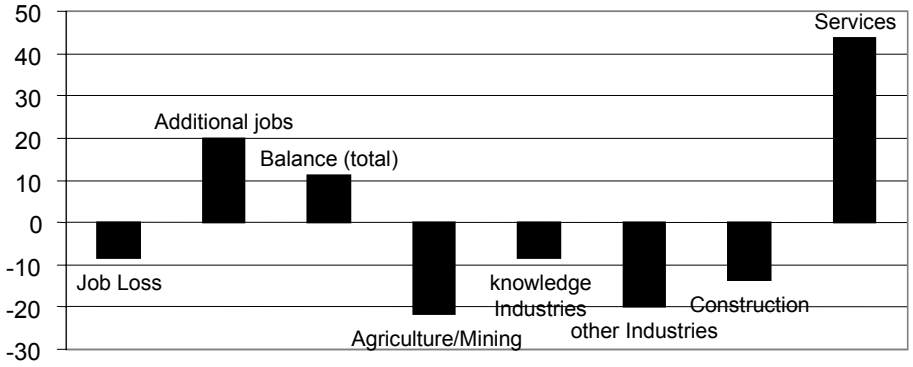
1) See Appendix 2.
2) Relation between Job Loss/Additional Jobs
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 2: Changes of Employment Shares in West-Germany 1977-98 (%)

	West-Germany		Agglomerated Areas		Non-agglomerated Areas	
Year	77	98	77	98	77	98
	100	100	100	100	100	100
Agriculture/Mining	3.5	2.5	2.9	2.1	4.1	2.8
Industry	42.5	32.6	39.2	28.3	45.7	36.2
Knowledge intensive Industries	16.0	13.3	17.8	13.7	14.2	12.7
Other Industries	26.5	19.3	21.4	14.6	31.5	23.5
Construction	8.0	6.2	7.2	5.3	8.6	6.9
Services	46.0	58.7	50.7	64.3	41.6	54.1
Services (total)	100	100	100	100	100	100
Business Services	16.8	22.7	19.5	26.9	13.7	18.7
Knowledge intensive Services	12.0	15.1	14.0	17.9	10.0	12.4
Other Services	4.8	7.6	5.5	9.0	3.7	6.3
Distribution Services	40.5	32.9	41.2	33.0	41.5	32.7
Consumer Services	8.5	7.5	8.3	7.9	8.7	7.6
Social Services	20.0	26.6	18.3	23.2	21.8	29.7
Government Services	14.2	10.3	12.7	9.0	14.3	11.3
Services (total)	100	100	100	100	100	100
Domestic trade oriented Services	79.9	76.4	76.7	72.7	83.2	80.0
Export oriented Services	20.1	23.6	23.3	27.3	16.8	20.0

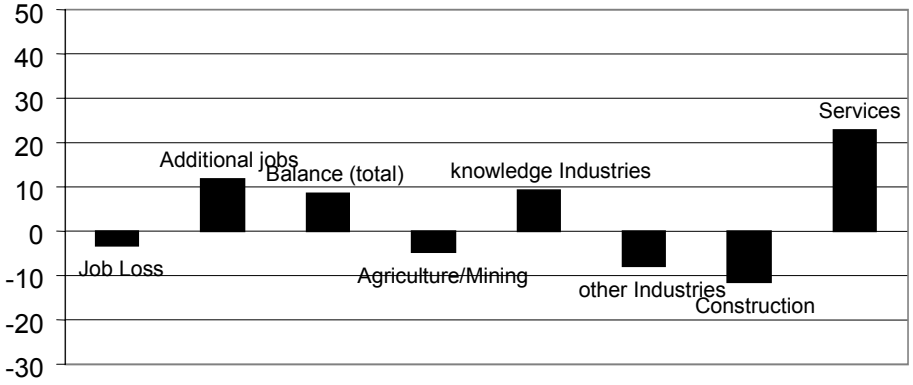
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 1: Employment Trends 1977-1998 in West-Germany (%) 1)



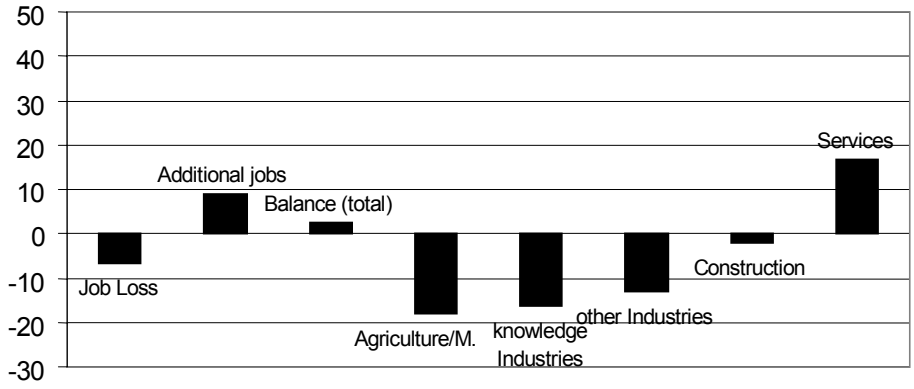
1) Job Loss, Additional Jobs and Balance in Percent of Total Employment in 1977. For Agriculture/Mining, knowledge and other Industries, Construction and Services: Employment Change between 1977 and 1988.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 2: Employment Trends 1977-1989 in West-Germany (%) 1)



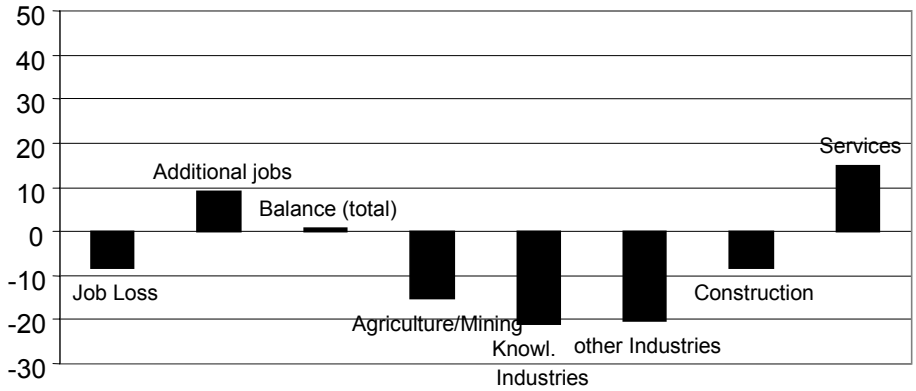
1) See Figure 1.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 3: Employment Trends 1989-1998 in West-Germany (%) 1)



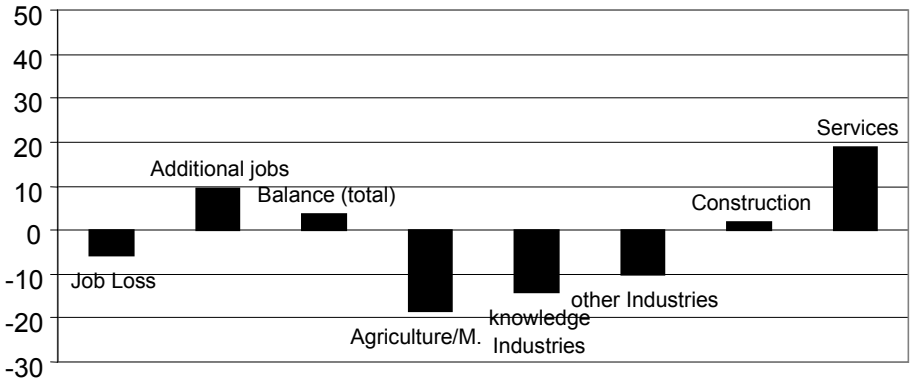
1) See Figure 1.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 4: Employment Trends 1989-1998 in agglomerated Areas (%) 1)



1) See Figure 1.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 5: Employment Trends 1989-1998 in non-agglomerated Areas (%) 1)



1) See Figure 1.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 3: Changes of Employment in West-Germany 1977-98: Women (%)

	West-Germany	Agglomerated Areas	Non-agglomerated Areas
Job Loss	-6.1	-7.4	-5.1
Additional Jobs	33.3	29.7	37.6
Balance (total)	27.2	22.3	32.5
Relation [1]	4.55	3.47	5.82
Job Loss	100	100	100
Knowledge intensive Industries	23.3	38.4	5.6
Other Industries	76.7	61.6	94.4
Additional Jobs	100	100	100
Agriculture/Mining	0.6	0.6	0.6
Construction	1.4	0.8	1.9
Services	98.0	98.6	97.5
Business Services	27.3	35.0	21.8
Knowledge intensive Services	17,3	22.5	14.7
Finance and Insurance	5.4	6.1	4.9
Other Business Services	10.0	12.5	7.1
Distribution Services	12.9	9.1	15.9
Consumer Services	4.6	5.3	4.1
Social Services	47.2	44.5	49.2
Government Services	6.0	4.7	6.5
Services	100	100	100
Domestic trade oriented Services	78.0	72.2	79.5
Export oriented Services	22.0	27.8	20.5

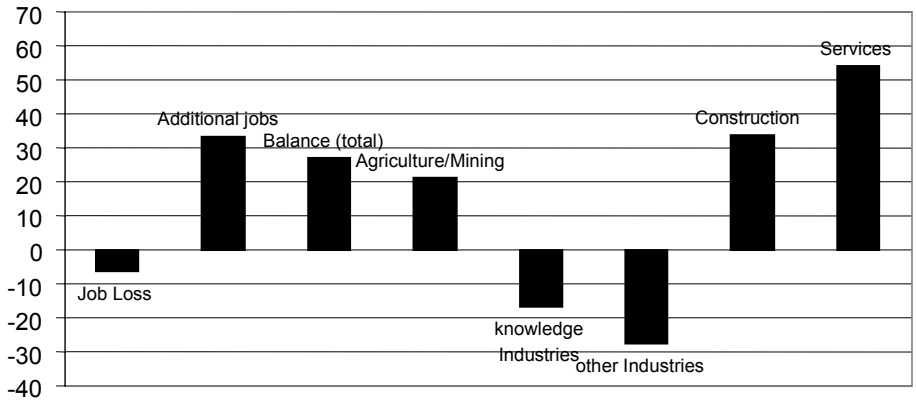
1) Relation between Job Loss/Additional Jobs.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 4: Changes of Employment in West-Germany 1977-98: Men (%)

	West-Germany	Agglomerated Areas	Non-agglomerated Areas
Job Loss	-10.1	-13.1	-7.6
Additional Jobs	11.6	12.0	11.2
Balance (total)	1.5	-1.1	3.6
Relation [1]	1.15	0.99	1.37
Job Loss	100	100	100
Agriculture/Mining	13.2	1.0	30.0
Knowledge intensive Industries	10.3	10.8	9.6
Other Industries	47.6	62.6	26.9
Construction	19.7	19.4	20.1
Government Services	9.2	6.2	13.4
Additional Jobs			
Services	100	100	100
Business Services	48.5	57.5	39.6
Knowledge intensive Services	26.0	31.7	20.4
Finance and Insurance	5.5	5.7	5.3
Other Business Services	22.5	25.8	19.2
Distribution Services	15.4	10.1	20.7
Consumer Services	7.5	7.5	7.5
Social Services	28.6	24.9	32.2
Services	100	100	100
Domestic trade oriented Services	61.3	59.0	63.6
Export oriented Services	38.7	41.0	36.4

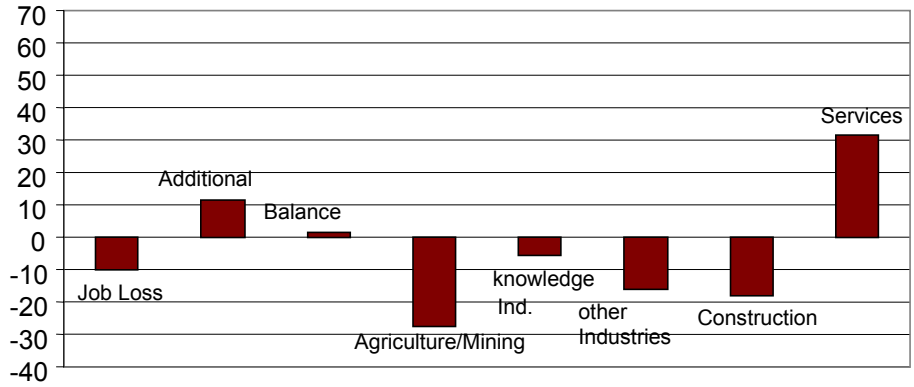
1) Relation between Job Loss/Additional Jobs.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 6: Employment Trends 1977-1998 in West-Germany: Women (%) 1)



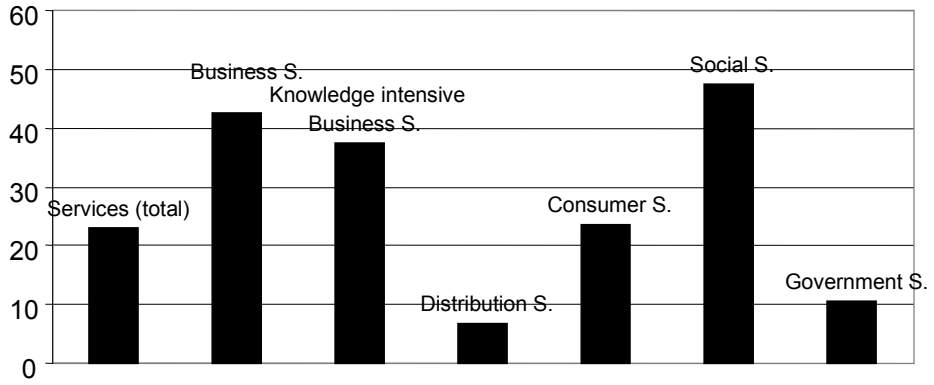
1) See Figure 1.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 7: Employment Trends 1977-1998 in West-Germany (%): Men 1)



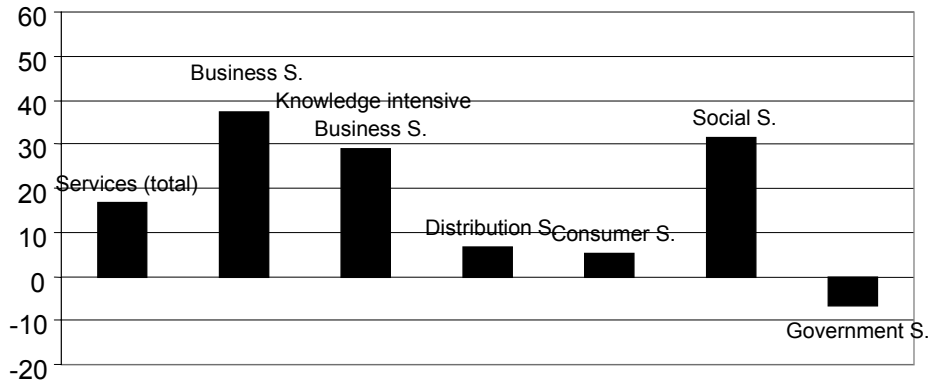
1) See Figure 1.
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 8: Employment Trends 1977-1989 in Services in West-Germany (%)



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 9: Employment Trends 1989-1998 in Services in West-Germany (%)



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 5: Changes of Employment Shares in West-Germany 1977-98: Women (%)

	West-Germany		Agglomerated Areas		Non-agglomerated Areas	
Year	77	98	77	98	77	98
	100	100	100	100	100	100
Agriculture/Mining	1.2	1.1	1.1	1.0	1.4	1.2
Industry	32.9	19.6	29.1	16.3	36.3	22.3
Knowledge intensive Industries	11.0	7.2	12.2	7.1	10.0	7.3
Other Industries	21.9	12.4	16.9	9.2	26.3	15.0
Construction	1.5	1.6	1.5	1.4	1.5	1.7
Services	64.4	77.7	68.3	81.3	60.8	74.8
Services (total)	100	100	100	100	100	100
Business Services	16.4	20.1	18.9	24.1	13.0	16.6
Knowledge intensive Services	11.6	14.0	13.7	16.5	9.6	11.7
Finance and Insurance	7.5	6.8	9.1	8.2	5.9	5.6
Other Services	4.8	6.1	5.2	7.6	3.4	4.9
Distribution Services	34.5	27.3	35.8	27.5	34.0	27.1
Consumer Services	10.2	8.3	9.4	8.1	11.1	8.4
Social Services	27.0	34.5	24.1	30.7	29.9	37.8
Government Services	11.9	9.8	11.8	9.6	12.0	10.1
Services (total)	100	100	100	100	100	100
Domestic trade oriented Services	83.8	81.8	80.7	78.4	86.8	84.8
Export oriented Services	16.2	18.2	19.3	21.6	13.2	15.2

Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 6: Changes of Employment Shares in West-Germany 1977-98: Men (%)

	West-Germany		Agglomerated Areas		Non-agglomerated Areas	
Year	77	98	77	98	77	98
	100	100	100	100	100	100
Agriculture/Mining	4.9	3.5	3.2	3.1	6.4	3.9
Industry	49.0	42.4	46.9	37.3	50.7	46.5
Knowledge intensive Industries	18.9	17.6	21.9	20.5	16.4	15.2
Other Industries	30.1	24.8	25.0	16.8	34.3	31.3
Construction	11.8	9.7	10.8	8.3	12.7	10.8
Services	34.3	44.4	39.1	51.3	30.2	38.8
Services (total)	100	100	100	100	100	100
Business Services	17.6	26.1	20.6	30.3	14.5	21.7
Knowledge intensive Services	12.8	16.6	15.0	19.5	10.5	13.5
Finance and Insurance	8.4	7.8	9.9	9.0	6.9	6.6
Other Services	4.8	9.5	5.6	10.8	4.0	8.2
Distribution Services	44.4	40.2	48.7	39.6	46.6	40.8
Consumer Services	6.4	6.8	6.9	7.1	5.9	6.5
Social Services	11.4	16.1	10.6	14.4	12.3	18.0
Government Services	20.2	10.8	13.2	8.6	20.7	13.0
Services (total)	100	100	100	100	100	100
Domestic trade oriented Services	70.3	69.4	66.8	65.9	74.0	73.1
Export oriented Services	29.7	30.6	33.2	34.1	26.0	26.9

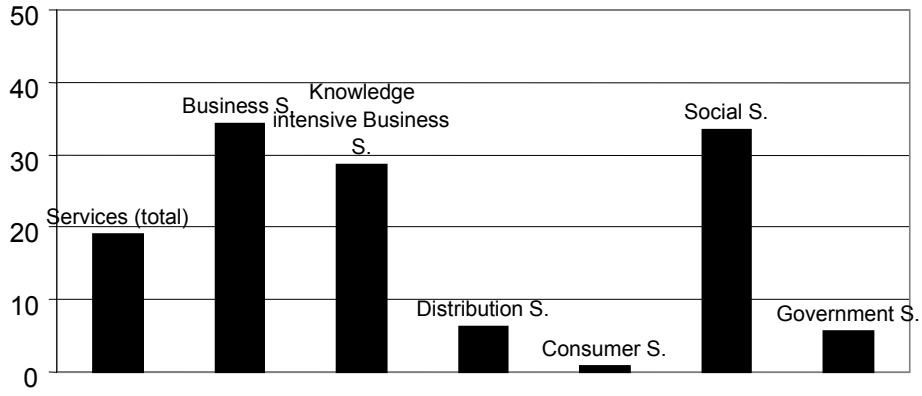
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 7: Employment of Women as a Proportion of Total Employment (%)

	West-Germany		Agglomerated Areas		Non-agglomerated Areas	
Year	77	98	77	98	77	98
Total	37.3	42.8	38.0	43.1	36.7	42.6
Agriculture/Mining	13.0	19.5	17.2	20.4	11.2	18.9
Industry	28.6	25.7	27.7	24.9	29.2	26.3
Knowledge intensive Industries	25.8	23.5	25.6	20.8	26.0	26.2
Other Industries	30.2	27.2	29.4	29.3	30.7	26.3
Construction	7.0	10.9	7.8	11.4	6.5	10.5
Services	52.8	56.7	51.9	54.5	53.7	58.9
Business Services	50.3	50.3	49.9	48.8	51.0	52.4
Knowledge intensive Services	50.3	52.5	49.6	50.4	51.3	55.4
Finance and Insurance	49.9	53.2	50.0	52.2	49.9	54.6
Other Services	50.5	46.0	50.6	45.7	50.3	46.2
Distribution Services	45.1	47.1	44.3	45.4	45.9	48.7
Consumer Services	64.2	61.4	59.5	57.7	68.6	65.0
Social Services	72.7	73.7	71.1	71.8	73.9	75.1
Government Services	43.9	54.4	48.8	57.3	40.0	52.3
Domestic trade oriented Services	57.2	60.7	56.6	58.7	57.7	62.4
Export oriented Services	38.0	43.9	38.6	43.2	37.1	44.8

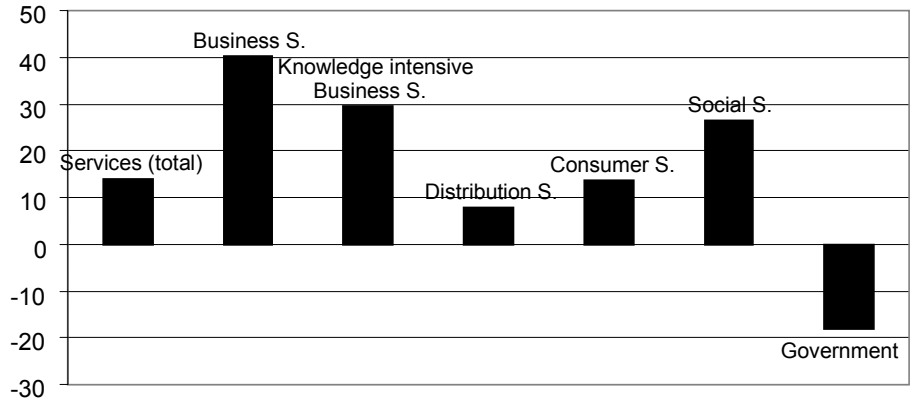
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 10: Employment Trends 1989-1998 in Services in West-Germany: Women (%)



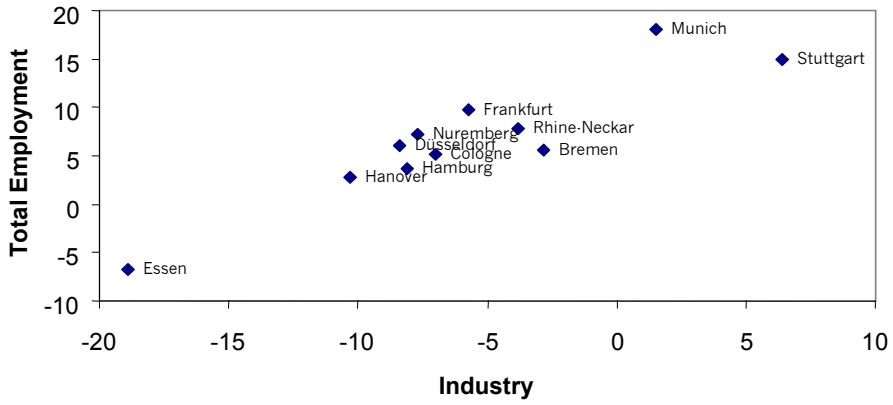
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 11: Employment Trends 1989-1998 in Services in West-Germany: Men (%)



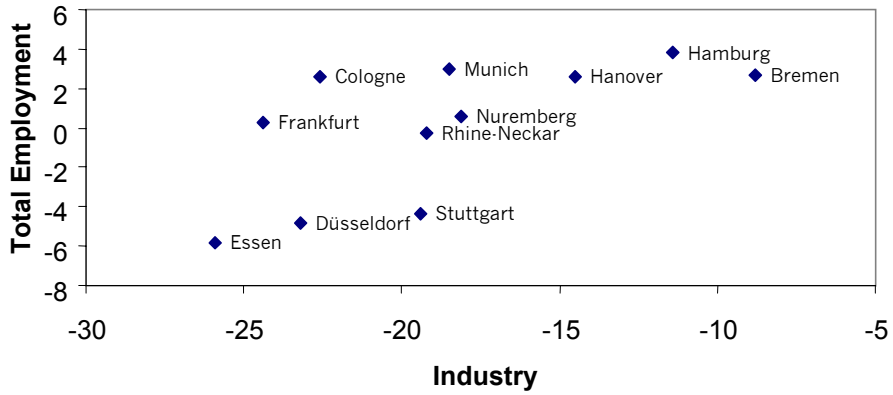
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 12: Industry- and Total Employment: Growth Rate 1977-1989 (%) R = 0.90



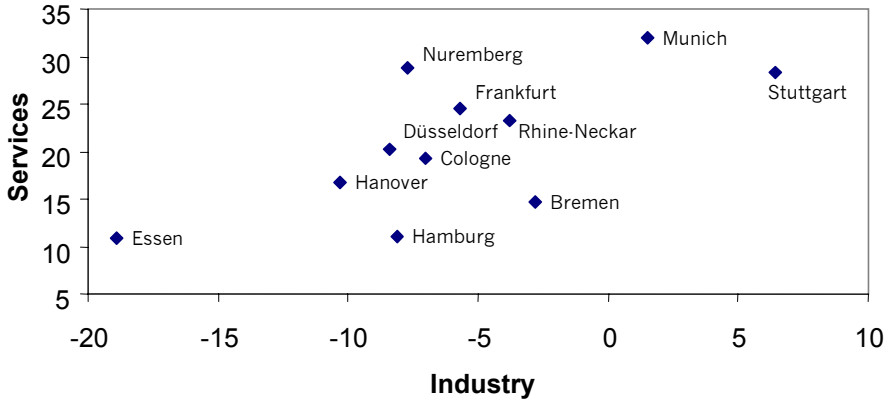
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 13: Industry- and Total Employment Growth Rate 1989-1998 (%) R = 0.69



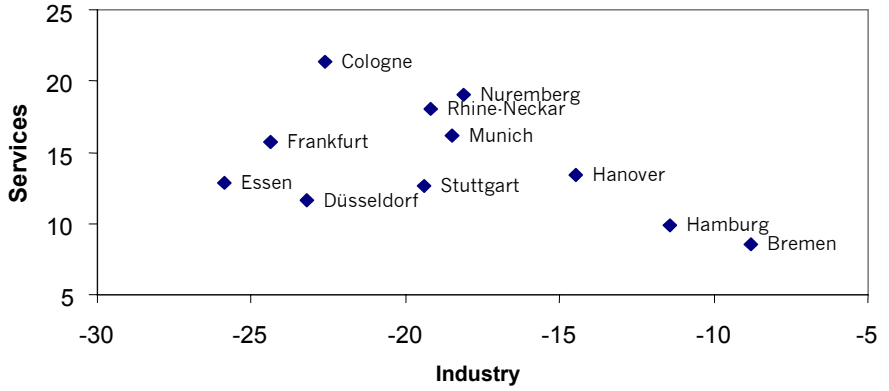
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 14: Industry- and Service Employment: Growth Rate 1977-1989 (%) R = 0.69



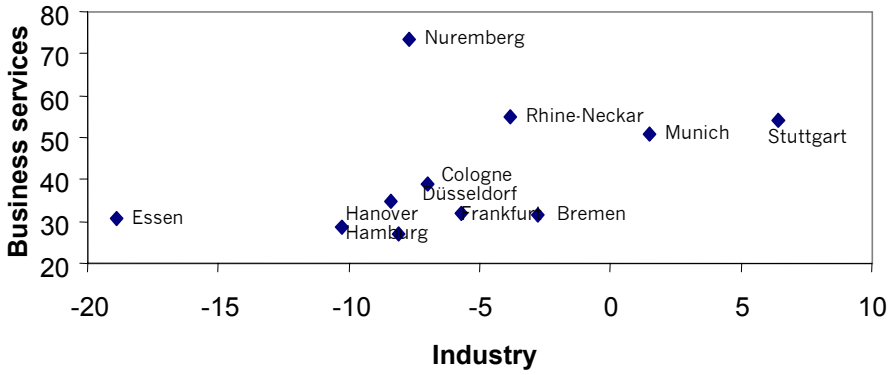
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 15: Industry- and Service Employment: Growth Rate 1989-1998 (%) R = - 0.49



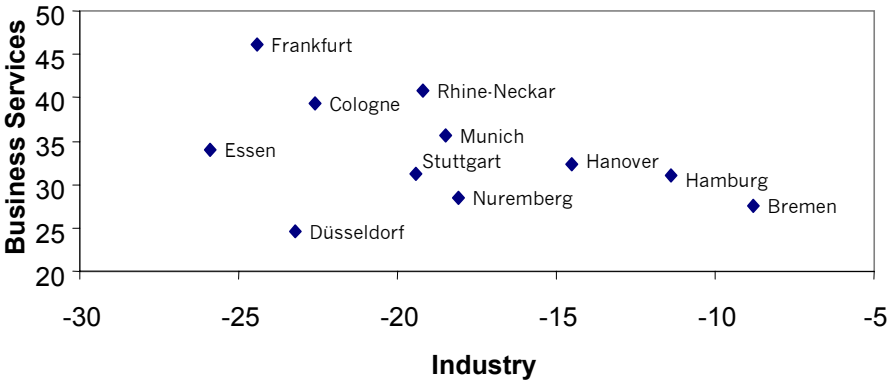
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 16: Industry and Business Services: Growth Rate 1977-1989 (%) R = 0.42



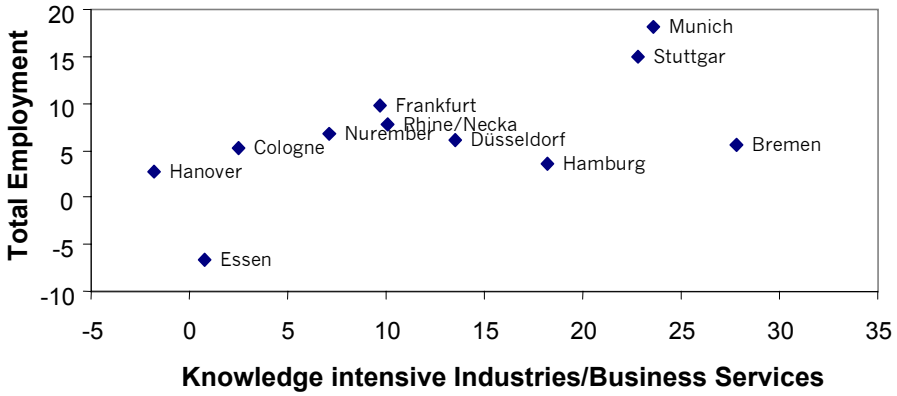
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 17: Industry and Business Services: Growth Rate 1989-1998 (%) R = - 0.42



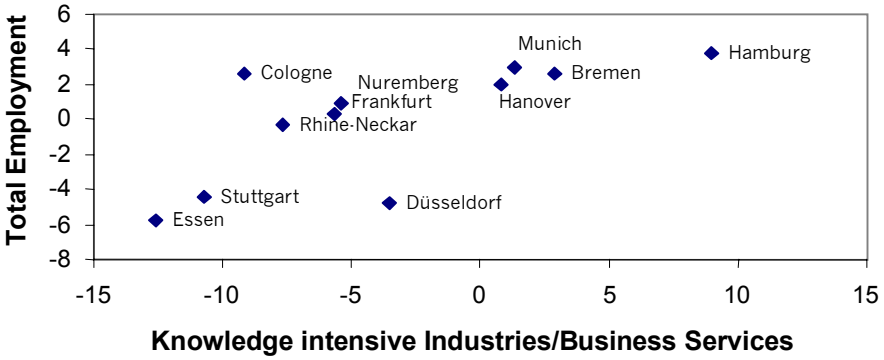
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 18: Knowledge intensive Industries/Business Services and Total Employment: Growth Rate 1977-1989 (%) R = 0.62



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 19: Knowledge intensive Industries/Business Services and Total Employment Growth Rate 1989-1998 (%) R = 0.70



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Tabelle 8: Shift-Share Components of Service Employment Change in West-Germany 1977-1998 (%)

	Locational Component	Structural Component	Total Employment Change
Nuremberg	14.2	39.2	53.4
Munich	5.9	47.5	53.4
Rhein/Neckar	1.9	43.6	45.5
Stuttgart	0.7	43.8	44.5
Cologne	0.0	45.5	45.5
Frankfurt	- 1.5	45.7	44.2
Düsseldorf	- 9.0	42.7	33.7
Hanover	-11.8	44.2	32.4
Bremen	-12.6	37.0	24.4
Essen	-18.4	43.5	25.1
Hamburg	-19.2	41.3	22.1
Agglomerated Areas (total)	- 8.2	46.9	38.7
Non-Agglomerated Areas	7.5	41.2	48.7
West-Germany	0.0	43.6	43.6

Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 9: Shift-Share Components of Service Employment Change in West-Germany 1977-1989 (%)

	Locational Component	Structural Component	Total Employment Change
Stuttgart	8.1	20.7	28.8
Munich	7.4	24.6	32.0
Nuremberg	5.5	22.8	28.3
Frankfurt	1.2	23.4	24.6
Rhein/Neckar	0.2	23.1	23.3
Düsseldorf	- 2.2	22.0	19.8
Cologne	- 4.0	23.8	19.8
Bremen	- 5.2	19.9	14.7
Hanover	- 6.5	23.3	16.8
Hamburg	-10.3	21.3	11.0
Essen	-11.9	22.7	10.8
Agglomerated Areas (total)	- 1.9	22.7	20.8
Non-Agglomerated Areas	3.1	22.2	25.3
West-Germany	0.0	23.0	23.0

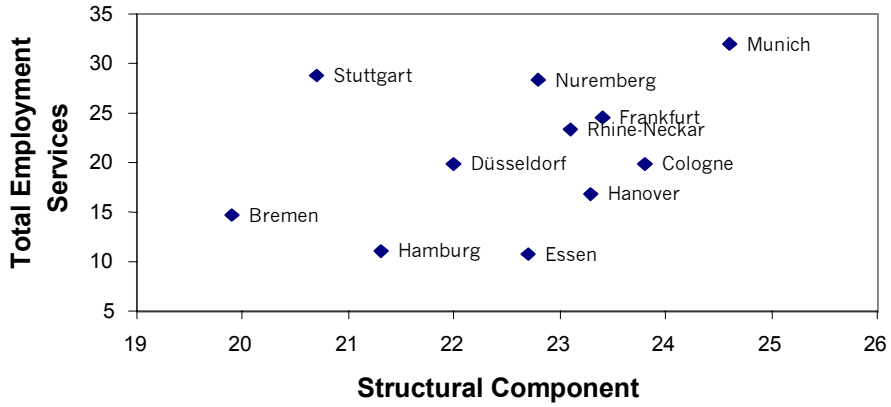
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 10: Shift-Share Components of Service Employment Change in West-Germany 1989-1998 (%)

	R 89/98	Locational Component	Structural Component	Total Employment Change	R 77/89
Cologne	1	4.1	17.3	21.4	7
Nuremberg	2	3.2	15.8	19.0	3
Rhein/Neckar	3	1.1	16.9	18.0	5
Frankfurt	4	-1.2	16.9	15.7	4
Munich	5	-1.7	17.9	16.2	2
Hanover	6	-3.2	16.6	13.4	9
Essen	7	-4.4	17.3	12.9	11
Stuttgart	8	-4.5	17.1	12.6	1
Düsseldorf	9	-5.1	16.7	11.6	6
Hamburg	10	-6.4	16.3	9.9	10
Bremen	11	-6.8	15.3	8.5	8
Agglomerated Areas (total)		-2.1	16.9	14.8	
Non-Agglomerated Areas		3.2	15.5	18.7	
West-Germany		0.0	16.7	16.7	

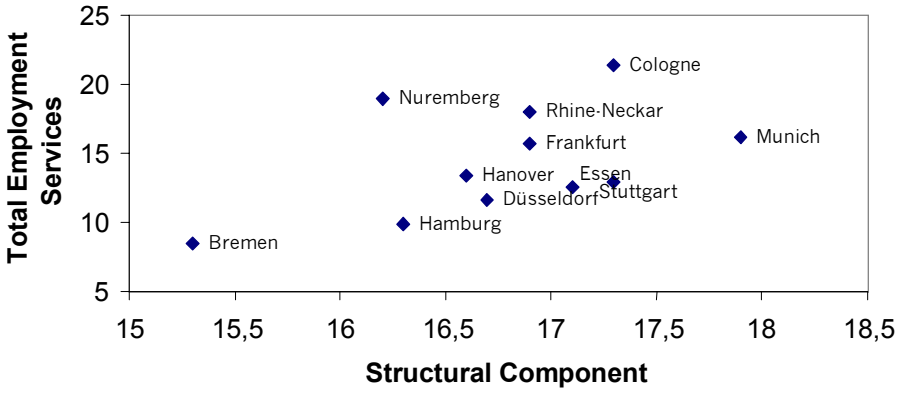
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 20: Correlation between the Structural Components of Service Employment and the Total Service Employment Change 1977-1989 (%) R = 0.38



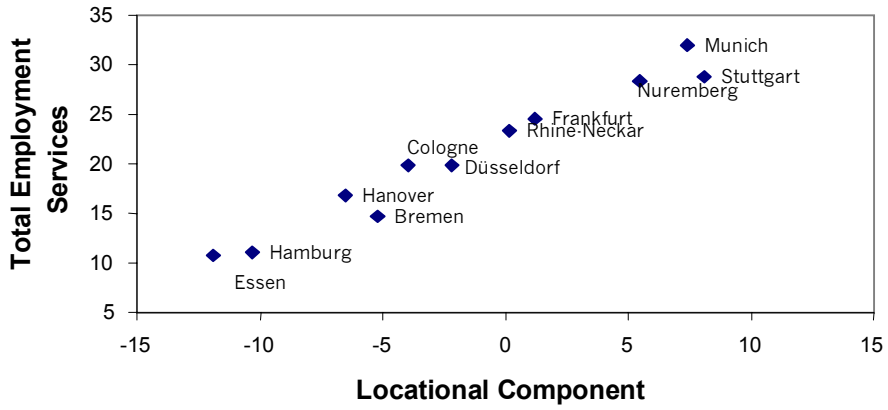
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 21: Correlation between the Structural Components of Service Employment Change and the Total Empoyment Change 1989-1998 (%) R = 0.51



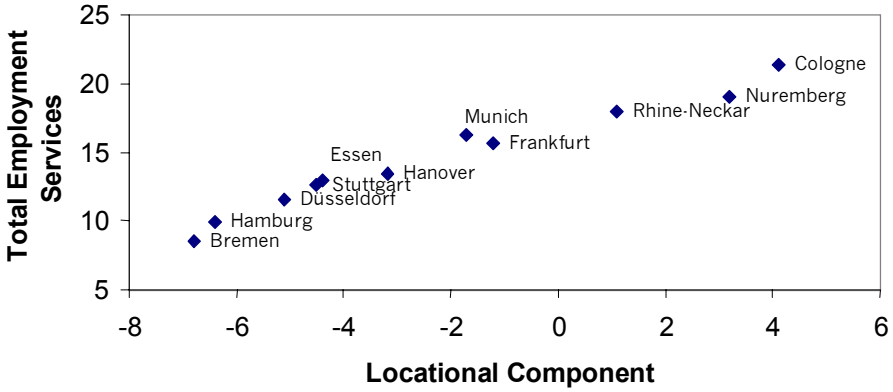
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 22: Correlation between the "Locational" Components of Service Employment and the Total Service Employment Change 1977-1989 (%) R = 0.98



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 23: Correlation between the "Locational" Components of Service Employment Change and the Total Empoyment Change 1989-1998 (%) R = 0.97



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 11: Employment Rates 1998 in West-Germany, Düsseldorf, Munich and Stuttgart (Employees in Percent of Inhabitants)

	West-Germany	Düsseldorf	Munich	Stuttgart
Total	36.2	43.5	40.3	39.5
	100	120	111	109
Industries	10.2	12.0	9.6	16.1
	100	117	94	157
Knowledge intensive Industries	5.0	4.8	5.5	9.6
	100	97	111	193
Other Industries	5.3	7.2	4.1	6.5
	100	136	78	123
Services	23.2	29.2	27.8	20.8
	100	126	120	90
Business Services	6.2	8.4	8.1	6.0
	100	134	130	95
Knowledge intensive Services	4.2	5.6	6.0	4.3
	100	136	144	104
Other Business Services	2.0	2.8	2.1	1.7
	100	131	103	79
Distribution Services	7.7	10.9	8.2	6.5
	100	142	107	85
Consumer Services	1.8	1.9	3.0	1.6
	100	107	168	91
Social Services	5.4	5.3	6.4	4.5
	100	98	119	84
Government Services	2.1	2.8	2.8	2.1
	100	131	131	100
Knowledge intensive Ind/Services	9.1	10.4	11.5	13.9
	100	115	126	152
Household-related Services	7.3	11.2	10.2	7.4
	100	153	140	101
Domestic trade oriented Services	16.9	20.8	20.4	14.8
	100	123	121	88
Export oriented Services	6.3	8.4	7.4	6.0
	100	133	117	95

Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 12: Employment Rates 1998 in West-Germany, Bremen and Essen (Employees in Percent of Inhabitants)

	West-Germany	Bremen	Essen
Total	36.2	27.5	26.7
	100	63	59
Industries	10.2	8.4	7.3
	100	82	72
Knowledge intensive Industries	5.0	3.2	2.6
	100	64	52
Other Industries	5.3	5.2	4.8
	100	99	90
Services	23.2	20.3	19.4
	100	87	83
Business Services	6.2	4.0	4.3
	100	63	69
Knowledge intensive Services	4.2	2.4	2.6
	100	58	62
Other Business Services	2.0	1.6	1.7
	100	74	79
Distribution Services	7.7	7.7	6.4
	100	100	83
Consumer Services	1.8	1.1	1.2
	100	61	65
Social Services	5.4	5.5	5.8
	100	102	107
Government Services	2.1	2.0	1.6
	100	95	76
Knowledge intensive Ind/Services	9.1	5.6	5.1
	100	61	56
Household-related Services	7.3	7.6	7.3
	100	104	100
Domestic trade oriented Services	16.9	15.5	15.3
	100	92	91
Export oriented Services	6.3	4.8	4.0
	100	75	64

Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Table 13: Employment Shares in Knowlege Intensive Industries 1998 (%)

	West-Germany	Düsseldorf	Munich	Stuttgart
Employment total	100	100	100	100
Industries	32.6	27.5	23.9	40.7
Knowledge intensive Industries	13.3	11.1	13.8	24.2
Knowledge intensive Industries:				
As Percent of Industrial Employment	40.2	40.3	57.8	59.6
Chemicals	6.7	13.6	6.0	2.3
Machinery	7.8	7.4	4.4	11.4
Motor vehicles	9.1	4.9	13.2	22.8
Aircraft	0.8	0.2	5.8	0.1
Electronic	12.3	12.0	21.5	17.7
Computing Hardware	0.7	0.2	3.0	0.1
Instruments/Optics	2.8	2.0	3.9	5.2
	West-Germany	Bremen	Essen	
Employment total	100	100	100	
Industries	32.6	26.5	24.1	
Knowledge intensive Industries	13.3	10.1	8.5	
Knowledge intensive Industries:				
as Percent of Industrial Employment	40.2	38.0	35.2	
Chemicals	6.7	2.6	4.8	
Machinery	7.8	5.9	5.2	
Motor vehicles	9.1	12.9	11.9	
Aircraft	0.8	4.3	0.0	
Electronic	12.3	9.7	11.9	
Computing Hardware	0.7	0.2	0.2	
Instruments/Optics	2.8	2.4	1.2	

Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

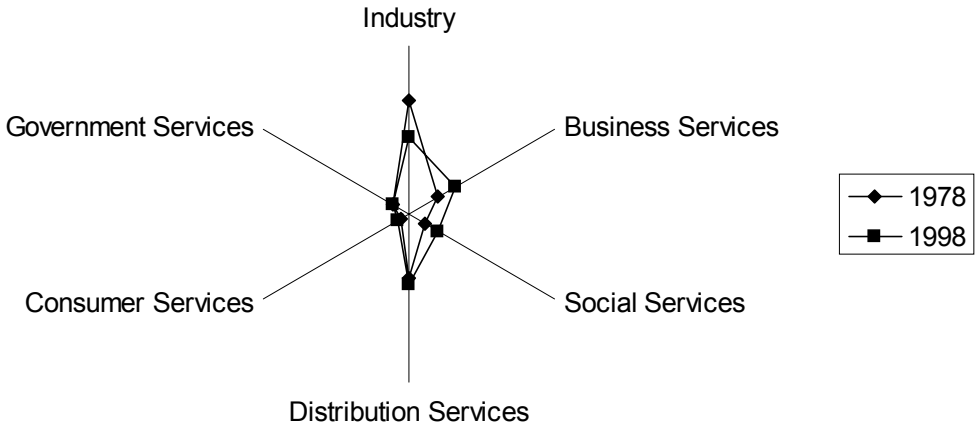
Table 14: Employment Shares in Knowlege Intensive Business Services 1998 (%)

	West-Germany	Düsseldorf	Munich	Stuttgart
Employment total	100	100	100	100
Services	58.6	67.1	69.3	52.6
Business Services	13.1	19.2	20.3	15.1
Knowledge int. Business Services	8.1	12.9	14.9	10.9
Knowledge intensive Business Services as percent of Business Service Employment	66.4	67.2	73.4	72.3
Finance and Insurance	32.4	31.1	34.2	34.4
Legal and Management Services	18.4	21.7	15.4	19.4
Engineering, Architectural Services	12.8	7.3	20.5	14.6
Public Relations, Advertising Serv.	2.8	7.1	3.3	3.9

	West-Germany	Bremen	Essen
Employment total	100	100	100
Services	58.6	64.2	63.8
Business Services	13.1	12.5	14.3
Knowledge int. Business Services	8.1	7.7	8.4
Knowledge intensive Business Services as percent of Business Service Employment	66.4	60.8	58.9
Finance and Insurance	32.4	29.1	19.9
Legal and Management Services	18.4	18.2	21.3
Engineering, Architectural Services	12.8	11.1	14.7
Public Relations, Advertising Serv.	2.8	2.4	3.0

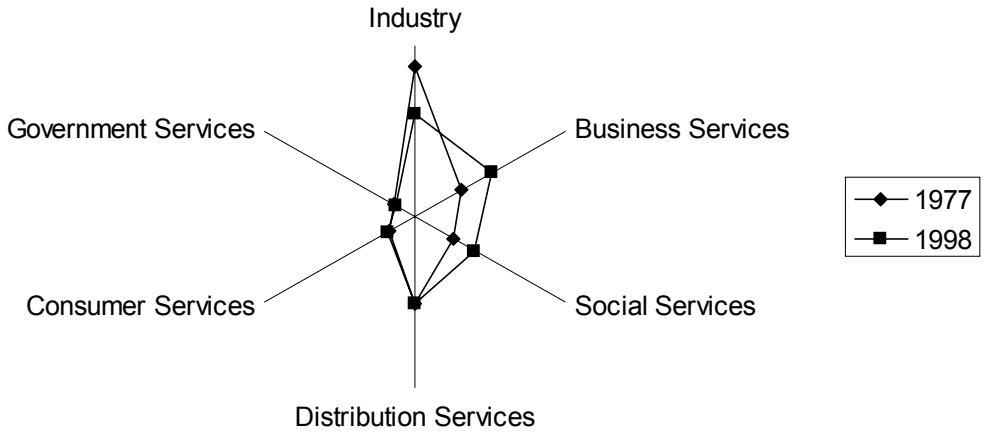
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 24: Changes of Employment Shares in Düsseldorf 1977-1998 (in % of Total Employment)



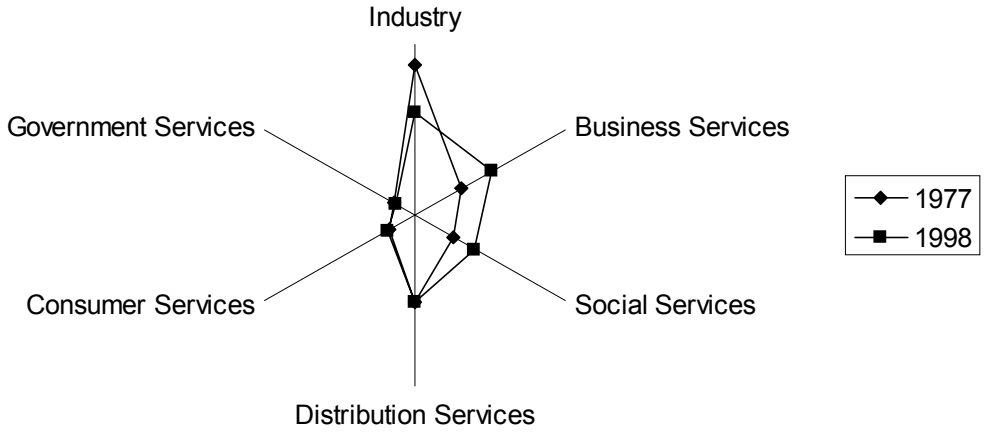
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 25: Changes of Employment Shares in Munich 1977-1998 (in % of Total Employment)



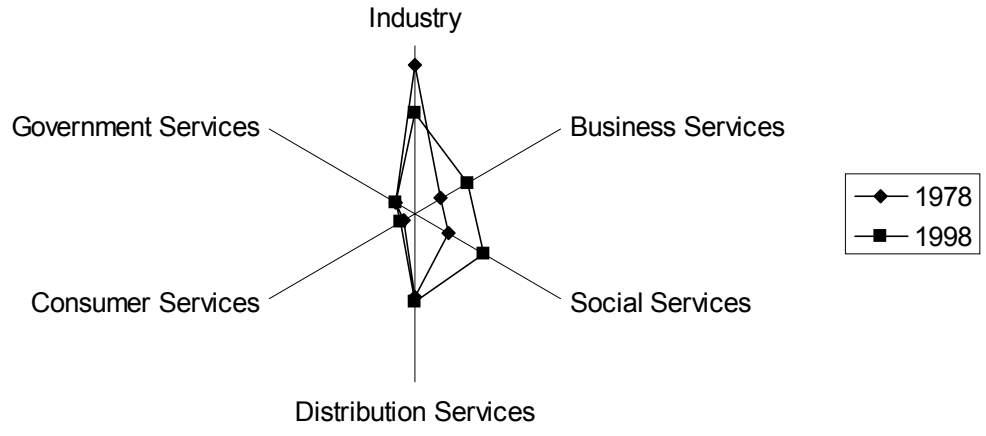
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 26: Changes of Employment Shares in Bremen 1977-1998 (in % of Total Employment)



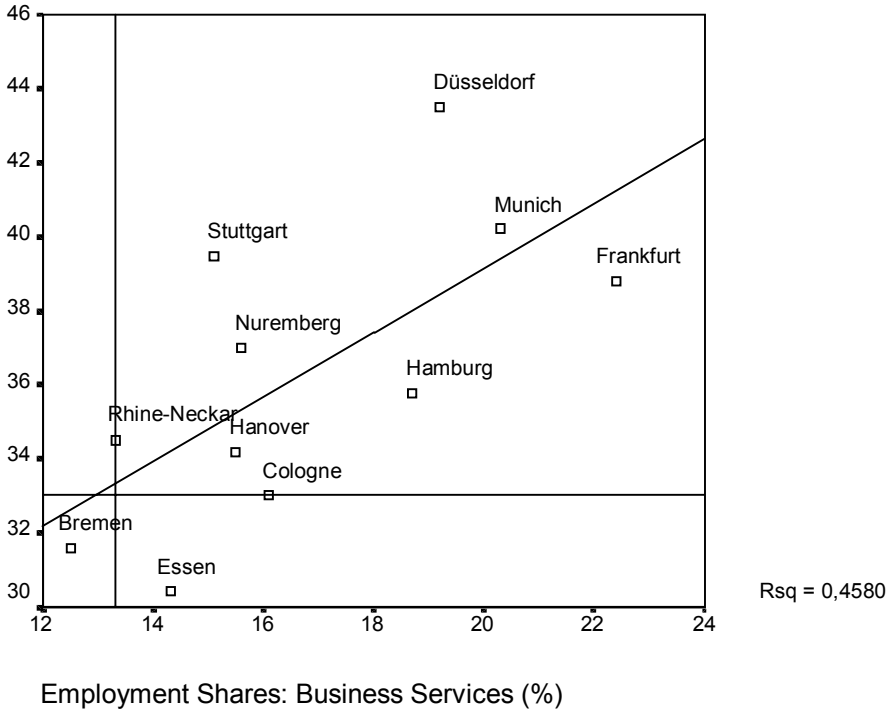
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 27: Changes of Employment Shares in Essen 1977-1998 (in % of Total Employment)



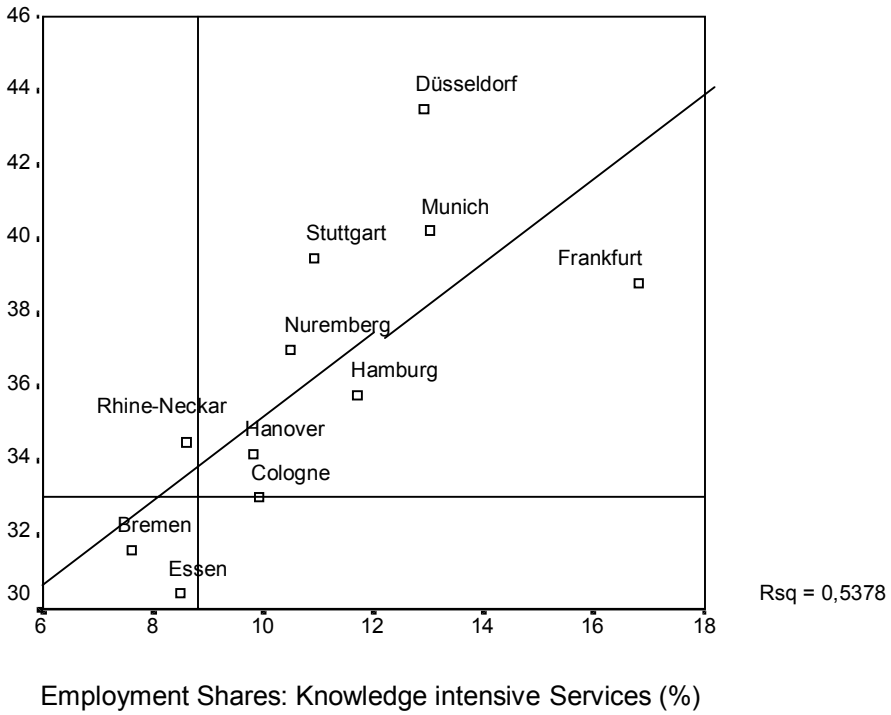
Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 28: Correlation between Employment Shares in Business Services and the Total Employment Rate 1998 (r = 0.65)



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

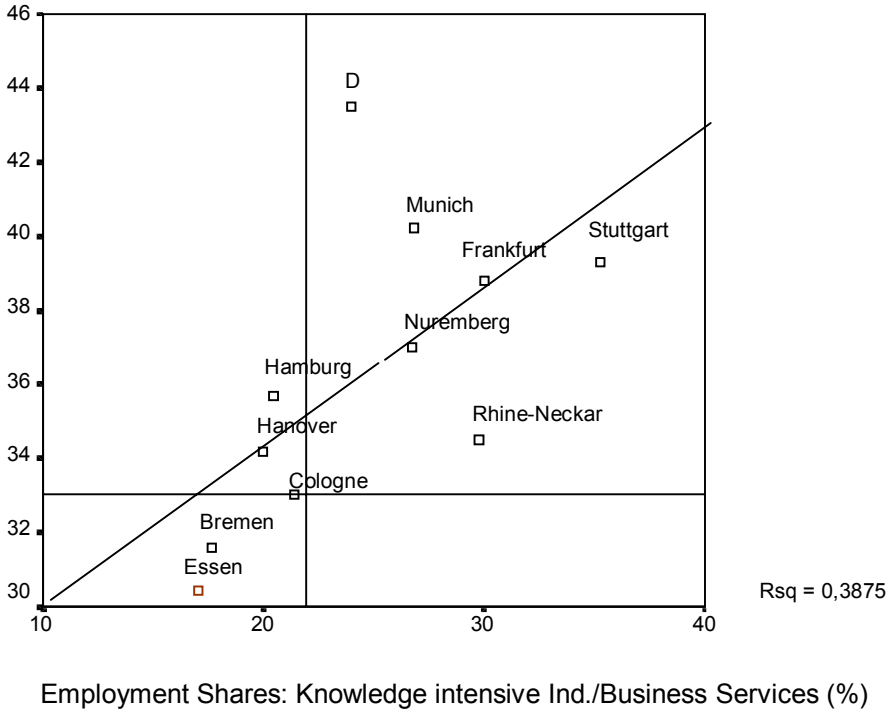
Figure 29: Correlation between Employment Shares in Knowledge Intensive Business Services and the Total Employment Rate 1998 (r = 0.70)



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

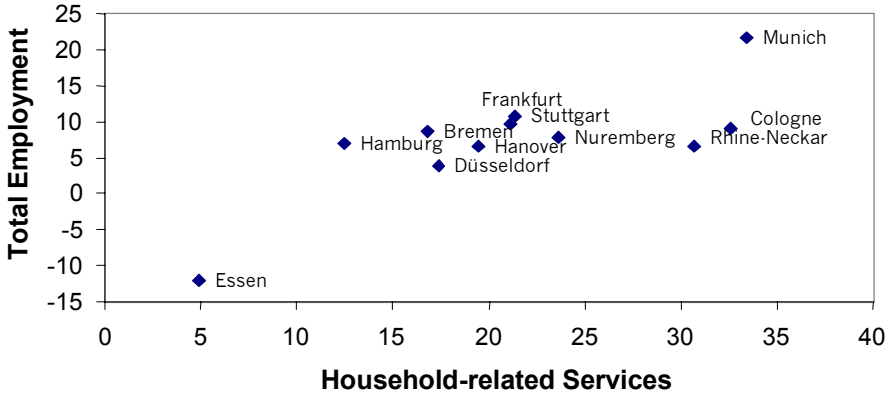
Figure 30: Correlation between Employment Shares in Knowledge Intensive Industries/Business Services and Total Employment Rate 1998

(r = 0.56)



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

Figure 31: Household-related Services and Total Employment: Growth Rate 1977-1998 (%) R = 0.77



Source: Regionaldatenbank Arbeitsmarkt am WZB/AB.

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