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Producer Services, Transaction Activities, and Cities

Rethinking Occupational Categories in Economic Geography

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Abstract Applying insights from 'new institutional economics' to classify economic activities or occupations avoids some problems for which conventional classifications of services and particularly producer services have long been criticized. In institutionalist thinking the mixture of organizational forms such as market, hierarchy or network in an economy is mainly determined by transaction costs, which can in turn be correlated to specific 'transaction activities'. Typical transaction activities can be identified in markets and in other institutional arrangements, allowing the classification of real economic activities, occupations or firms as transactional or not. Many other commonly applied labels like information related activities appear comparatively imprecise. This categorization and differentiation sheds new light on discussions about spatial development, from the world city debate to claims about the presumed role of high-tech occupations in metropolitan areas. It is argued that transactional occupations, especially those requiring higher qualifications, can be expected to be highly concentrated in larger agglomerations. In contrast, many non-transactional occupations though requiring high qualifications and usually also regarded as basic for metropolitan economies, like parts of R&D, are not necessarily concentrated there.

1. Introduction

It is widely accepted in social sciences that contemporary societies evolve into *information* or *service economies,* regardless of whether output or occupations are considered. *Producer service*s, or more narrowly defined, business or professional services are said to be of major importance for competitiveness and employment creation. In urban and regional research, little doubt exists that the dynamic economic cores of the major metropolises or world cities are formed by these producer services, where they are concentrated, in contrast to smaller cities or hinterlands. Amazingly, these occupational categories are usually not *positively* defined. It appears that there are no generally accepted criteria according to which service output or occupations could be classified. In official statistical sources and, as a result, in much empirical work *residual* definitions are used. Services are then those activities that neither produce nor physically modify material goods, and the output of such activities cannot be stored, transported or owned (Illeris 1996:12). Correspondingly, business services remain as a subgroup of services after public, financial, welfare and household services are excluded from the total of services (EC 1999a: 47).

Research on producer services intensified after Singleman proposed dividing services into four subgroups: social, personal, distributive, and producer services (Delaunay & Gadrey 1992). The unequal spatial distribution of these producer services, whether organized as independent firms or in corporate headquarters, has been studied widely on the international scale following the inquiry of Noyelle and Stanback (1984) into structural changes in the economic base of American cities. Friedmann and Wolff (1982), for example, described 'world city formation' and Sassen (1992, 1998) 'global cities'. Meanwhile extensive literature has developed around these analyses (cf. Beaverstock et al. 1999) and comparative, empirical research is under way (Taylor & Walker 2000). Numerous studies investigated the inter-regional distribution of producer services for single nations, as well as intra-regional patterns for urban regions (e.g. Moulaert & Daniels 1991, Moulaert & Tödtling 1995, Illeris 1996, Daniels 1998). Overlapping with the term producer services is the term informational activities. The focus on information derived from Prorat's (1976) work, who identified a growing sector of activities being occupied with the production, handling and distribution of information. The spatial concentration of such 'white collar' occupations, also labeled quaternary activities, in major cities was analyzed by Gottmann (1961, 1983), who predicted in his later book the *coming of the transactional city*, in which the number of jobs concerned with informational occupations would by far outnumber jobs in material production. This argument was rein-

forced by Castells (1989) with allusion to the ongoing revolution in information and communication technologies. All the research mentioned above only overlaps in part with the approach developed subsequently.

The main difference to the aforementioned research stems from the fact that little explicit reference has been made in either of these fields to institutional economics as proposed by Coase (1937) and Commons (1934) and further developed mainly by Williamson (1981, 1985). Studies following this approach lead to a very different view of the sectoral composition of output and economic activities, which also impacts upon questions of spatial distribution. A general definition of *transactional activities* or of *transactional occupations*, related to specific professions, can be derived from that approach. In part classifications based on these definitions coincide with conventional classifications, but in part they differ significantly e.g. as regards producer services.

Institutional economics starts out with the recognition that economic coordination is costly and asks which organizational forms, such as the opposite modes of markets or hierarchies, will economize on transaction costs. These transaction costs are, in Arrow's often quoted general definition, the 'costs of running the economic system'. With a few exceptions, insights of institutional economics and of empirical studies based on that approach have largely been neglected in the debates about the service economy and about the role of producer services in regional development. The most notable exception is the 'Californian school', which developed mainly on the basis of the work of Scott (1988a, b) and Storper (1989), integrating theories of spatial and organizational structure and change. In these studies the institutionalist explanation for changes in the level of vertical integration, is applied to explain organizational and hence spatial dynamics. In the more recent work Scott (1998) and Storper (1997) also take regulationist and evolutionary theories into account. Another exception is Cappelin (1988:275) showing that 'transaction costs should be jointly considered with spatial demand, production costs and transportation costs' to explain optimal locations of firms and households. Further, Lambooy and Moulaert (1996) discuss the potential of the institutionalist and other approaches for explaining contemporary processes of spatially differentiated socio-economic growth and decline. The authors rightly criticize the institutionalist view as not being capable of explaining present post-fordist transformations of spatial units, as opposed to regulationist and evolutionary reasoning that take into consideration a much wider set of influences deriving from technological, political and labor market factors.

Notwithstanding this criticism, however, it appears that the potential contribution of the institutionalist approach for describing and analyzing the social division of labor as well

as its spatial structure and change has been underestimated. For instance, spatial consequences from findings of macro-economic institutionalist studies showing a constant increase in the share of the transaction sector in Gross National Product (GNP) have not yet been assessed. Wallis and North (1986) show in their historical study about the United States that beginning in 1870 the share of transaction costs in GNP expanded from roughly one fourth to more than half in 1970. The authors make use of a broad definition of transactional activities including intermediate enterprises (wholesale, retail, financial services), transactional activities within production (of goods and services) and a part of public services (social overhead costs). A narrower definition for the transaction sector is employed by Löchel (1994) in an investigation about Germany. He includes only trade, insurance, banking and 'other services' (consulting, marketing, legal advice etc.) and omits those parts of the tertiary sector that are mostly state controlled (like public services or education). The share of the transaction sector then accounts for about one fifth of value added in 1960 and increases steadily until it reaches one third in 1990. These accounts are based on the view that economic sectors should be basically divided into transaction industries on one side and non-transaction industries (production/transformation) on the other. Consequently, the service sector would no longer exist as a separate ‘main’ category since its segments conducting mainly transaction activities (retail and wholesale trade, finance, insurance, real estate) constitute the transaction sector and the remaining segments (like personal services and transportation) are part of the non-transactions sector.

Obviously, many questions arise concerning services and the subgroup of producer services when these studies are given any weight. Some of the most important ones are: Can transactional activities and occupations be conceptualized in a way that distinguishes them clearly from the so-called services in general and from producer services in particular? How important will transactional activities be in the emerging post-fordist economies that are in the process of being created by increasing flexibilization, deregulation, and globalization (e. g. Boyer 2000) on the one side, and by rapidly developing electronic information and communication technologies on the other? From a geographical perspective, how are transactional occupations distributed over various spatial levels? And, regarding the dynamics of urbanized areas and national territories, are changes towards suburbanization and interregional decentralization to be expected or will spatial concentration increase? This paper cannot answer these questions in depth, but rather tries to join different lines of thought and open new routes for theoretical and empirical inquiry.

In the following, *second* part of the paper, an institutionalist vocabulary is applied to define transactional activities and occupations. The variability and significance of such activities is demonstrated with examples from the 'real world'. Differences to analyses centered on the term information and information related occupations are briefly pointed out. In the *third* part the widely used NACE classification is reinterpreted especially for business services showing that they not only include transactional, but also non-transactional activities. In the *fourth* part some general hypotheses about the spatial distribution of transactional occupations and probable changes in that distribution are developed. Since producer or business services are of outstanding interest in the debates about urban and regional development, consequences for spatial analysis that ensue from the differences between the proposed transaction based categorization of occupations and conventional classifications are discussed. Finally, in the *fifth* part, conclusions are drawn and some questions for further research outlined[1].

2. Services, producer services, information and transaction activities

In the literature on services, the complaint that the category services is extremely heterogeneous is endemic. General conclusions, it is argued, on the growth or spatial distribution of services can only be drawn for certain subgroups for that reason. Numerous subdivisions of services have been proposed from a macroeconomic perspective (cf. Illeris 1996). But Marshall and Wood (1995:35), quoting their earlier work, state that 'questions of classification and definition remain as problematic as ever' and that the 'passage of time has only reinforced this conclusion'. Recently, Daniels (2001:13) argues that the differentiation between services and manufacturing is an indefensible 'artificial division of these two economic sectors' and should be dismissed altogether, since it is an 'impediment' to research in face of the dynamically changing interfaces between these sectors.

Summarizing the debates about services, Walker (1985:43) earlier correctly judged conventional approaches as being composed of 'fragmented ideas about markets, firms and economies of scale' and disentangled in his work much of the confusing discussion. His demand is that 'one must deal with complex production systems' or find a 'way of handling the division of labor in the modern capitalist economy' (ibid). While this approach insists upon the central role of labor in any kind of production and rejects the notion of 'post-industrial economies' it does not entail an overarching view of social organization like institutional eco-

[1] In general, the paper is focused on the private sector, governed by competition, because of its significance for

nomics, interpreting firms and markets as alternative means to achieve economic coordination, but criticizes institutional economics mainly for not being capable of explaining complexity of industrial organization, in particular the large 'middle ground' of organizational forms which neither fit the market nor the hierarchy mode, and as being fixed on static efficiency which rules out the ability to come to grips with situations of monopolistic competition (Sayer & Walker 1992).

The institutional perspective appears nonetheless appropriate if the limited goal is to discriminate between categories of activities or occupations that can be used to describe technical and social divisions of labor. Transactions are a distinctive category in economic life. Taking their attributes and their role with regard to the division of labor into account can make a significant contribution to achieving this task. To trace the contribution of the institutionalist approach to the debate on services in general is, however, beyond the scope of this paper. The focus of the following will be on producer services and transaction activities and the spatial aspects of their development. Terms like 'informational occupations' or 'information related activities', common in much work on producer services and spatial development, are of little use for this exercise since they cover too diverse a range of occupations. For example, basic research, programming for automated manufacturing and strategic decision making are all information related activities, but fulfill quite different economic functions as will be shown below.

Transactions, their costs, and organizational form

The institutionalist approach takes as its ultimate unit of investigation the *transaction,* in contrast to other schools like the marxist that start their analysis with objective qualities of *commodities,* or the psychological school that concentrates on subjective, time and place specific aspects of individualistic *needs*. The transaction is the unit that 'correlates law, economics, and ethics' as Commons (1934:58) put it. In this way, the institutionalist view allows the rejoining of what had been divided up into different theoretical realms of social sciences. Whereas Commons, in his terminology, points to the proprietary aspects of transactions, defining them as 'the rights of future ownership of physical things', Williamson (1981:1544) emphasizes the actual exchange and includes immaterial objects. 'A transaction occurs when a good or service is transferred across a technologically separable interface. One stage of activity terminates and another begins.' Transactions then link discrete steps in a chain where economic value is created, as in a production process (of a material good) or the transformation

spatial development. Government and non-profit activities are largely omitted.

of the condition of an object or a person (usually called a service). Transactions are the necessary result of the internal (technical) or external (social) division of labor and can occur in firms, markets or other organizational settings. This interpretation of transactions relates not only to *tangible* ('material') goods, but also to *intangible* ('immaterial') goods such as knowledge, i.e. the results of research and development activities. Williamson, as quoted above, explicitly mentions transacting of 'services'. The extensive debate in the literature on services, whether an output of economic activity is to be classified as a good or a service is consequently of minor importance for further analysis. What results as the basic question is, whether a given activity is to be classified as concerned mainly with a discrete step in the *production* or *transformation* of a certain output (be it a car, a novel, or a computer program) or with a *transaction* between different steps like R&D, design or manufacturing in the process of creating this output or transferring such output between different economic agents. These steps are of course usually much further subdivided, which requires correspondingly more transactional work. They are executed by economic units, which can be single persons or firms, and are typically related to certain specializations that then are occupations or professions of persons, or core competencies of firms.

Williamson (1975, 1981) divides economic organizations into two basic forms, hierarchies and markets. Within hierarchies or firms, he avers, transactions are regulated by hierarchical coordination based primarily on plans or instructions, whereas in markets, coordination is achieved mainly by the use of the price mechanism. These opposite organizational forms of course cannot describe economic reality, since an enormous differentiation of organizational forms is possible. There are organizational structures, like networks, that are governed by relational coordination and in firms or markets, agents can utilize elements of the opposite organizational form (Williamson 1985, Powell 1990). For example, firms can decentralize internally by setting up partially independent units on different levels with various degrees of autonomous regulation. In markets, agents can establish long-lasting relationships or, in the case of firms, strategic alliances. The institutionalist approach is primarily concerned with the question, what organizational form will be cost-efficient under specific economic circumstances, where these circumstances differ mainly along three dimensions: first, the specificity of assets required for a transaction, second, the frequency with which similar transactions occur, and third, the complexity and uncertainty of transactions.

The total cost of a transaction can be split up into costs for coordination and costs for motivation (Milgrom & Roberts 1992). In markets, costs for *coordination* arise from the need to determine prices and all the other necessary details of a transaction, to search for potential

buyers or sellers, to bargain on the conditions of a contract, to control the execution of a contract, etc. Within firms, information has to be gathered, compiled and transmitted through hierarchies, different options for plans and strategies have to be evaluated, decisions must be made and communicated, their execution monitored. These costs of coordination in firms will depend primarily on the degree of the division of labor. The larger the firm in horizontal and vertical direction, the more internal transactions will take place. In markets, coordination cost will depend on the size of markets. The more buyers or sellers there are, the more differentiated the products, and the more geographically dispersed the market participants are located, the higher (everything else being equal) the cost for coordination will be.

While coordination costs in firms or markets thus depend on rather objective conditions of the economic environment, costs for *motivation* have a quite different foundation. They are related to costs that depend on the behavior of the parties to a transaction. Since transactions are carried out by human beings, it can neither be expected that the actors solve problems in a completely rational way, nor that the actors behave without taking their real self-interest into calculation. There may be, in Williamson's (1981) terms, more or less 'bounded rationality' and 'opportunism' in economic behavior. In organizational arrangements costly safeguards against these conditions have to be established. Such behavioral problems affect market and non-market forms of organization alike, though to a different degree and for that reason necessitating different appropriate control mechanisms.

Costs of motivation then reflect behavioral constraints, they are of a *subjective* nature. The costs of coordination, however, depend in the first place on the degree of the division of labor or size of markets, which is an *objective* condition for any real transaction. These two dimensions of transactions are not independent from each other. In many real economic situations it is hard to decide whether motivational aspects determine the chosen coordination mechanism or the other way round (Milgrom & Roberts 1992).

Transaction activities, the division of labor within and between firms, and post-fordism

The new institutionalism is mainly concerned with the efficiency of transactional arrangements and for that reason with costs and conditions of economic reality that influence these costs. These transaction costs are obviously closely connected to different *transaction activities* which are of primary concern in the present context, and have to be carried out in markets and firms, and in any other organizational arrangement.[2]

[2] These transaction activities should not be viewed as simply calibrating the ‚economic mechanisms' as in machine systems. Any economic transaction is deeply embedded in social structures and processes and possesses ‚relational qualities' (Storper 1997: 37).

In markets six main transaction activities can be distinguished. There are pre-contractual activities, necessary for preparing contracts such as search and inspection. The parties to a transaction will then engage in bargaining and contracting activities, which are usually followed by the post-contractual activities: execution, control and enforcement (Furubotn & Richter 1997:284).

Within firms, managerial transaction costs arise for establishing, maintaining or re-structuring the organizational setup. Typical activities are personnel management, monitoring of business and employees, decision making, dealing with inter-firm relationships (e.g. mergers, acquisitions, alliances) or public relations.

Institutionalist reasoning tells us that transaction activities, in interdependence with the division of labor in production, can be structured in an endless variety of organizational forms. Specialized transaction activities can be performed at different levels of the division of labor: as specific jobs or professions, as firms or units internal to firms. Which organizational form prevails in a certain economic setting depends on a wide array of conditions. Institutionalist theory insists on the primacy of transaction cost, in turn being determined by the specificity of investments, frequency, uncertainty and complexity of transactions. But historical conditions, as well as distribution and power relationships cannot be excluded from the analysis without sacrificing the explanatory power of the approach with regard to the real world (Pitelis 1998). Nevertheless, from the institutionalist perspective transaction activities can be positively defined.

In the following, examples for specialized transaction activities will demonstrate their often underestimated economic significance and their enormous variability, be it within the boundary of firms, as firms themselves specialized in transacting or in sector and place specific production systems.

Individual workers (or other organizational units) can be specialized in transaction activities within firms of the non-transaction sector, which comprises firms whose core competencies lie in any field other than transactions, e.g. manufacturing, movie production, transportation, engineering, or personal services. Specializations *within firms* can be identified as specific occupations or professions, they begin with a foreman, a manager on a lower intrafirm level or a sales representative, but also include highly specialized and qualified production planners, procurement specialists or top managers. While some of those employees will mainly deal with either internal or external transactions (e.g. production planners as opposed to procurement specialists) others (e.g. top-managers) may be occupied with both domains.

But there are evidently many *firms* that specialize in transactional activities, they constitute the transaction sector. Theoretically, for transaction firms, an 'optimal firm size' can be deduced much in the same way as for production firms in the neoclassical approach. If decreasing returns to scale are assumed, there is only one value of turnover where a transaction firm maximizes its profit (Furubotn & Richter 1997). In a real economy examples for transaction firms abound. Any activity that mainly consists of brokerage, be it for property, jobs, commodities or capital, foreign currencies or financial products can be said to be of pure transactional character. The same can be said of consulting that relates to market conditions, whether the clients of such firms are businesses, public organizations or private individuals. The former includes consulting on economic, legal or organizational issues, the latter might be counseling on professional career or job training. Many such transactional firms are extremely specialized. Consider for instance 'headhunting' firms that search highly qualified personnel for specific positions and arrange the hiring or 'outplacement agencies' that mediate the firing.

Thus, transactional activities as defined here only partly intersect with those occupations that are usually regarded as transactional in the tradition of Jean Gottmann, who referred mainly to the 'white collar revolution' caused by scientific, technological and economic progress and resulting in shifts in occupational structures towards 'quaternary services' (Gottmann 1982, 1983; Corey 1982). For instance, consulting by specialized firms or internal decision making are to be considered as transactional in Gottmann's perspective and in the view based on the institutionalist definition. Engineering work, qualified medical care or technical occupations and research in natural sciences, however, also characterized as quaternary services by Gottmann, are clearly not considered as transactional here, since such occupations are not typically centered on organizing transactions between economic agents.

As in the non-transaction sector, such firms of the transaction sector vary tremendously in their economic power and significance. A small shop may be specialized in transacting, as well as a large wholesale company. Huge international enterprises now exist, whose core business is to organize 'buyer driven global commodity chains' (Gereffi & Korzeniewicz 1994) in labor intensive consumer goods industries. These core companies, as in athletic footwear *Nike* or in apparel *Liz Claireborne,* are 'manufacturers without factory' (Gereffi 1996:430), concentrating on the critical steps in the commodity chains confronted by complicated transactional conditions. They perform design, import, distribution, marketing and advertising, and contract the intermediate steps of raw material processing and manufacturing to secondary companies, often in third world countries. Many firms specialized in transactions

have developed in huge compartmentalized, international companies, as in advertising and marketing (Lash & Urry 1994), management consulting (Illeris 1996), law (Beaverstock et al. 2000) or auctioneering (Fischermann 1997).

The more uncertain and complex transactions are, the higher is the demand for special know-how to arrive at acceptable contractual arrangements for the parties involved. The *culture industry* provides many examples for firms specialized in arranging economic exchange, which can be explained by the peculiar traits of that industry (cf. Ryan 1991). The economic value of a product in that industry (a film or a novel) is extremely difficult to assess in advance. Life cycles of products can be extremely short. There are specific problems of: how to manage the creative process because of the contradictions in the artist-capitalist relation, how to protect copyrights, and how to distribute benefits between participants in the process of creating the original artifact, producing and marketing it. In many fields of the culture industry, for instance, artists that create the originals, such as writers, screen writers, or musicians, have their economic interests represented by agents, typical specialists for transacting, whose work exemplifies the intricate task of establishing a deal in this industry. For the case of the British *publishing industry,* Lash and Urry (1994:116) describe in detail 'the rise of the agent' in the late 1980s referring to the numerical growth of such firms and also to their growing economic significance. Similar processes appear to be happening in Germany. Whereas in 1985 only about a dozen specialized agent firms existed in (literary) publishing , now about 80 such firms can be found (Nentwich 2000).

Another case of a culture industry with many firms specialized in managing mainly or exclusively transactions is the American *film industry,* agglomerated in Hollywood . There are, first, on a low level of sophistication, enterprises like casting firms that only search for and vet potential new actors for certain roles. Second, 'producer' firms exist that actually carry out little production themselves, but rather organize the production process: This starts with finding new stories and scripts from the thousands of screenwriters that populate Hollywood, to the interlinking of a large number of small production firms that actually do the shooting, supply necessary personnel and equipment and perform post-production (Storper 1997). And again there are, thirdly, agent firms that now perform a very significant if not dominating role in that industry (Puttnam 1997).

Highly specialized and differentiated organizational structures as in the Hollywood film industry have been shown to exist in many other industrial districts or industrial complexes in many sectors of manufacturing as well as in service industries (e.g. Scott 1988a, b, Sengenberger 1992). Regularly certain professions or firms in such production systems are

specialized in transacting. Scott (1997), analyzing specifically the organizational structure of cultural production complexes, points at large international and interregional firms that 'straddle the critical interface between any given agglomeration and global markets' and continues to enumerate small scale transaction specialists such as 'agents, contractors, 'impannatore', dealers, representatives, jobbers' that work on the intraregional level (p. 334). In Dei Ottai's (1994) account of production and related financing in Italian industrial districts, transaction specialists are described that are simultaneously 'entrepreneurs without a factory and lenders without money' (p. 542). Having developed trust relationships with both local producers and bank managers, these 'pure entrepreneurs' can reduce problems of information asymmetry between lending banks and credit taking producers, a relationship which is known to be complicated by problems of adverse selection and moral hazard.

In the culture industries some researchers find the typical market conditions of post-fordism that will more and more determine other industries' future already manifested: short production cycles, increasing product differentiation, importance of content, the high psychic gratification of products as opposed to the utilitarian aspects (Lash & Urry 1994). This argument is in line with the regulationist view, asserting that since the mid-seventies in traditional industries fordist principles of organizing the internal and external division of labor gave way to a new paradigm, though different countries developed along different socio-economic trajectories (e.g. Lipietz 1997, Boyer 2000). Within firms some broad trends can be identified, like the implementation of more flexible forms of work organization, higher autonomy of certain units and sometimes stronger internal competition, reduction of hierarchical levels, and expanding use of programmable machinery (Sayer & Walker 1992). The external relationships are characterized by outsourcing and an intensified division of labor between firms. At the same time the geographical spread of many markets tends to grow larger with globalization. How will these trends impact upon the overall share of transaction activities? While some trends of internal restructuring (e.g. reduction of hierarchy levels, resynthesis of tasks through information technology) tend to lower the importance of transactions, others (like stronger internal competition) rather increase the necessity of such occupations. With regard to external relationships, a trend towards an expansion of transaction activities can be anticipated, fuelled mainly by intensified outsourcing and the geographical extension of markets. In many countries this stronger need for coordination in the private sector will receive an additional impulse from the ongoing reorganization in the public domains driven by neo-liberal policies. Privatization and deregulation of formerly state controlled sectors like telecommunication, mail services, health, and education will increases the use of competitive forms of

regulation, and hence the need of transaction activities. In sum, a significant growth in transactional activities appears predictable under post-fordist socio-economic regulation.

3. Transaction activities vs. producer services

The terminology used in the literature about services, producer and business services is in no ways unequivocal. Since many contributions refer to the European activity classification nomenclature (NACE) this taxonomy is discussed in order to reveal differences between transaction activities and common service categories. A recent official publication of the European Commission (EC 1999a) based on this taxonomy classifies services (Tab. 1) into the *main groups*[3]: consumer and producer services[4], each of those again into several *subgroups* (e.g. business services), which consist of a number subsectors (e.g. computer and related services) that are in turn composed of a number of *activities*.[5] They will be reclassified below according to the institutionalist perspective to show that existing occupational taxonomies can be beneficially reinterpreted.

Which of these subsectors or services can be classified as transaction activities according to the proposed definition? To answer that question, several results of the above discussion should be recalled. First, this classification does not deal with the question whether an economic activity results in a tangible (material) or intangible (immaterial) output, but whether an activity is to be considered mainly as some form of production/transformation or mainly as transaction. Second, these transaction activities are typically search, inspection, contracting, execution, control and enforcement in market dominated organizational forms, and management, monitoring, organizing in hierarchically structured forms. Third, transaction activities have a twofold foundation, irrespective of the organizational forms (such as firm, market or otherwise) in which they are performed. On the one hand, the amount of effort necessary for conducting transactions depends on the extent of the division of labor, which is objectively given for any real productive system. On the other hand, the intensity of necessary control activities in any of the myriad of daily transactions in a real economy also depends on

[3] The labels *main group, subgroup*, and *activities* are my own, the term *subsector* is also applied in a study of the EC (1999a).
[4] The other main group, *public utilities* (energy, water, telecommunication etc.), is not of primary interest in the present context, since most activities of this group are still under some sort of public control in many countries. This group is, therefore, omitted from further discussion.
[5] For the subsector computer and related services the activities are: hardware consultancy, software consultancy and supply, data processing, and data base activities. For complete list of activities within other subsectors of business services see EC 1999a:70-73.

behavioral conditions, which are the result of subjective decisions of individual actors. It should further be noted that for a meaningful classification of activities into production and transformation or transaction, the assumption has to be made that most jobs subsumed under these activities are described sufficiently by the label of that activity[6].

The focus of the following discussion will be to identify transaction activities in producer and business services. However, such activities in other (sub-)groups will be briefly identified first. Under the heading *welfare service,* belonging to **consumer services** in Tab. 1, education and training as well as health can be considered as intangible goods. A transformation in the condition of the 'clients' is reached by teaching in the one case and medical labor in the other, where both kinds of labor will regularly only be productive if they are combined with the necessary capital equipment. This could be said of *social security*, too, which has to be provided ultimately with tangible goods and labor.[7]

The activities subsumed under the subgroup *household services* are also almost all predominantly a form of production or transformation. This is obvious e.g. for repair work resulting in repaired goods or for restaurants and hotels providing hotel accommodation or food for customers. Though, of course, any productive work divided socially or technically implies a certain amount of transactional activities to function efficiently. Travel agencies are, however, basically engaged in organizing transactions between customer and a third party (and are therefore marked with two asterisks in Tab. 1). They do searching, inspecting and contracting for travel and accommodation arrangements between customer and another intermediate organization (tourism organization) or final supplier (like airline, railway, car rental companies or hotels).

Such transaction activities of travel agencies can be utilized by private consumers, but equally by business clients. Therefore, their classification as consumer service is misleading and sometimes they are labeled as 'mixed' services. This holds true vice-versa for some so-called producer services discussed below, like banking and insurance and even for activities classified as business services like architectural services (included in the subsector of technical services). An empirical investigation by Goe (1990) in three metropolitan areas in north-eastern Ohio reinforces this argument, showing that the majority of firms in six out of eight 'producer' services groups derived the major proportion of their revenues from consumers rather than business or public clients.

[6] In reality these activities consist of many different jobs and these jobs of single tasks which ultimately would have to be classified as production/transformation or transaction.
[7] Social security is also usually provided under state control and for that reason not discussed further.

The subsectors of the first **producer services'** subgroup, *distribution*, consists typically of transactional activities, be it retail, wholesale or intermediaries. The economic actors in these areas observe market conditions, try to find suitable arrangements between supply and demand side concerning prices, qualities and quantities of products in a specific time and place. These are activities of market coordination and, thus, overwhelmingly of transactional character. Physical transportation of goods should *not* be included here, since it can easily be interpreted as a special form of production (Milgrom & Roberts 1992). This, however, does not apply to the transactional activities performed with relation to transportation. It follows, for instance, that the work of a truck driver would be considered as part of production, but the work of a shipping agent as transactional.

Table 1. Main groups, subgroups, subsectors of services, and transactional content of their activities

Consumer Services		**Producer services**		
Welfare services	*Household services*	*Distribution*	*Financial services*	*Business services*
Education and training	Restaurants and hotels	Retail **	Banking **	Computer and related services *
Health	Repairs	Wholesale **	Other credit institutions **	Professional services **
Social security	Travel agencies **	Intermediaries **	Insurance **	Marketing services **
	Recreation and other cultural activities		Real estate **	Technical services
	Home services		Pension schemes **	Research & Development *
	Personal services		Venture/risk capital **	Renting and leasing services
	Other services			Labor recruitment and provision of personnel *
				Operational services
				Other business services *

**) Activities are *mainly* of transactional nature. *) Activities are *partially* of transactional nature.

The subgroup *financial services* has a special character. In all other subgroups, activities are characterized by a direct exchange of labor (physical/mental) and/or its products against some sort of pay. In the financial sector one area of activities (transferring money, keeping accounts, financing of export etc.) is related to the monetary side of that exchange of 'real' goods or services. These activities are part of the completion of transactions. In the other area of financial activities one form of money or capital, like assets, stocks, currencies, securities or derivatives etc. is exchanged against another one. The actual transfer of such titles is largely without friction and can be organized with comparatively little transaction costs or activities. Millions can be transferred with a mouse click across the world and result in gigantic profits - or losses. But precisely for that reason decisions require very careful preparation, market analyses and intensive control, hence, transaction activities. Investment banking might serve

as an example. It consists basically of assessing profitability of existing and potential, now often global, organizational structures, forecasting of market trends, buying and selling of firms, and the exchange of assets. In a similar way, the subsector real estate consists largely of transactional activities: brokerage, buying, selling, and managing of real estate, commercial buildings, offices, and private homes[8]. Usually the different subsectors and activities of the financial sector will be closely interlinked and conduct very intense transactions with each other. In sum, financial services can be characterized as being of transactional nature, which is in line with the categorization in the study of Wallis and North (1986).

The subgroup of *business services* attracted the most interest in much work done on competitiveness and economic development on the national and regional scale. All subsectors of that group will for that reason be judged according to their content of transactional activity in the following discussion.

The first subsector, *computer and related services,* is difficult to classify as a whole. Whether such activities are of transactional nature or not depends on the functions that are performed. Under this heading transaction activities like consulting on hard- and software can be found, but also activities belonging rather to production, like writing customized programs, possibly for automated manufacturing, and maintenance and repair of computers. This group is, therefore, regarded in part as transactional (being marked with one asterisk in Tab. 1)

The next two categories *professional services* and *marketing services* are definitely to be considered as transaction activities. Legal activities, accounting, consulting in tax, business and management being subsumed in the first group, and activities like market research and advertising in the latter.

The following subsector, however, *technical services*, including architecture and engineering, technical consulting and technical testing and analysis, will in general comprise activities that are rather a form of production, though essentially with immaterial output. Architectural plans, engineering concepts and technical blue prints perform very different functions than plans or concepts used for transactional purposes. Technical concepts can be regarded as a step in the production chain and they are absolutely indispensable. Their provision has to be coordinated with other steps in the production chain to yield marketable or planned results. But technical concepts or technical activities in themselves lack the subjective dimension of transactions. They are usually of scientific, objective character, which of course cannot be said of the exchange of such work between economic agents, whether in markets or firms. And even if engineers and architects perform transactional tasks besides their technical work,

[8] The construction and maintenance of premises and infrastructure, that is production, is regularly not performed

the core of their activities is generally in the domain of production. This does in no ways preclude, that under conditions of an elaborated division of labor, e.g. in an large engineering firm, a certain employee or possibly engineer performs exclusively transactional tasks.

In the literature *research & development* are often regarded as part of business or producer services (e.g. Martinelli 1991, Moulaert & Toedtling 1995, Illeris 1996, Daniels 1998), since most of these activities will be used by businesses and require high qualification levels of workers. The high qualification attributes causes writers following Gottmann's tradition (e.g. Corey 1982, 2000) to characterize R&D in total as quaternary or transactional. From the institutionalist point of view, however, a very similar argument, as advanced for technical services, can be applied again concerning the transactional character of R&D. The core of such work, especially in basic research, less so in applied research or development, is of a technical nature. It consists of the creation, application and further development of scientific knowledge, mostly in natural sciences. Although the economic exchange of R&D entails extremely complicated transactional problems, caused by its high immaterial content, complexity and uncertainty of its economic value, the knowledge itself is in general provided through lengthy, creative processes that often imply very high human-capital and technology inputs. For exchanging such knowledge in markets to the benefit of the parties involved, costly transactional arrangements are indispensable. Transaction specialists like specialized or patent lawyers are frequently involved in this exchange. Often, then, R&D is conducted by salaried researchers within the boundaries of firms or other institutions, since its evaluation is very problematic or the full appropriation by firms otherwise hard to achieve.

The main institutions conducting R&D are universities, research cooperatives funded by government and groups of firms, and industrial firms (Hayter 1996). The closer the activities of these institutions are to the application in marketable, final output, the more transactional aspects gain in importance. Strongly simplified, the following relations between production and transaction activities can be expected for the three main institutions doing R&D. In universities, which usually do most of basic research, transactional activities will play a minor role. Results of research, for instance, are often simply published in the international scientific literature, organizational and pay structures of universities are comparatively undifferentiated. Research cooperatives will pay more attention to organizational efficiency and market conditions and, hence, transaction problems, because they have to be profitable in the view of the private capital providing a share of their financial resources. And in industry R&D, most activities will be closely connected to the market situation, leading to a higher

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by firms of this subsector but contracted to other firms.

share of transactional activities in employment, managing the internal research processes and marketing the results externally. In innovative efforts of private firms, R&D activities are thus closely guided by transactional considerations, since innovation is the search for technical and economic novelties potentially opening opportunities for extra profits. Technical and economic experts will typically cooperate intensively, team work is common. This is all the more true in the face of the increasing need for flexible production under post-fordist conditions, where linear R&D systems are replaced more and more by 'loopy' systems intensifying the interaction between research, development, procurement and marketing in firms (Hayter 1996, Storper 1997). Much of R&D in natural sciences is nevertheless done with little regard to market conditions and can, for that reason, be classified as a part of production directed at creating new knowledge. Only if R&D efforts are aimed at exploring market conditions or problems like intrafirm management, as parts of social sciences are, of course, could they be considered as belonging to transaction activities.

Renting and leasing services, embracing renting or leasing of automobiles and other transport equipment or various kinds of machinery for business use, are treated as a separate category in the NACE classification. In the present context they have to be classified as production activities, no matter what their economic significance is, usually increased competitiveness is assumed if sufficient supply is available. Such services are offered by special firms and purchased by other firms which causes the parties involved to come to an extra transactional arrangement. The rendered service itself, however, like the utilization of rented construction equipment or a truck, will often be a part of production.

In the next subsector, *labor recruitment and provision of personnel*, the included activities have to be judged differently. The *provision* of personnel, which happens frequently on a temporal basis, would have to be classified according to the functions that are performed by this personnel. Work performed by these employees can be in transactional or production activities. Though external provision of personnel requires extra transactions between provider and client, the work of that personnel would, in the latter case, still belong to the production sphere. But *labor recruitment*, that is search, selection, screening and testing of applicants etc. is a typical transactional task, often provided by specialized firms like personnel consulting, assessment centers or as previously mentioned, ‘headhunters’. Especially for highly qualified personnel search, selection and contract arrangement can be extremely difficult and for that reason costly, driving many firms to outsource these functions to specialized firms that realize economies of scale and develop their core competencies in such transactions.

Operational services have, for the purposes of this paper, to be considered as a part of production. Operational services comprise industrial cleaning and cleaned professional premises, factories or industrial equipment is a necessary pre-condition for the proper functioning, economic or technical, of those enterprises, hence, belongs to production.[9]

The last subsector to be classified, *other business services*, comprises a very mixed residual of jobs. There are activities, which are forms or components of production, though in some cases possibly artistic qualifications are required, as in photography or fashion design. Other activities like automated or manual packaging clearly are a part of production. Some occupations like secretary and translator in general support transactional work and can consequently be included therein. And there are also many activities with pure transactional functions, such as brokerage, bill collecting, and the activities of agents in the culture industry, used as an example for a specialization in transacting in the previous section.

4. Transaction activities in the space economy

After transaction activities have been defined theoretically and compared to commonly used categories of services, questions of their spatial distribution can be addressed. The enormous organizational diversity in which such activities may be carried out should be stressed here again. Transactional activities can be performed on many different levels of specialization. A self-employed professional or certain employees in firms can perform such tasks. A subdivision of a firm can specialize in certain areas of transactional activities or they can be the core business of a whole firm. In addition, any such specialized transaction activity can be carried out with various degrees of sophistication, above all regarding qualifications or experience required and economic as well as technical resources applied. Although a salesperson in a small shop and a sales manager in a multinational corporation may perform similar transactional functions, quite different levels of training and expertise will be needed in these occupations. In order to explore the spatial distribution of transaction activities, at least a crude differentiation within transaction activities thus seems necessary, taking into account, whether occupations require a higher qualification and more experience or only a lower level of such competencies.

[9] The other group covered, security and investigation activities, might be viewed as partly transactional as it is form of control, but such services are a form of privatization of state functions and consequently disregarded here.

Problems of definition and classification of services regarding the use of standard categories (as in the NACE based taxonomy) have been discussed above. Analyses of urban and regional development usually focus on the category producer services, or more specifically, on business services or professional services. Sometimes labels like 'advanced' producer services are used to indicate that the most important services are the 'complex knowledge-intensive business services designed as direct inputs to firms' (Moulaert & Toedtling 1995:102). Summarizing international literature about the spatial distribution of these services, Illeris (1996) presents two main findings. One is that in almost all countries producer services are overly concentrated in the largest city areas. The other one is that in a number of countries tendencies towards a spatial decentralization, interregional and intraregional, of such services can be observed. Both these findings can now be seen in a different light, since transaction activities have been differentiated from various subdivisions of services including producer services. Five general hypotheses about the specificities of the spatial distribution of transaction activities and locational change will be presented in the following section, in order to delineate consequences of the preceding reinterpretation for urban and regional analysis.

First, the spatial distribution of different transaction activities will vary with their degree of sophistication similar to central place structures of services in general. As indicated above, a differentiation into lower and higher qualified activities is necessary at least, and might suffice as a first approximation. Lower level transaction activities can, for the regions of a nation, be expected to be distributed roughly proportional to employment and population. In contrast, higher qualified transactional and specialized activities, on which the following discussion will focus, will concentrate in urban regions. For the largest urban regions, the share of higher level transaction activities can be expected to be significantly higher than the share of employment and also than the share of such activities in an average urban region.

Such polarized patterns of spatial distribution of higher level transaction activities are highly probable because economic organizations specializing in transactional operations usually need close contacts to many other such organizations to perform their functions efficiently. For such activities, proximity matters in a geographical and often also in a socio-cultural sense. From the geographical view, costs of transaction per unit can be lowered, when transacting parties cluster in space, in particular if exchange processes do not occur regularly and are not standardized (Scott 1988a). In a socio-cultural sense proximity also matters, as transacting parties with similar social and cultural background can benefit from 'untraded interdependencies' (Storper 1996) such as common values, shared beliefs, and tacit understanding. These latter factors derive from the subjective dimension of transaction activities.

Second, although the largest part of highly qualified transaction activities, because of the sheer volume of such transactions in a modern economy, is probably utilized by business clients or performed within firms, there are also many specialized transaction activities predominantly provided for private consumers. Such activities, often neglected in spatial analysis, are probably very unevenly distributed as well. This might apply to the case of specialized retail in luxury or other consumption goods, or for auction houses, fairs and the like. In addition, there are, as shown above, many service categories for which the distinction between producer and consumer services is artificial. This concerns legal or tax consulting, insurance and banking or real estate. All such services can very well be used by private and business clients. Suppliers of such specialized or highly qualified transaction activities, whether serving mainly consumers or producers, will tend to concentrate in larger cities, since input (e.g. labor, information) and output factors (e.g. location of clients, proximity) draw them into highly urbanized environments.

Third, different localization patterns of economic activities are related closely to their transactional intensity. Activities consisting of less complex and more standardized transactions will be dispersed over space, while activities involving rather complicated and non-routine transactions will tend to cluster. This is known for many forms of physical production (e.g. industrial districts with craft production vs. large scale assembly in manufacturing), but there are also activities conventionally regarded as producer or business services, which may entail relatively little transactional content. Technical services like engineering, architectural work and technical testing, but also parts of research & development in natural sciences were discussed, for example, in the previous section.

Although such activities may require higher or even highest qualification levels, they do not necessarily imply intense and continual transactional relations with other economic agents. In an extreme case a lone genius or a research team in a well equipped remote place might well 'produce' a breakthrough in natural sciences opening immense opportunities for profits. Occasional contacts to the scientific community and electronic communication could be sufficient for this kind of work. A stock broker, however, can normally not work without immediate and direct contact to the constantly changing global stock markets, and needs a whole range of other informational sources, personal and technical. In spite of recent advances in information technologies, these conditions are only given to a full extent in large urban centers. Both types of activities deal mainly with intangibles. But the first type can still be regarded as a part of production, even if the result is a yet unknown scientific finding, extremely valuable in economic terms and possibly true forever. The result of the latter activity

may be the decision to buy or sell, or do nothing at all, and even if it also concerns billions in worth, it might be correct just for one single moment in time and under very specific market conditions. Consequently, it is probable that specialized activities with higher transactional intensity are, on all spatial levels, more strongly concentrated in space. And that activities with stronger traits of production, even if highly sophisticated and conducted by highly qualified personnel, are less in need of dense economic environments.

The location of centers of scientific research offers an illustration for this claim, when compared to concentrations of global financial activities. Numerous science parks or towns are located in the vicinity of smaller university towns (e.g. the Science Park in Cambridge/ UK, 'Research Triangle' North Carolina/US), or on the fringe of urban regions (e.g. the Cité Scientifique, West of Lille/France or the new science center WISTA in the South-West of Berlin/Germany). Even in former national peripheries, centers of R&D can now be located (EC 1999b), as in the North-West of Italy or, more obvious, in France, where the South-East has developed into a center of R&D over the past decades, and most other remote French regions now also contain 'technopoles'[10]. For the US a recent study compared the spatial concentration of high-technology activity of metropolitan regions using a composite index (deVol et al. 1999). While the San Jose/Silicon Valley area clearly ranks on position one, Dallas takes, rather surprisingly, position two, before Los Angeles/Long Beach. And the smaller metropolitan regions around Seattle, Washington D.C. and Albuquerque, relatively distant from economic cores, take position ahead of Chicago and New York City. In addition, the ten regions attaining the highest growth rates of output are exclusively smaller clusters of high-technology (e.g. Albuquerque/NM, Pocatello/ID, Boise/ID). Such 'disperse clusters' of organizations engaged in scientific research seem typical for natural sciences, and even if they entail highly concentrated research activities in specific fields, they appear as a whole relatively decentralized when compared to agglomerations in financial services. The overwhelming part of these transaction industries is concentrated, on a global scale, in only three metropolitan areas, those of New York, London and Tokyo (Drennan 1996). Likewise, within single nations a pattern towards concentration of these services in just one metropolitan area can be discerned, where, once again, financial services are ordinarily agglomerated in a distinct central business district (Sassen 1998) thus generating excessive densities of economic acti vity.

In the case of financial services, as in other transactional activities such as advertising or management consulting, whole organizations develop their core competencies in the sphere

[10] See map and list of FTEI at http://www.france-technopoles.asso.fr/technopo/corpsf.htm.

of transactions. Other organizations, like huge industrial corporations, can split their production and transaction intensive operations spatially, concentrating the high level transaction functions in headquarters, very frequently also located in the large metropolitan regions and perform production in decentralized locations, from suburban areas to the national and international periphery.

An additional impulse for agglomerative tendencies of specialized transactional functions results from their special labor market conditions. These seem to be even more complex and plagued with higher uncertainty than labor markets in technical professions or natural sciences. Two examples might suffice: 1) In the process of selecting a candidate for a position in areas like engineering, university diplomas and other formal assessments appear more significant, than in areas like marketing or personnel management. 2) An engineer or researcher in natural sciences will be much easier to relocate between national subsidiaries of a global corporation than an expert for patent law or a top manager. The examples indicate that for occupations in transactional activities (marketing, patent law, management), behavioral aspects and capabilities that are difficult to codify play a more important role in employment relations, leading to a higher uncertainty on the side of employers and employees than in non-transactional occupations (engineering, natural sciences). This difference also increases the significance of socio-cultural proximity between the parties of employment contracts and reinforces the concentration of transactional activities.

Fourth, and connected to the preceding hypothesis, many specialized transaction subsectors are closely interrelated with each other. This is exemplified by the frequently used term 'FIRE sector', encompassing finance, insurance and real estate. Other specialized transaction activities like wholesale, marketing, legal advice, labor recruitment, career or consumers' counseling, auctioneers' and agents' activities could now be added to this list for typical occupations concentrated in metropolitan areas, tied together in space by complicated, frequent, non-routine processes of exchange.

This description is reminiscent of Gottmann's characterization of *transactional cities,* with the qualification, that transaction activities can now be defined rigorously on the basis of the institutionalist approach, allowing the differentiation of transactional activities sharply from many other activities, which also mainly consist of a processing of information, whose functions, however, are not transactions but rather some form of immaterial production as in the cultural industries or in natural sciences. Of course, such activities can also be highly centralized in specific regions or in large metropolitan areas. But in the mix of all economic ac-

tivities, specialized transaction activities seem the most cohesive and resistant to decentralization because of the close and intricate interrelations of their subsectors.

The differentiation between transaction and non-transaction activities bears similar consequences for the global cities debate since the conceptualization of transaction activities has an immediate relevance for understanding the typical activities concentrated in global cities. These can be broken down into transaction activities internal to firms, like top management, strategic decision making, control activities, financial and personnel monitoring or interfirm relationships, and specialized external transaction activities like financial services, investment banking, legal advice, advertising etc. Thus, to discriminate between different economic activities and to comprehensively describe the occupations that form the economic core of the these huge agglomerations, the concept of high level transaction activities appears more useful than the reference to vaguely defined complex informational activities, high knowledge intensity or high level qualifications per se.

Fifth, in view of the preceding discussion the decentralization tendencies of producer services can be questioned. Intraregional and interregional decentralization of producer and business services has recently been observed in a number of urban regions and nations. In urban regions decentralization has occurred from central areas to the fringe, in nations from the largest urban areas to smaller ones as mentioned above. A differentiation between highly qualified transactional occupations and other highly qualified occupations might show a different outcome. Presumably it is the latter activities that show stronger tendencies of decentralization. Empirical evidence for this hypothesis is very sparse though, since most analyses of spatial growth differences of producer services on hand do not discriminate (sufficiently) between subgroups, preventing an answer to be found for that question. Some support for this view can, nonetheless, be found in the literature.

Data on interregional decentralization of producer services between 1981 and 1987 in Denmark show that in the leading region, Copenhagen, the share of national employment in management consulting declined only from 72% to 71%, while the region's share in engineering consultancy declined from 58% to 53% (cf. Illeris 1991). The former activities, specialized in transactions, decentralized to a much lesser extent than the latter, more associated with production. On the intraregional scale more recent evidence, covering the period from 1982 to 1992, indicates that in the Copenhagen region activities of the transaction sector (e.g. banks, lawyers and advertising firms) remained concentrated in the center, while the locations of non-transaction activities (e.g. consulting in engineering and architects) shifted to the

suburbs (Illeris 1997). Analogous results can be found in a study by Airoldi et al. (1997) for the metropolitan region of Milan in Italy.

5. Summary and conclusions

The theoretical assertions of the paper can be summarized in five main points. First, defining transaction activities based on the institutionalist approach allows the differentiation between occupations that are mainly a discrete step in the production or transformation of a certain output, and occupations that mainly consist of transactional functions linking these steps. In interdependence with the technical and social division of labor, transactional activities can be carried out in a vast variety of organizational forms: markets, firms, networks or other mixed forms. This categorization cuts across the traditional borders of the manufacturing and service sector and comprises all occupations necessary for the coordination of economic activities, whether internal to manufacturing and 'service' sector, or in specialized firms (the transaction industries). Transactional activities are performed by a large and probably growing sector of the labor force in industrialized nations and the ongoing restructuring along post-fordist trajectories appears to accelerate these tendencies.

Second, human labor, whether of manual, technical, scientific or artistic character and resulting in tangible goods or some sort of medium storing or representing that work (construction plan, computer program or painting) can be viewed as form of production and differentiated from transactional activities. This opens a quite different view on the social division of labor than conventional classifications. Whether the output of human labor is tangible or not (or fulfills the other requirement of the usual services definition) is negligible. The main criterion for classifying a given activity, profession or firm is, whether transaction or production/transformation tasks prevail. Such a classification can be done irrespective of the technical means applied to carry out an activity. The growing number of modern occupations that are in some way connected to the use of computerized equipment, for instance, are in no ways all transactional. Neither do attributes of occupations like the level of necessary qualifications, 'white collar' or their 'informational' character *alone* qualify them as transactional. Technological innovations can, of course, radically alter the technical and social division of labor leading to different combinations of transactional and non-transactional specializations.

Third, the proposed classification was applied to the NACE nomenclature of services, showing that its subsectors can be characterized according to their transactional content

(Tab. 1). In some cases (e.g. ‘labor recruitment and provision of personnel’ or ‘other business services') the subsectors listed, however, are composed of a mix of transaction and non-transaction activities. Such subsectors are marked as partially transactional. These service categories, which are also commonly applied in the literature, are too broad for a precise classification. The single occupations behind these categories then have to be considered separately.

Fourth, the above conclusion is also valid for the subgroup of business services which has attracted much attention in spatial research and policy. Business services consist of a mix of transaction and non-transaction activities. Even R&D, which is in the literature often regarded as a business service, entails a large segment of activities which represent mostly functions of production. Only the narrowly defined professional services and marketing can be classified as performing exclusively transactional activities.

This differentiation bears consequences for spatial analysis. As far as e.g. marketing and professional services are concerned, the analysis presented agrees with the common view in the literature expecting these highly concentrated in urban areas, especially when the high qualification segment of the labor force of these activities is looked at.

Other subsectors of business services, however, are in this view *not* or only partially regarded as transactional, and hence probably less concentrated in space. Many activities included in technical services and also parts of R&D are not mainly dealing with transactions, they can be performed without the transaction specific locational advantages of highly agglomerated urban spaces. The contrast between the recent growth of such activities in suburban locations or in smaller scientific communities across national territories on one side and the continued dominance of the extremely centralized transaction based economies of global cities on the other, appears to be related to that differentiation. And this differential spatial structure of economic activities seems perceptible on various spatial levels global, national and intraregional.

Some support for this assertion can be found in the literature, but of course, both the theoretical classification (of activities, professions and firms) on basis of the institutionalist approach as well as the spatial structures of transactional activities and their dynamics remain to be empirically tested. In particular, studies of firms to test transaction based classifications and comparative place specific occupational analyses would be important.

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