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Abstract. This paper discusses the limits of current cluster theory and theorizes trans-local network externalities as an important cause for the urban agglomeration of knowledge services. A survey of management consulting firms in the metropolitan region of Frankfurt demonstrates that the benefit of co-location in the city lies in the access to reputation networks rather than in the exploitation of local value chain linkages. The city is a locus of opportunity because firms in the city have a higher share of distant clients and because distant clients are won more often through referrals. Cities are reputational nodes for trans-local business development.

Keywords: world city network, business services, consulting, reputation, knowledge, cluster theory

JEL-Codes: L2, L84, M31, R30

1 Introduction

The growth of knowledge based business services has a clear spatial pattern. They have been clustering in the major metropolitan regions across Europe and instead of slowly dispersing over space they continue to concentrate there (BRYSON *et al.*, 1997; BENNETT *et al.*, 1999; KEEBLE and NACHUM, 2002; WOOD, 2002; HAAS and LINDEMANN, 2003). Why do industries cluster? Though a small part of variation in the spatial distribution of industries can be explained with natural cost advantages (ELLISON and GLAESER, 1999; ROOS, 2005), the major share of spatial clustering can only be understood as a consequence of external economies. External economies are “services (and disservices) rendered free (without compensation) by one producer to another” (SCITOVSKY, 1954, 143). They are thus outside the reach of the firm and depend either on the size of the industry, the region or the economy

1
2
3 (STIGLER, 1951). Local externalities are usually associated with market size or scale
4
5 economies (KRUGMAN, 1991), transactional cost advantages (SCOTT, 1988) or
6
7 technological spill-overs (JAFFE et al., 1993; AUDRETSCH and FELDMAN, 2004).
8
9

10 This paper posits that the urban agglomeration of knowledge services requires a different
11
12 explanatory approach because several of the arguments developed in current cluster theories
13
14 do not apply to highly specialised knowledge services. Knowledge services are not produced
15
16 in value chains; hence the notion of local externalities to co-location in backward and forward
17
18 linkages is empirically inappropriate. Moreover, knowledge services do not produce the kind
19
20 of innovation discussed in mainstream cluster theory. Innovation is neither technological nor
21
22 organised in internal laboratories or separate business processes. Instead, new knowledge is
23
24 always attained within the client relationship and thus inseparable from daily service work.
25
26 Put simply, local transactional linkages are overemphasised in the context of knowledge
27
28 service firms. So why do knowledge service firms cluster in cities? This paper shifts focus
29
30 from backward production to forward market relationships, from technological know-*how* to
31
32 relational know-*who*, and from cost to opportunity. It explores the idea that firms enjoy
33
34 network externalities through co-location at different spatial scales: local agglomeration
35
36 creates size and diversity and thus conveys the advantage of reputational spill-overs.
37
38 Moreover, the better a city is connected to other cities in a city network, the higher the
39
40 propensity for local firms to be referred to business opportunities in other places. This line of
41
42 argument will be developed in detail, conceptually, and also examined empirically in the
43
44 context of management consulting in the metropolitan region of Frankfurt. Section 2 reviews
45
46 the existing portfolio of agglomeration theory and reveals three conceptual blind spots in the
47
48 context of knowledge services. Section 3 reports the methodology and data while sections 4
49
50 and 5 present the results of a survey in the metropolitan region of Frankfurt. Section 6
51
52 discusses the findings and draws conclusions for future research.
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2 Blind spots in agglomeration theory: refining the explanation of urban knowledge service clusters

2.1 From value chain linkages to value shop of servicing

Alfred Marshall's (1956 [1890]) trilogy of agglomeration advantages has fundamentally influenced cluster theory and has found application in many contemporary approaches as, for instance, in geographical economics (KRUGMAN, 1991). Marshall identifies three advantages of geographic agglomeration: specialised suppliers, labour market pooling and knowledge spill-over. Later, the California school of economic geography recurred on the work of Coase (1937) and Williamson (1979) and applied transaction cost considerations to the geographic organisation of value chains. Most explicitly theorised in the concept of new industrial spaces, Scott (1988) argues that under conditions of a post-Fordist production regime with increasing disintegration and social division of labour, the transaction cost between organisations could best be minimised through geographical co-location.

This argument has been developed largely within the context of manufacturing. In the case of knowledge services, however, the concept largely fails because the organisational logic of value creation differs fundamentally from the production of tangible commodities. Stabell and Fjeldstad (1998) conceive of professional services as value shops rather than value chains. In contrast to the linear assembly of a fixed set of activities, the value shop describes the problem-specific alignment of resources and scheduling of activities in response to a client problem. The shop metaphor alludes to the notion that the specific and often unique alignment of problem-solving resources is essential for the management of the value creation process. In the context of professional services, the value creation process cannot be organised in a sequential chain of activities because it is often location-bound (SAMPSON and SNAPE, 1985; BODDEWYN et al., 1986), i.e. problem-solving activities cannot be produced in locations other than where they are actually delivered. This largely impedes any spatial

1
2
3 division of labour in order to exploit scale economies in upstream activities. A brief review of
4
5 empirical findings illustrates the inadequacy of the value chain configuration in the context of
6
7 knowledge services:
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9

10 *Backward linkages.* In comparison with manufacturing sectors, knowledge-intensive
11
12 business service firms maintain only limited vertical relations along the value chain. Nachum
13
14 and Keeble (2001) hardly found vertical supplier-relations in the London consulting sector
15
16 since most consulting firms organised the entire service production within the company and
17
18 often by just one single person. Intermediary services and goods purchased from suppliers are
19
20 often unrelated to the strategic value-adding competence of the consulting service and
21
22 therefore do not offer competitive advantage through co-location.
23
24
25

26 *Horizontal linkages.* In contrast, horizontal linkages have been proved as important
27
28 competitive factors in the consulting market (STRAMBACH, 1994; LILJA and POULFELT,
29
30 2001). Networks of cooperative partner firms extend market opportunities, sustain revenue
31
32 growth, enhance service range and quality and broaden the knowledge base. Empirically,
33
34 however, patterns of cooperation seem only weakly related to spatial proximity (COE and
35
36 TOWNSEND, 1998). Instead, it is the functional synergies rather than geographic co-location
37
38 that drive cooperation.
39
40
41
42

43 *Forward Linkages.* Intuitively, geographical co-presence appears to be a sine qua non
44
45 condition for the choice of location. Indeed some empirical work shows that knowledge-
46
47 intensive business services are located in close proximity to their customers (BRYSON and
48
49 DANIELS, 1998; HERMELIN, 1998; BENNETT *et al.*, 2000). However, a major part of the
50
51 literature suggests that locational proximity is far less important than one would assume
52
53 (SCHAMP, 1986; TORDOIR, 1994; WOOD, 1996). Illeris (1994) suggests a framework in
54
55 which highly specialised services are independent from client location because high
56
57 specialisation and sophistication yield premium fees and thus render transportation only a
58
59 marginal cost (ILLERIS, 1994). Spatial proximity, which is necessary in the course of co-
60

1
2
3 operation in the consulting process, is established through temporary travel and residential
4 stays at client premises rather than permanent co-location (RALLET and TORRE, 1999). In
5
6 the context of business consulting, empirical work shows that often the majority of clients are
7
8 located outside the region of the service provider (SCHAMP, 1986; DANIELS, 1991;
9
10 DANIELS *et al.*, 1992; KEEBLE *et al.*, 1992; BRYSON *et al.*, 1993; STRAMBACH, 1995;
11
12 WOOD, 1996; BRYSON *et al.*, 1997). Not only suppliers but also the clients neglect spatial
13
14 proximity to their providers (SCHICKHOFF, 1985). De Lange (1993) demonstrated that
15
16 although business services and client companies locate in the same type of location, i.e. big
17
18 cities, they do not co-locate in the same cities, i.e. business service firms do not follow their
19
20 clients. Strambach (1994) and Wood (1996) conclude from their research that business
21
22 development is more constrained by the access to social networks than by geography. This
23
24 line of thinking informs hypothesis 1:
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27
28
29
30

31 *H₁: The quality of a client relationship is independent from geographical proximity.*

32 33 34 35 36 **2.2 From local externalities to trans-local network externalities**

37
38 If direct relationships are not important locally, why do many knowledge-intensive business
39
40 service firms cluster in metropolitan cities and regions? The world city hypothesis offers an
41
42 alternative perspective on the urban agglomeration of knowledge services by focusing on the
43
44 nodal function of a city in the global network economy (FRIEDMANN, 1986; SASSEN,
45
46 1994; FELSENSTEIN *et al.*, 2002). World cities are important nodes of governance, control
47
48 and innovation for other places rather than merely big urbanisations with large endowments of
49
50 infrastructure and population. One important indicator for the measurement of their centrality
51
52 is the concentration of specialised management functions, knowledge-intensive services,
53
54 financial centres or advertising (TAYLOR, 2004). Analyses by the research group
55
56 Globalisation and World Cities (GaWC) as well as the work on the world system of cities
57
58 (SMITH and WHITE, 1992) show how strongly the cities are interconnected through
59
60

1
2
3 overlapping location patterns of multinational business service firms (TAYLOR and
4
5 HOYLER, 2000; TAYLOR *et al.*, 2002; TAYLOR, 2004) and international passenger air
6
7 traffic (SMITH and TIMBERLAKE, 1995). Although knowledge service agglomeration often
8
9 extends the boundaries of global cities to cover larger areas of metropolitan regions, the
10
11 effects of centrality and connectivity may not be equally distributed. Instead, the global city is
12
13 the original place for urbanisation advantages and connectivity within the city network
14
15 whereas the geographical extension of a wider metropolitan region often complements the
16
17 functions of the central city. Therefore, it is hypothesised that the advantages of international
18
19 connectivity are limited to the city and do not fully apply to the entire metropolitan region:
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21
22
23

24
25 *H₂: Firms in the city are more international than firms in the rest of the*
26
27 *metropolitan region.*
28

29 This network perspective extends current agglomeration theory because it goes beyond
30
31 merely local externalities and theorises positive network externalities for a city as an effect of
32
33 its connectivity with the international city system. A network externality signifies the fact that
34
35 the value of a unit of a good increases with the number of units sold: “the utility that a given
36
37 user derives from the good depends upon the number of other users who are in the same
38
39 ‘network’” (KATZ and SHAPIRO, 1985: 424). The utility of an urban business location may
40
41 then be conceived as a firm’s reachability of other firms (strategic partners and clients) in
42
43 *other* locations. If a city is highly connected within the city system it thus conveys
44
45 reachability advantages to its firms beyond the local. Within a conception of urban network
46
47 externalities, large cities form the nodes of a global network economy: the higher the
48
49 interconnection of a city within the city network, the higher the utility for a firm to be located
50
51 in that city. This perspective delivers an additional argument to agglomeration theory: cities
52
53 convey urbanisation advantages because they realise trans-local network externalities in the
54
55 global network economy. It has been demonstrated empirically that cities with greater degrees
56
57 of connectivity in the world city network enjoy advantages with respect to policy programs
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1
2
3 (CAPELLO, 2000). When network connectivity yields external effects to the city as a whole,
4
5 does it also yield private returns to individual firms seeking trans-local interconnection? If
6
7 metropolitan or world cities represent the nodes or spatial gateways to the global network
8
9 economy, firms locating in those cities should on average benefit from this international
10
11 business access and experience better performance. Drawing on the world city hypothesis, the
12
13 argument is then extended to the expectation that world cities yield a location premium to
14
15 business service firms (hypotheses 3).
16
17

18
19
20 *H₃: Firms in the city enjoy higher rates of employment growth than firms in the*
21
22 *rest of the metropolitan region.*
23

24
25 Finally, if the network connectivity of a city is the cause of enhanced firm performance,
26
27 hypotheses 2 and 3 should exhibit a significant degree of association. In order to test
28
29 explicitly if firm internationality accounts for firm performance, hypothesis 4 is also
30
31 submitted to empirical analysis:
32

33
34 *H₄: The more international a firm the higher will be the average rate of firm*
35
36 *growth.*
37
38

39 40 41 **2.3 From 'know-how' spillovers to 'know-who' and economies of overview**

42
43 A third conceptual bias in current agglomeration theory is associated with its emphasis on
44
45 know-how. Knowledge spillovers yield technological externalities, whereby knowledge gains
46
47 occurring in one firm increase the productivity of the other firms without full compensation.
48
49 In the literature, a whole series of theories hypothesise the conditions for increasing local
50
51 knowledge externalities along a range of different dimensions, as for instance, competition
52
53 (JACOBS, 1969; PORTER, 1990; GLAESER et al., 1992; MALMBERG and MASKELL,
54
55 2002) vs. monopoly (Marshall-Arrow-Romer externality, cf. GLAESER et al., 1992),
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57 localisation (MARSHALL, 1956 [1890]; PORTER, 1990) vs. urbanisation (JACOBS, 1969),
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1
2
3 and traded (WILLIAMSON, 1981; SCOTT, 1988) vs. untraded interdependencies
4
5 (STORPER, 1997).
6
7

8 This paper argues that these theories prioritise technical knowledge and production
9
10 efficiency over business opportunity. It has been argued earlier that the absence of localised
11
12 vertical and horizontal production linkages in management consulting hampers the potential
13
14 for technological knowledge spill-over. Moreover, the innovation process in knowledge
15
16 services differs from technology production. Knowledge firms do not generate innovation in
17
18 internal laboratories but always in close interaction with their clients. Clients are source and
19
20 catalyst for the generation of expertise, innovation and revenue. Management consulting, in
21
22 particular, is a very unspecified and intransparent marketplace in which highly specific
23
24 services are offered (GLÜCKLER and ARMBRÜSTER, 2003). In order to reduce uncertainty
25
26 between consultants and clients and to avoid market failure, personal trust and reputation are
27
28 extremely important to initiate and sustain business relationships (KEEBLE *et al.*, 1992 ;
29
30 CLARK, 1993; GLÜCKLER, 2005). In this respect, know-how is not the only source of
31
32 economically relevant knowledge. Instead, know-*who* (LUNDVALL and JOHNSON, 1994)
33
34 is a vital form of knowledge that relates to the interconnection of people and the quality of
35
36 their relationships. The essential entrepreneurial value of know-who is that it yields business
37
38 opportunity and provides advantages of overview. Johannisson (1990) emphasises the
39
40 entrepreneur's quest for maximising business opportunity rather than only minimising cost.
41
42 Economies of overview relate to "the demarcation of an action frame where overview
43
44 facilitates the identification and subsequent exploitation of opportunities" (JOHANNISSON,
45
46 1990, 35). In contrast to the management of cost where scale economies are the guiding
47
48 principle, economies of overview economise on business opportunities. Economies of
49
50 overview increase with geographic proximity and agglomeration since more actors and
51
52 potential multipliers are within direct reach. Local buzz, i.e. the spill-over of information and
53
54 gossip in a localised community, potentially yields opportunities and so is a potential leverage
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1
2
3 for firm growth (MARSHALL and WOOD, 1992; GERTLER, 2003; STORPER and
4
5 VENABLES, 2004).

6
7
8 Economies of overview are even more important if services are highly specialised. One
9
10 lesson to be learned from geography is that the more specific a service is, the wider stretches
11
12 its minimum catchment area across space in order to meet sufficient demand to cover
13
14 production cost (CHRISTALLER, 1933). While Johannison conceives economies of
15
16 overview as a purely local externality, the notion of overview economies may also be
17
18 theorised as a trans-local network externality. Moulaert and colleagues have extended the
19
20 notion of overview to a multi-level conception (MOULAERT and MARTINELLI, 1993;
21
22 MOULAERT and DJELLAL, 1995) by arguing that “economies of overview can only be
23
24 realised if synergies between elements stemming from different spatial levels and forms are
25
26 achieved” (MOULAERT and DJELLAL, 1995: 109). In the context of knowledge services,
27
28 location in metropolitan agglomerations may convey returns on the access to trans-local
29
30 resources such as global networks of clients and knowledge flow. Correspondingly, an
31
32 empirical survey found that consulting firms in London were more globally oriented than their
33
34 decentralised counterparts, in terms of international revenues, overseas offices and staff
35
36 recruitment (KEEBLE and NACHUM, 2002). A metropolitan location might be an advantage
37
38 for knowledge-intensive business services not only because of their proximity to direct clients
39
40 but also because of their access to extra-regional business opportunities. With increasing
41
42 specialisation, management consulting services will face decreasing local demand which
43
44 makes it more difficult to grow exclusively on the basis of clients in their geographical
45
46 neighbourhood. Therefore, consultants need to find new business at a national or international
47
48 scale. A well connected city might offer better economies of overview that may also imply
49
50 access to trans-local social networks. Thus one would expect hypothesis 5:
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*H₅: Firms in the city have more clients outside the region than firms in the rest
of the metropolitan region.*

1
2
3 This paper does not stop at theorising the effect of overview advantages but also focuses on
4 its mechanisms: how do consultants in the metropolitan centre manage to win clients in other
5 regions? Does geographic remoteness make a difference for business development? And if so,
6 what are the different mechanisms that drive client acquisition? Geographical co-location
7 obviously eases face-to-face contact and thus diminishes the costs of canvassing clients
8 locally. In close proximity a consultant can contact, meet and present proposals to more
9 potential clients than across larger distance at the same cost. Therefore, one would expect
10 direct client acquisition to be more frequent locally. With increasing distance, however, the
11 opportunity cost of a relationship rises, since the number of equally preferred but more
12 proximate contacts grows (SORENSEN, 2005). Apart from opportunity costs, meetings with
13 client targets at longer distance also incur travel expenses and thus render direct client
14 acquisition more risky and costly.

15
16 Alternatively, reputation may ease business development over long distance. Briefly
17 defined, it is the expectation of future performance based on the perception of past behaviour.
18 If a far away client learns about the positive reputation of a consultant, this consultant enjoys
19 a higher propensity of winning that client. Since reputation is itself uncertain information, its
20 reliability and credibility varies with the communication channel through which it circulates.
21 Two significant types of reputation need to be distinguished (GLÜCKLER and
22 ARMBRÜSTER, 2003; GLÜCKLER, 2005): Public reputation is public domain information,
23 published and communicated freely in media and press. In contrast, reputation is *networked*
24 when new contacts learn about each other's reputation through joint trusted contacts within
25 their social network. If a consultant is referred to a remote client through a mutual contact, the
26 client will be more likely to assign this consultant. This line of reasoning complies with the
27 value shop rationale suggested earlier (STABELL and FJELDSTAD, 1998), where reputation
28 serves as a key value driver. Combining the advantage of reputation networks with the
29 network externality of overview economies, it may be argued that the more internationally
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2
3 linked a city, the more likely will referrals transcend local networks and offer business
4
5 opportunities in other places. This is exactly the kind of effect most desired by consultants
6
7 and informs hypothesis 6:
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9

10 *H₆: Remote clients are won more frequently through personal recommendation*
11
12 *than proximate clients.*
13
14

17 **3 Case region and method**

18 **3.1 Data**

19
20 In Germany, management consulting revenues concentrate on the big metropolitan regions of
21
22 Hamburg, Rhine-Ruhr, Rhine-Main, Rhine-Neckar, Munich and Berlin. In the year 2000,
23
24 60% of the entire market sales were concentrated in only 12 cities. Following Munich, the
25
26 Rhine-Main region forms the second largest consulting agglomeration with over 4,500
27
28 consulting firms (STBA, 2003). While the region accounted for 8.8% of the national GDP, the
29
30 consulting sector had a share of 11% in national consulting sales. At the same time and
31
32 throughout the 1990s, the region experienced an intensive annual growth of 10% of new
33
34 consultancy firm foundations, a rate far above the national average. The city of Frankfurt
35
36 achieves very high connectivity scores in the European city network and thus belongs to the
37
38 ‘major spines’ of highest city network centrality (TAYLOR and HOYLER, 2000). The case
39
40 study region thus complies with the precondition of high connectivity necessary to test the
41
42 hypotheses formulated in section 2. The metropolitan region of Frankfurt differs from other
43
44 metropolitan regions in Europe in that it is a polycentric region with various central cities.
45
46 Since 1999 there is a geographical definition of the region constituted by the regional
47
48 chambers of commerce (see figure 1).
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57
58 INSERT FIGURE 1 ABOUT HERE
59

60 The chamber of commerce provided a directory of publicly registered consulting firms in
the region. According to the European industry standard, consulting firms are classified under

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2
3 NACE 74.14.1 “Business Consulting”. After correcting the directory a total of 1,390
4
5 consulting firms were identified as the regional population for the survey. The postal survey
6
7 was carried out in 2003 and collected data at two different levels: the firm and the
8
9 relationship. At the firm level, 213 consulting companies completed the questionnaire which
10
11 equals a response rate of 15.3%. The majority of the sample are small and medium size firms
12
13 with an overall average of 22 employees in Germany. With a median of five consultants, more
14
15 than half of all firms are in fact micro businesses. Moreover, the great majority of 189 firms
16
17 are domestic without permanent locations or employees abroad. Following the European
18
19 Federation of National Consulting Associations (FEACO 2003), the four principle consulting
20
21 specialisations are represented quite equally within the sample: 26% of the firms operate in
22
23 strategy consulting, 19% in IT consulting, 20% in human resources consulting, 24% in
24
25 operations consulting and 10% in other fields but mostly in financial consulting.
26
27
28
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30

31
32 At the relationship level, firms were asked to provide anonymous but individual
33
34 information on their clients. This data collection was based on a network questionnaire
35
36 comprising two elements. First, in a name generator consulting firms were invited to list all
37
38 their clients up to a maximum of ten. Second, in a name interpreter consultants were asked to
39
40 qualify each individual relationship along a number of criteria. Overall, of the 213 the major
41
42 part of 186 consulting firms provided detailed information on 982 individual client
43
44 relationships where each company provided 5.28 clients on average ($S.E. = 1.88$).
45
46
47
48
49

50 51 **3.2 Measures**

52
53 Measures are applied at two different data levels: the firm and the client relationship. At the
54
55 firm level, employment growthⁱ over the time period between 1997 and 2002ⁱⁱ was used as a
56
57 measure of firm performance and serves as the dependent variable. Conceptually,
58
59 employment growth is an adequate measure since the scope for improved capital/labour ratios
60
in consulting is limited. If firms win more business and work on more projects they

1
2
3 necessarily need to extend their headcount. Empirically, earlier research on multinational
4 consulting firms showed that employment is also a good proxy for revenues. While both
5 measures were correlated at $r = .90$ ($p < .01$), even their growth rates were correlated at $r =$
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necessarily need to extend their headcount. Empirically, earlier research on multinational consulting firms showed that employment is also a good proxy for revenues. While both measures were correlated at $r = .90$ ($p < .01$), even their growth rates were correlated at $r = .60$ ($p < .01$) (*source disclosed for anonymity*). In addition, it is impossible to access financial performance data since most companies are partnerships with no obligation to publish financial results. The independent variables include firm location, international activity, and the growth of repeat business while firm age was added as a control variable (see Table 1 for variable definitions).

At the relationship level, client location is the dependent variable. To predict the likelihood for client location within the metropolitan region, tie strength (i.e. duration of relation, frequency of contact, share of revenues that the client contributes) and referrals were defined as independent variables. With respect to methodological rigor and validity of the relational data, two potential sources of distortion need to be addressed. First, there is a problem of incomplete recalling of client relations. Interviewees usually tend not to remember all contacts that are relevant for a certain issue (MARSDEN, 2003). In this study, this problem is of limited relevance since it is unlikely that a consultant does not remember his most important clients. Moreover, the data collection was assessed against a measure of revenue coverage. Revenue coverage is the cumulated percentage of revenues that each client contributes to the overall annual revenues of a consulting firm. In two thirds of the cases the mentioned set of clients accounted for at least 80% of the revenues and in over 40% of the cases all clients were listed, i.e. they accounted for 100% of the revenues. The data are thus relatively exhaustive.

INSERT TABLE 1 ABOUT HERE

Second, there is a problem of information adequacy. Do respondents always learn about recommendations whenever they enter a new client relationship? Consultants were asked to indicate whether a client was won through referral and whether this client has referred new

1
2
3 clients actively to the company. Qualitative Interviews carried out prior to the development of
4
5 the questionnaire suggest that successful recommendations always become overt to the
6
7 consultant: “When somebody contacts us, we do of course ask him, how he came to approach
8
9 us. ‘Well, this person has recommended me to turn to you’. Then we know it”. This is owed
10
11 to the motivations of all three parties to disclose the recommendation: (i) the *recommender* is
12
13 an existing client who invests in the relationship with the consultant by making an additional
14
15 commitment; (ii) the *consultant*, in turn, owes gratitude and reciprocation of commitment thus
16
17 reinforcing the position of the existing client; (iii) the *recommended* new client is also
18
19 motivated to disclose the referral in order to ensure a higher commitment by the consultant. If
20
21 the consultant failed to commit enough effort in the new client project, he knows that it would
22
23 be known to the existing client thus damaging his credibility. The consultant’s reputation
24
25 would erode with respect to both clients given their sanction potential. Hence, following the
26
27 incentive argument and the evidence from interviews, client referrals will always be reported
28
29 to the consultant.
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39 **4 Firm level results – toward a metropolitan location premium?**

40
41 First, the argument is tested that the connectedness of world cities implies a stronger
42
43 inclination to international business. The results in table 2 report that Frankfurt firms are
44
45 significantly more international than firms in the rest of the region. While 57.3% of the firms
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47 in the region have international projects or operations, more than three quarters of all firms in
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49 Frankfurt operate internationally. In the region, less than half of the clients are international
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51 whereas firms located in Frankfurt have nearly 60% of their clients abroad. This finding is in
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53 full support with hypothesis 2 and encourages adopting the world city hypothesis argument
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55 that urban interconnection yields location advantages to knowledge services.
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INSERT TABLE 2 ABOUT HERE

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3 Table 2 also supports hypothesis 3 that firms enjoy higher performance when they are located
4 in the metropolitan centre. Consulting companies located in Frankfurt grew at 5.6% faster per
5 annum than their counterparts in the region. Though only weakly significant, there seems to
6 be a location premium of the metropolitan centre. This premium is, of course, only a black
7 box and leaves open the real nature of the comparative advantage in an urban location. What
8 is the cause of this growth differential? Following hypothesis 4, the assumption would be that
9 internationality enhances firm performance. If world cities are more interconnected than other
10 cities in the overall network, then international orientation in these world cities should convey
11 comparative advantage to firms located in these centres.
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25 INSERT TABLE 3 ABOUT HERE
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29 In order to assess this expectation, multiple linear regression analysis is used to test the effect
30 of firm location, international business, client orientation, repeat business growth and the
31 control variable firm age on employment growth (Table 3). Model 1 confirms a weakly
32 significant effect of firm location on annual employment growth. Despite a low level of
33 significance the locational growth differential cannot be rejected. Model 2, however, clearly
34 refutes a positive association between firm internationality and employment growth. Neither
35 the proportion of international clients nor an own international operation increase the
36 likelihood for enhanced firm growth. Therefore the link between the world city network
37 hypothesis and positive returns for individual firms cannot be supported. Instead, model 3
38 shows a positive effect of repeat business growth on the average annual employment growth.
39 This effect is maintained also in the final model 4, where firm location and the growth of
40 repeat business are significant. Since the metropolitan region of Frankfurt is a very
41 heterogeneous, poly-centric region with four other major cities, alternative models were used
42 in addition to test if the location premium was not a function of the central city of Frankfurt
43 but of a combined urban category of the major five cities vis-à-vis the rest of the region. The
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3 results, however, were insignificant and thus re-enforced the models presented in table 3:
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5 firms grew at higher rate throughout the booming late 1990s if they were located in Frankfurt.
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7 In conclusion, employment growth is higher in the city than in the region and obviously
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9 contingent on the ability to increase the repeat business with existing clients. At the same time
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11 it has to be emphasised that the effects are not all equally strong and significant and that
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13 model 4 only explains around 13% of the overall variance in the data. Nonetheless, one would
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15 not expect to account fully for a performance indicator such as firm growth only with a set of
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17 three general variables.
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25 **5 Relationship level results – toward a geography of reputation**

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27 In the survey, each consultant was asked to specify for each individual client relation whether
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29 their client had been won through a personal recommendation and whether that client had
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31 already referred his business to another client afterwards. The results are astonishing in terms
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33 of the empirical weight of personal recommendation and so called reputation networks
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35 (GLÜCKLER, 2005). 45% of all clients were won through some form of networked
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37 reputation, i.e. through referral by another client or other third party. More than 40% of clients
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39 had themselves spread successful referrals and thus contributed to the business development
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41 of a focal consulting company. Comparing clients who referred new contacts with those who
42
43 did not, it turns out that the likelihood for a referral increases with the duration of a client
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45 relationship and its relative contribution to the consultancy's revenues. Those who had
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47 referred new business by recommendation already bought services from their consultancy for
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49 over 5.5 years as compared to only 3.5 years for those who had not. Moreover, those who had
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51 referred new business contributed 19% to a consulting firm's revenues as compared to 14% in
52
53 the case of the non-recommenders, on average. The analysis for individual clients across all
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55 client networks demonstrates that these important relationships are not only intensive and
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57 beneficial for themselves, but that they are furthermore sources of reputational spill-over.
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3 Thus, close and enduring relations as well as big client accounts clearly improve new business
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5 development.
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8 Following earlier empirical findings discussed in section 2, hypothesis 1 expects that
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10 there is no significant difference between local clients and remote clients in terms of the
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12 quality of the relationship and tie strength. Table 4 reports the results from logistic regression
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14 analysis. Model 1 displays the effects of tie strength on the likelihood for a client to be located
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16 in the same region and shows that frequency of contact and duration of the relationship both
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18 improve the odds only negligibly and at a low level of significance. In fact, none of the three
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20 variables of tie strength are significantly associated with client location in bivariate models.
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22 Therefore, business relationships seem to be relatively independent from geographical
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24 constraints. This finding is particularly interesting since many of the arguments in
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26 geographical cluster theories are based on the difference that proximity makes for the
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28 intensity and quality of personal contact. Hence, the results support hypothesis 1 as expected.
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34 INSERT TABLE 4 ABOUT HERE
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39 Instead of focusing on the geography of direct relationships the argument about
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41 metropolitan location advantage concentrates on the geography of indirect relationships and
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43 economies of overview: finding clients and raising business opportunities through persons.
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45 Following hypotheses 5 and 6, it is another question whether firm location makes a difference
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47 for the geography of referrals. Hypothesis 5 suggests that firms in the metropolitan centre
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49 have relatively more clients outside the region than firms at the metropolitan fringe. In fact,
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51 the t-test for mean differences supports this expectation: While consulting firms in the
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53 metropolitan fringe had 47.8% of clients outside the region, consultants in Frankfurt had
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55 55.4% of their clients and thus significantly more outside the region ($N = 975$; $T = 2.252$; $p <$
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57 $.05$). If the argument about the importance of reputation networks and their concentration in
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59 the metropolitan centre is correct, then one would also expect hypothesis 6 to be supported
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3 empirically. The key comparative advantage of the centre rests in the density of trans-local
4 social networks and thus offers the economies of overview necessary to be referred to trans-
5 local clients. Again, the sample data support this hypothesis. Clients outside the region were
6 won significantly more often through referrals than within the region: While practically half
7 of the external clients (49%) were won through reputation networks, only 42% of the local
8 clients were won by referral ($N = 966$; $T = 1.999$; $p < .05$).

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17 Since these comparisons measure the individual effects only separately, the variables are
18 further submitted to multivariate logistic regression models in order to study their combined
19 effects. In tale 4 models 2 and 3 display the multivariate logit coefficients for the aggregate
20 regression models. Model 2 confirms the direction and strength of association between firm
21 location, referrals and client location. Both variables have the correct signs and are
22 significant, and also the model is significant. There is joint effect that when a consultancy is
23 located in Frankfurt, their clients are more likely to be located outside the region, and when a
24 client was referred to the consulting company, that client is also more likely to be outside the
25 region. In addition, when tie strength (see model 1) are added to model 3, the suggested
26 interpretation is further enhanced. While the variables of tie strength are either less or no
27 longer significant, the effect of firm location becomes even more pronounced and highly
28 significant. It should be noted that the models are not intended to optimise the overall
29 explanatory power of the models but to demonstrate the adequacy of the combined effects of
30 firm location and referrals in order to support the argument of trans-local reputational
31 spillover concentrated in the city.
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55 **6 Discussion and conclusion**

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58 This paper has discussed the shortcomings of current agglomeration theory in the context
59 of knowledge services. It has argued that the city does not only offer local externalities based
60 on traded interdependencies but also trans-local economies of overview. The local advantages

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3 are well understood. It should not be neglected that often at least forty percent of the client
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5 base is located within the same region und there is also evidence that knowledge service firms
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7 grow within their regional customer base in less connected, secondary cities and regions
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9 (DANIELS and BRYSON, 2005). However, and quite against geographical intuition, this
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11 paper demonstrates that the quality of client relations was independent of geographical
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13 proximity. Since specialised knowledge services follow a value creation logic in which
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15 resources are aligned often uniquely to solve specific problems and to produce tailored
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17 solutions (STABELL and FJELDSTAD, 1998), face-to-face collaboration with clients does
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19 not necessarily depend on permanent co-location but may also be facilitated through temporal
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21 travel across distance.
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27 Apart from the local linkages, this paper has argued for the city as an important locus for
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29 trans-local business opportunity. The survey presented here found that Frankfurt firms won
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31 more clients outside the region and that they won them through reputational spillover, i.e.
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33 inter-personal referrals. Local reputation networks of this kind convey trans-local network
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35 externalities in that they circulate referrals to clients in other places. The regression models
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37 presented here may only explain a limited portion of the variance. Instead of being
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39 deterministic, the results of this paper rather indicate a contingent relation (SAYER, 2000)
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41 between a location in the city and the propensity to find business opportunities outside the
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43 region. This does not deny the fact that firms located within the city region may also find
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45 access to external business opportunities. The literature on knowledge intensive business
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47 services has identified various mechanisms to extend business to other regions, such as
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49 referrals from ongoing repeat business or piggy-backing strategies through non-equity
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51 partnerships with other consultancies (O'FARRELL and WOOD, 1999). Trans-local
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53 reputational spillover in the city forms one of these various mechanisms that drives trans-local
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55 business development.
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3 This empirical finding suggests a geography of reputation where the dense, diverse and
4 trans-locally connected urban communication networks spread reputation farthest and thus
5 yield trans-local business opportunities to local firms. At the same time this geography of
6 reputation connects the concept of local economies of overview (JOHANNISSON, 1990)
7 with the implicit notion of positive network externalities in the world city network approach.
8 Knowledge services cluster in cities – among other reasons – because cities boost business
9 opportunities across space. This paper thus links to the broader debate about agglomeration
10 economies and contributes to an understanding of the interplay between local externalities and
11 global linkages (BATHELT *et al.*, 2004). This recursive interdependence of local and global
12 relations constitutes an understanding of the city as a Neo-Marshallian node (AMIN and
13 THRIFT 1992; NACHUM and KEEBLE, 2003).
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29 The analysis has also shown that the city offers a location premium. Frankfurt firms
30 enjoyed stronger employment growth, on average, than firms located in the rest of the
31 metropolitan region. The causality for this location premium remains unclear though. Since
32 overview and reputation advantages are measured at the level of individual relationships, it is
33 difficult to test the effect of these economies of overview on performance at the firm level.
34 Therefore, future research is necessary to test for the effect of overview economies and
35 reputation networks on firm performance.
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45 The findings here suggest that the metropolitan region does not convey homogenous
46 advantages as a whole. Instead, the city clearly dominates as the primary locus of opportunity
47 and trans-local reputational spill-over. The example of the region Frankfurt/Rhine-Main is an
48 especially interesting case because it is one of the few metropolitan regions in Europe that has
49 a polycentric structure. We might expect an even more pronounced decay between the city
50 and its fringe in mono-centric metropolitan regions such as London, Paris or Madrid. Finally,
51 since this research has focused on the analysis of firms within only one metropolitan region,
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3 future research should pursue cross-sectional comparison between cities and regions to
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5 explicitly control for the connectivity of a city in the world city network.
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ⁱ The compound annual growth rate indicates the annual rate of change for an absolute growth difference over a

period of several years. It is calculated as
$$CAGR_x = \left(\frac{x_{t_1}}{x_{t_0}} \right)^{\frac{1}{T}} - 1$$
, where x denotes the variable of interest, t_0 denotes beginning value and t_1 the ending value of x , and T signifies the time passed in years. Since only 63.4% of the firms were founded before 1997, absolute growth comparisons along these six years could not be made for the entire sample. However, the CAGR measurement technique permits relative comparisons between firms with different (but overlapping) time periods. Consequently, it is acceptable to compare average annual growth rates with those firms that were established even after 1997.

ⁱⁱ The time period between 1997 and 2002 is particularly suitable for the study because the growth boom in German management consulting speeded up in the mid 1990s until the sudden economic downturn in 2002. This period thus represents a sequence of continuous and relatively stable growth conditions for management consulting in which most firms either increased their headcount or were newly founded.

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Figure 1: The metropolitan region of Frankfurt with its major cities

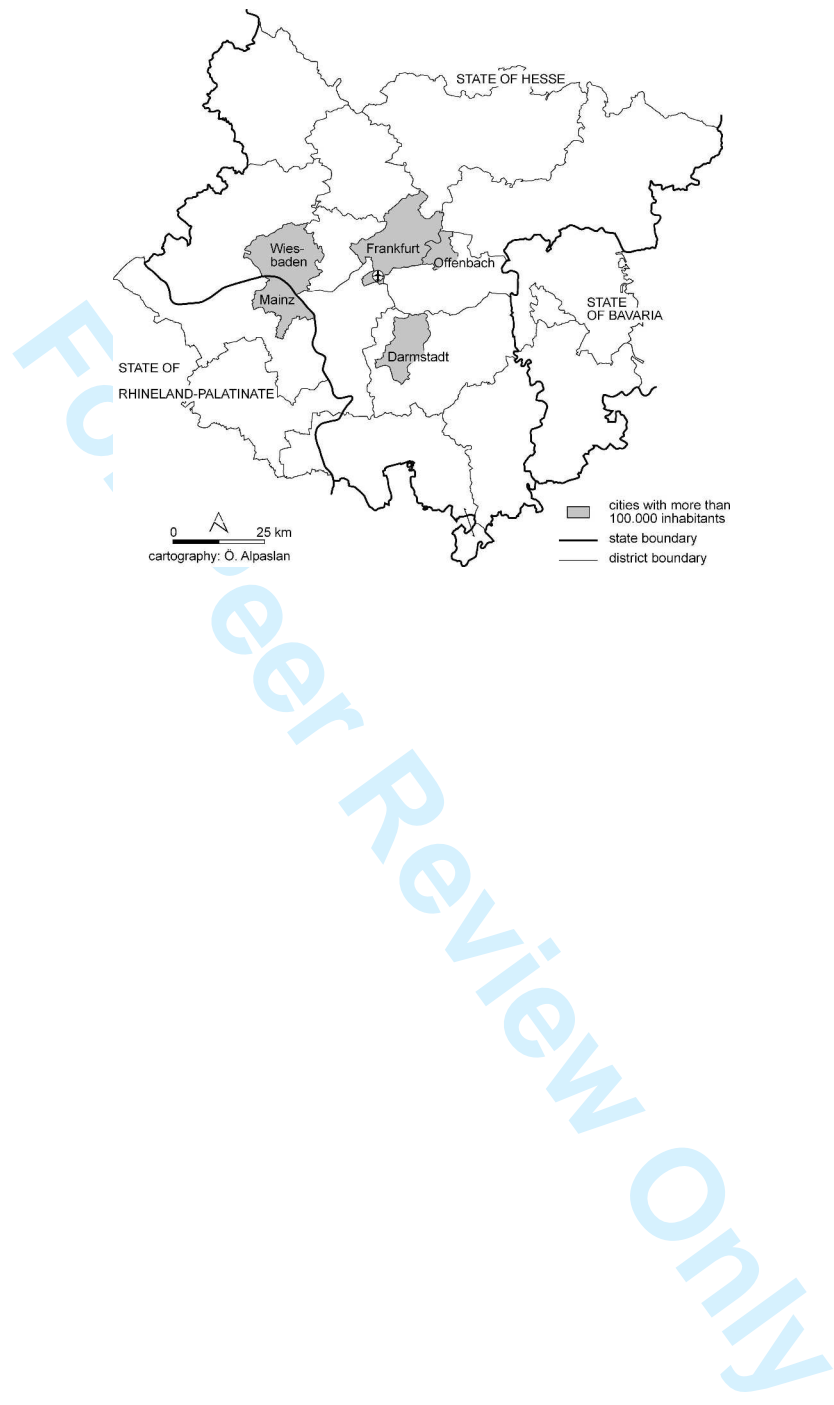


Table 1: Variable labels and definitions

Variable	Definition
A. Firm level	
<i>Dependent variable</i>	
Firm growth	Compound annual growth rate (CAGR) of employment in Germany 1997-2002
<i>Independent variables</i>	
Firm location	Dummy variable, 1 = Frankfurt (0 = metropolitan region)
Repeat business growth	Dummy variable, 1 = increase (0 = constant or decrease). Repeat business is the percentage of sales with existing clients (new or follow-up projects),
International activity	(1) International clients, percentage of international clients (2) International operations, dummy variable, 1 = consulting firm has international activity (i.e. temporary travel, non-equity cooperation, FDI) (0 = no international operation)
Firm age (control)	Year of firm foundation in Germany
B. Relationship level	
<i>Dependent variable</i>	
Client location	Dummy variable, 1 = within the region (0 = outside the region)
<i>Independent variables</i>	
Referral	Dummy variable, 1 = yes, "this client has been gained through the referral of another client or business partner" (0 = direct client acquisition)
Firm location	Dummy variable, 1 = consulting firm located in Frankfurt (0 = in the region)
Tie strength	(1) Duration of relationship in years (2) Frequency of contact (daily, weekly, monthly, a few times per year, less often) (3) Client contribution to revenues in percent of total revenues in the year 2002

Table 2: Student t-Test for mean differences between core city and metropolitan region

Variable	Group variable	<i>N</i>	Mean	<i>S.E.</i>	<i>T</i>	<i>d.f.</i>	Mean diff.
Int. operations	Region	89	0.573	0.053			
	City	98	0.765	0.043	-2.825 ^a	174.165	-0.192
Int. clients	Region	87	43.667	3.900			
	City	98	59.520	3.478	-3.044 ^a	183.000	-15.854
Employment growth (CAGR)	Region	45	0.033	0.029			
	City	62	0.089	0.013	-1.754 ^c	60.583	-0.056
Firm age	Region	89	1993.865	1.049			
	City	98	1992.633	0.871	0.040	185.000	2.960

^a $p < .01$; ^b $p < .05$; ^c $p < .10$; standard errors in parentheses

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Table 3: OLS regression coefficients for estimating employment growth (CAGR)

Variables	Model 1	Model 2	Model 3	Model 4
Intercept	-8.812 ^a (3.155)	-9.641 ^c (2.727)	-8.536 ^a (2.629)	-9.569 ^a (3.093)
Firm location	.052 ^c (.028)			.047 ^c (.028)
Int. operations		.045 (.028)		
Int. clients		.000 (.000)		
Repeat business			.073 ^a (.024)	.072 ^b (.028)
Firm age	.004 ^a (.002)	.005 ^a (.001)	.004 ^a (.001)	.004 ^a (.002)
<i>R</i> ² (adjusted)	.085	.076	.126	.131
<i>F</i>	5.909	4.485	9.797	6.155
<i>p</i>	.004	.005	.000	.001
<i>S.E.</i>	.144	.136	.134	.142
<i>d.f.</i>	106	126	122	103
<i>N</i>	107	127	123	104

^a $p < .01$; ^b $p < .05$; ^c $p < .10$; standard errors in parentheses. Size has no significant effect on the average employment growth.

Table 4: Logistic regression models for the estimation of client location (1=metropolitan region)

Variables	Model 1	Model 2	Model 3
Intercept	.163 (.241)	.237 ^b (.119)	-.107 (.221)
Duration of relation	.032 ^c (.017)		.017 (.016)
Frequency of contact	-.176 ^c (.103)		-.188 ^c (.097)
Share in revenues	-.002 (.005)		
Firm location		-.320 ^b (.137)	-.378 ^a (.140)
Referral		-.290 ^b (.137)	-.270 ^c (.142)
-2 Log-Likelihood	1078.415	1197.483	1155.059
χ^2	6.378 ^c	9.261 ^a	15.734 ^a
R^2 (Nagelkerke)	.011	.014	.025
Hit ratio (%)	51.9	55.2	56.2
N	783	871	845

^a $p < .01$; ^b $p < .05$; ^c $p < .10$; standard errors in parentheses