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Consumption and Social Life in Cities: Evidence from Germany

Rainald Borck

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Summary. This paper examines social agglomeration externalities. Using survey data from the German Socioeconomic Panel, it examines the link between city size and different measures of consumption, social interaction and social capital. There is strong evidence of agglomeration effects in consumption, while positive effects of city size on social interaction and social capital variables seem to some extent to be driven by sorting. Further, using responses to satisfaction questions, the paper analyses whether individuals are compensated for diseconomies of agglomeration by positive agglomeration externalities in other areas. This hypothesis cannot be rejected.

1. Introduction

About 75 per cent of the population in developed countries live in cities. Since housing prices, commuting costs, congestion, pollution and crime all increase with city size, a good question is, why? Given these obvious costs of agglomeration, the existence of cities must be explained by countervailing agglomeration economies. At least since Alfred Marshall, economists have emphasised the positive role of agglomeration for economic activity. Productivity in big cities is thought to be higher because of larger input markets, knowledge spillovers and benefits from labour pooling. A large branch of urban economics is concerned with the theoretical modelling and empirical identification of these agglomeration externalities (see Duranton and Puga, 2004 for a survey of theoretical approaches and Rosenthal and Strange, 2004, for a survey of empirical studies).

If productive externalities are prevalent, individuals in big cities should receive higher nominal wages which compensate for higher housing and commuting costs. However, besides facilitating production, cities also serve as centres of consumption and social interaction. This implies that individuals may accept lower real wages in large cities if they are compensated by other agglomeration economies. And, indeed, Tabuchi and Yoshida (2000) and Glaeser *et al.* (2001) find that, while nominal wages increase with city size, living costs increase even faster so real wages decrease with city size. This implies that productive agglomeration externalities alone are not enough to compensate individuals for the diseconomies of agglomeration. Rather, there must be other agglomeration effects on top of productive agglomeration externalities.

The aim of this paper is to assess the importance of various kinds of non-productive agglomeration externalities. I will use the term social agglomeration economies for those agglomeration effects which do not

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affect individual productivity but still benefit individuals. While urban economists have traditionally emphasised the role of cities in production, more recent papers have focused on agglomeration economies stemming from benefits in consumption or social interaction (Glaeser, 2000; Glaeser *et al.*, 2001). Glaeser *et al.* (2001) argue that cities are centres of consumption. They show that cities with amenities such as a good climate and many restaurants per capita have grown faster than cities without such amenities. Consumption externalities also play a central role in the theoretical literature of the new economic geography. Following Fujita (1988), Krugman (1991) and others, this literature studies agglomeration benefits stemming from the interaction of consumers' love for variety, increasing returns at the level of the firm and transport costs. An empirical assessment of consumers' evaluation of the consumption benefits provided by agglomeration would therefore also be important for this large and growing branch of economics.

The role of consumption in cities is also emphasised by scholars from other urban studies traditions such as sociology or geography. For example, Jayne (2005, 2006), Clarke (2003) and others show how consumption trends are shaped by cities and how consumption in turn shapes urban spaces and society in general. Florida (2005) also argues that consumption and cultural diversity are crucial to cities' attractiveness. Most of this literature is concerned with discerning broad trends of cultural changes and the dynamics of urban geography. By contrast, the present paper focuses on a more narrow question. Is it possible to ascertain empirically how city size affects individuals in their consumption opportunities and in their social relations?

Glaeser (2000) argues that non-market interactions present the future of urban research. Indeed, he argues that one cannot understand cities without understanding non-market interactions. It is quite clear that many social interactions are facilitated by spatial proximity. Using data from the US, Brueckner and Largey (2007), Glaeser (2000) and Glaeser and Gottlieb (2006) examine different indicators of social interaction and show the importance of city size as a determinant. I use many of the same indicators, albeit from a different dataset, the German Socioeconomic Panel.[1] Moreover, whereas Glaeser (2000) and Glaeser and Gottlieb (2006) mainly present simple correlations and pooled OLS estimates, I also present evidence from fixed effects estimates. This is important because it is very likely that individuals who are prone to benefit more highly from certain social activities may sort themselves into cities exactly because of these social activities being readily available there. OLS regressions do not allow controlling for this unobserved heterogeneity, while on the contrary including fixed effects does allow this.

The body of the paper studies how indicators of various kinds of social interaction are influenced by city size.[2] Among these indicators are various measures of consumption, such as visits to restaurants, cinemas and so on, measures of social interaction such as trust, number of friends, partnership, and measures of 'social capital' such as membership of organisations and political interests. Finally, I also examine satisfaction with life in general and satisfaction with various specific domains, in particular, housing, work and consumption. The idea is to test an equilibrium hypothesis: if individuals are mobile, in equilibrium, residents of larger cities should just be compensated for the diseconomies in certain domains, such as commuting and housing markets, by agglomeration economies in other domains, such as labour markets, consumption or social interaction.

The results indicate that city size is an important influence on many of these indicators. Some measures of social interaction and social capital reveal positive agglomeration economies while others reveal negative economies. Furthermore, including fixed effects washes out individual heterogeneity and at the same time reduces some of the effects of city size. The strongest evidence in favour of agglomeration economies is shown in consumption, while the evidence for social interaction and social capital is

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somewhat mixed and seems to be partially driven by sorting. Moreover, the data on satisfaction indicate that individuals in bigger cities experience higher satisfaction in consumption and lower satisfaction in housing, while they show no marked effect on job satisfaction. Overall life satisfaction does not seem to depend on city size. Hence, the hypothesis that, in equilibrium, agglomeration economies and diseconomies just balance each other cannot be rejected.

The paper is organised as follows. The next section presents a brief overview of the kinds of social agglomeration externalities considered in this paper. Section 3 describes the data used in the empirical analysis. Section 4 shows the regression results from pooled OLS or (ordered) logit regressions. While OLS results cannot address important questions such as the sorting of certain types of individuals into cities of different sizes, these results are presented here in order to compare the present analysis with that of Glaeser and Gottlieb (2006). Section 5 then addresses sorting issues, placing particular emphasis on fixed effects estimates. This will allow us to judge how far the OLS results may be driven by sorting. Finally, the last section concludes the paper.

2. Social Agglomeration Externalities

In this section, I describe the types of externalities on which the empirical analysis will be based. I will categorise externalities into three types described in the following sub-sections: consumption, social interaction and 'social capital'. In the last sub-section, I briefly discuss agglomeration diseconomies in housing markets and how one can empirically assess whether these are outweighed by agglomeration economies in labour markets or social economies.

2.1 Consumption

The idea of agglomeration economies in consumption is firmly rooted in theory, but empirical evidence is scant. As argued by Glaeser *et al.* (2001), cities are centres of consumption. There are many goods for which membership must exceed a certain threshold for the good to be profitably supplied. For instance, small towns will typically lack cinemas, theatres and concert halls, and there will be only a limited number of restaurants. Therefore, consumers in bigger cities should benefit from the usage of these 'club goods'. There is also an important agglomeration externality in consumption which is emphasised by the new economic geography. Models using the Dixit–Stiglitz assumption of consumers' love for variety show that firms locate in cities to be close to consumers and consumers locate in cities to benefit from the lower price index of consumption goods (see, for example, Fujita, 1988). Hence, individuals in large cities will benefit from the greater variety of goods and services offered there.

2.2 Social Interaction

Human life is inherently social. It is relatively obvious that the benefits of social interaction should depend on the size of the relevant group with which one can interact. In this sub-section, I present some measures of social interaction used in the sequel.

Trust. Social interactions often rely to a large extent on face-to-face contacts. In small communities, individuals interact with each other on a day-to-day basis and may therefore find it easier to trust others in their social relations. Putnam (2000) and Glaeser and Gottlieb (2006) find that people in large cities are less trusting. However, it may also be the case that individuals with some unobserved trait which makes them less trusting predominantly live in small cities.[3] Hence, on average, the effect of city size on trust is not clear *a priori*.

Crime. While there are increasing returns in many social interactions, there are also increasing returns to crime. Criminals benefit from a greater number of potential targets and the lower costs of escape, as well as low probability of apprehension in larger cities.

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The relationship between city size and crime is well documented (see, for example, Glaeser and Sacerdote, 1999). I will use two indicators which are linked to individual perceptions of crime: responses to survey questions on general worries about crime, and the frequency of leaving one's door unlocked.

Matching. One of the big advantages of city life comes in the form of matching externalities. Since matching markets in cities are likely to be thick, the idea that there are matching externalities in city size seems natural. And indeed, under certain assumptions, one can generate matching functions with increasing returns to scale (see Duranton and Puga, 2004). This idea has generally been applied to labour markets, but the application to marriage markets and other social relationships is obvious. There are two basic arguments why there would be increasing returns in matching markets. First, individuals will find it easier to find a suitable partner in a bigger city. And secondly, the quality of any given match is likely to be better in thicker markets. Therefore, one would expect that the benefits of interacting with friends and partners should be higher in cities. However, things are a bit more complex. If cities are better marriage markets, single individuals should be willing to move to cities to find a mate. However, individuals who have found a mate should, other things equal, be more likely to move out of cities to benefit from lower housing costs (Gautier *et al.*, 2005). Therefore, it is not clear *a priori* whether individuals in bigger cities should be more or less likely to live with a partner.[4]

2.3 Social Capital

An important topic in the recent literature is the alleged fall in 'social capital'. Glaeser and Gottlieb (2006) discuss how cities shape individuals' incentives to become involved in civic matters and politics. On the one hand, urban proximity might facilitate interaction in political community matters. On the other hand, as argued by Robert Putnam (2000), city residents may also be less likely to be engaged in civic matters and to be 'socially connected'. For instance, he states that large-city residents in the US are less likely to be group members or attend club meetings and are less altruistic and trusting (Putnam, 2000, p. 205). I will use similar indicators of social capital and examine the extent to which city size and social capital are related in this dataset.[5]

2.4 Satisfaction and the Balance of Agglomeration Externalities

The survey used in this paper asks individuals broad questions about their satisfaction with life in general and with some specific domains such as the supply of goods and services in their community, their job and their dwelling. This information can then be used directly to test for agglomeration economies in these domains. Based on conventional urban economic theory, one would expect individuals in larger cities to be more satisfied with the supply of goods and services and their job (because of the higher wage) and less satisfied with housing (because of the higher housing costs).

Further, we can test whether an urban equilibrium obtains where individual utility is equalised across city sizes. Suppose individuals are mobile between cities. Then, in equilibrium, an individual of given type should be indifferent between what size of city he or she should live in. There is a simple test of this equilibrium hypothesis. Let individual utility be a function $u(c(s,\cdot), h(s,\cdot), w(s,\cdot))$ where c, h and w are sub-utility functions defined over consumption (c), housing (h) and work (w), all of which are a function of city size s and other variables. Then, in an equilibrium with perfect mobility, it should be true that utility is equalised across all city sizes. The total differential of utility with respect to city size is

$$\frac{du}{ds} = u_c c_s + u_h h_s + u_w w_s \qquad (1)$$

where subscripts denote partial derivatives. The data will then allow separate tests of the effect of city size on satisfaction with the domains

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(consumption, work, housing) as well of the equalisation hypothesis that life satisfaction is independent of city size, $du/ds = 0$. Note that this test differs from the usual tests which use indicators such as wages or housing costs to assess agglomeration effects. Here, instead, individuals directly report their satisfaction. This opens the possibility that compensation takes other than monetary forms. This may be the case, for instance, if individuals in large cities receive high wages but have low job satisfaction due to some (unobserved) disadvantage of working in a large city.

3. Data and Estimation

3.1 Data

In order to test some of the hypotheses just outlined, I use survey data from the German Socioeconomic Panel (GSOEP). I use the waves from 1993 to 2003. However, some variables are not available for all years (some only for 2003).[6]

Variables and summary statistics are listed in Table 1. The dependent variables are the following:

Consumption. The GSOEP asks individuals about their use of spare time. I use answers to the following questions as measures of consumption:[7]

Now some questions about your free-time. Please indicate how often you take part in each activity: daily, at least once a week, at least once a month, seldom or never?

—Dine out. Go out for a drink or for a meal (café, bar pub, restaurant)
—Cinema. Cinema visits, visits to pop concerts, dance events, clubs
—Concert. Visits to cultural events e.g. concerts, theatre, exhibitions
—Internet. Internet usage outside work.

Social interaction. The following measures of social interaction are included in the analysis

—Trust. What is your opinion on the following statement? On the whole one can trust people. (Totally agree, agree slightly, disagree slightly, totally disagree)
—Friends. What would you say: How many close friends do you have?
—Visit friends. Social intercourse with friends, relatives or neighbours (daily, at least once a week, at least once a month, seldom or never).
—Crime. What is your attitude towards the following areas—are you concerned about them? Crime in Germany (very concerned, somewhat concerned, not concerned at all).
—Door. How often do you leave the door to your apartment unlocked? (very often, often, sometimes, seldom, never).
—Partner. Individual lives in a stable partnership.

Social capital. For social capital, I use the following variables

—Member: Are you a member of one of the following organisations or unions? Trade union; professional body; works or staff council at your place of work; group or organisation that supports the conservation and protection of the environment and/or nature; club or similar organisation.
—Participate. Participation in public initiatives, in political parties, local government (daily, at least once a week, at least once a month, seldom or never).
—Political interest. Generally speaking, how much are you interested in politics? (very much, much, not so much, not at all.)

Satisfaction. Individuals are asked the following questions about their satisfaction levels. How satisfied are you today with the following areas of your life? (0 means totally unhappy, 10 means totally happy)

—Life in general;
—the supply of goods and services in your area;
—your job;
—your place of dwelling;
—your health.

The GSOEP records the size class of the city where the individual resides in seven classes: (1) under 2000 inhabitants; (2)

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Table 1. Summary statistics

Variable	Mean	Standard deviation	*N*
Big city	0.727	0.445	407 836
Small city	0.04	0.195	407 836
Life satisfaction	6.989	1.772	174 138
Satisfaction with goods	6.367	2.452	172 938
Satisfaction with job	6.975	2.141	104 490
Satisfaction with dwelling	7.5	2.097	173 367
Trust	2.647	0.72	22 609
Close friends	4.393	4.204	22 609
Concern about crime	2.451	0.618	163 988
Cinema, pop concert	2.575	1.095	116 613
Restaurant	2.67	1.001	47 087
Concert	2.354	0.940	116 613
Partner	0.871	0.336	407 836
Gender	1.514	0.5	343 882
Age	42.224	23.965	336 985
Log income	9.243	0.569	182 412
Children	0.675	0.989	182 490
Unemployed	0.031	0.173	407 836
Current health	3.427	0.950	164 810
Log years of education	2.432	0.209	173 840

2000–5000; (3) 5000–20 000; (4) 20 000–50 000 (5) 50 000–100 000 (6) 100 000–500 000; and (7) over 500 000 inhabitants. For the study, I recode city size in three categories: small towns (less than 5000 inhabitants), medium-sized (5000–100 000) and large cities (more than 100 000). While this results in some loss of information, it makes the results somewhat simpler to present. Detailed results using all categories are available on request.

In order to control for other individual characteristics, I include a variety of other control variables, in particular, gender, (log of) real per capita income, age, (log of) years of education, being unemployed, current health status, number of children, homeownership, living with a partner and a dummy for East German residents.

Before presenting results from multiple regressions, I briefly present an overview of how a few variables of interest vary with city size. Taking the example of consumption, the average small-city resident goes out for drinks or dinner on average a little more than once a month (mean response is 2.34) while residents of big cities go out closer to once a week (mean 2.70). In small cities, individuals report 4 friends, while in large cities each individual reports on average 4.37 friends. By contrast, Glaeser (2000) reports that, in the US, residents of big cities have on average fewer friends than residents of smaller cities. Relatively large differences are found for satisfaction variables: individuals in small cities have an average satisfaction score of 5.23 for goods and services while large-city residents have an average score of 6.62. On the other hand, small-city residents have an average score of 7.52 for satisfaction with their dwelling compared with 7.17 for big-city residents. For life satisfaction, the average scores lie closer together: 6.68 for small-city residents and 6.89 for large-city residents.

3.2 Estimation

The estimation will be carried out in three steps. First, I will present results from pooled regressions, either by OLS or (ordered) logit. Letting y_{it} be a specific dependent variable for individual i at time t; x_{it} a $1 \times k$ vector of controls; s_{it} city size; and ε_{it}

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an i.i.d. error term, one could estimate pooled OLS equations of the form

$$y_{it} = x_{it}\alpha + \beta s_{it} + \varepsilon_{it} \quad (2)$$

or, in the case of a categorical variable, the ordered logit[8]

$$y^*_{it} = x_{it}\alpha + \beta s_{it} + \varepsilon_{it} \quad (3)$$

$$y_{it} = k \Leftrightarrow \lambda_k \leq y^*_{it} \leq \lambda_{k+1} \quad (4)$$

where, y^*_{it} is the latent variable and y_{it} the observed categorical variable.

The maintained assumption in either (2) or (3) is that s_{it} (as well as x_{it}) is strictly exogenous for ε_{it}. That means that city size varies in response to some unmeasured variable which, however, affects none of the y_{it}.

Several issues arise in the estimation. First, since an aggregate regressor (city size) is used to explain individual outcomes, OLS standard errors are biased (Moulton, 1990) and, hence, robust standard errors are used.[9]

A second potential problem arises from individual unobserved heterogeneity. Let c_i be a dummy variable for individual i, called a 'fixed effect'. Then, estimation of (2) is biased if some of the elements of x are correlated with the c_i. Consider the effect of community size on some social interaction variable, say, the number of friends. Then, it is plausible to suppose that sociable individuals will seek environments where they can meet each other—i.e. they will flock to big cities. Hence, community size and individual unobserved heterogeneity may be correlated, so I will also estimate fixed effect models of the form

$$y_{it} = x_{it}\alpha + \beta s_{it} + c_i + u_{it} \quad (5)$$

For estimating panel models with categorical dependent variables, the following procedure is used. For binary dependent variables, I use a standard fixed effects conditional logit estimator. For ordered categorical variables, the dependent variable y_{it} is transformed into a variable

$$y'_{it} = \begin{cases} 1 \text{ if } y_{it} > \bar{y}_i \\ 0 \end{cases} \quad (6)$$

where $\bar{y}_i$ is the individual mean over time.

The estimated equation is then a fixed effect conditional logit with y'_{it} as the dependent variable. This estimator is a slight variation of that developed by Ferrer-i-Carbonell and Frijters (2004). Other panel models with categorical variables have estimated fixed effects logit models by setting y_{it} to 1 if it exceeds a common threshold, say, the sample mean at time t, $\bar{y}_t$. The estimator in (6) has the advantage of using individual specific cut-offs which implies that fewer cases are lost (see Ferrer-i-Carbonell and Frijters, 2004, for further discussion).

4. Pooled Regression Results

4.1 Consumption

Results on individual use of leisure time are displayed in Table 2. The table shows that, except for classical concerts, men go out more often than women. All activities seem to be normal goods, i.e. demand for these activities increases with income. Healthier individuals go out more, as do those who are employed. Having a partner reduces the probability of going out but increases usage of the Internet; individuals living with a partner use the internet more often than those without a partner. Homeownership and education are also significantly positively related to the shown activities.[10] The results on city size are rather clear. The first column in the table shows that, in communities with less than 2000 inhabitants, individuals go out to bars or restaurants less often than in mid-sized towns. For cities of more than 100 000 inhabitants, the probability of going out for drinks or food is significantly higher than in mid-sized towns. The same pattern holds for cinemas/rock concerts/dancing and classical concerts/theatres/museums. For cinemas, however, the difference between small and mid-sized towns is not significant. The last column in the table shows the effect of city size on Internet usage. Individuals in small towns use the Internet less often than those in mid-sized communities, while the effect of larger cities is insignificant. This partly corroborates other findings that cities and the Internet are complements rather than

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Table 2. Consumption

	Dine out	Cinema	Concert	Internet
Female	−0.332 (0.023)***	−0.228 (0.016)***	0.332 (0.016)***	−0.648 (0.026)***
Partner	−0.303 (0.027)***	−0.609 (0.059)***	−0.284 (0.034)***	0.151 (0.044)***
Log personal income	0.836 (0.032)***	0.469 (0.025)***	0.585 (0.025)***	0.559 (0.039)***
Current health	0.207 (0.014)***	0.181 (0.010)***	0.242 (0.018)***	0.085 (0.020)***
Age	−0.053 (0.005)***	−0.133 (0.004)***	0.024 (0.006)***	0.002 (0.007)
Age squared	0.000 (0.000)***	0.001 (0.000)***	−0.000 (0.000)***	−0.001 (0.000)***
Unemployed	−0.328 (0.038)***	−0.232 (0.025)***	−0.328 (0.024)***	−0.005 (0.056)
Children	−0.185 (0.014)***	−0.217 (0.013)***	−0.123 (0.012)***	0.023 (0.020)
Owner	0.120 (0.026)***	0.224 (0.021)***	0.359 (0.026)***	0.256 (0.035)***
Log years of education	0.882 (0.052)***	1.327 (0.064)***	2.890 (0.061)***	2.669 (0.098)***
Small city	−0.217 (0.046)***	−0.020 (0.046)	−0.247 (0.049)***	−0.182 (0.066)***
Big city	0.182 (0.036)***	0.171 (0.042)***	0.219 (0.042)***	0.127 (0.054)**
East	−0.579 (0.032)***	0.150 (0.033)***	−0.127 (0.037)***	−0.088 (0.060)
Observations	45 024	111 969	111 969	21 325
Log likelihood	−56 364.48	−116 058.18	−107 094.74	−23 911.05

Notes: Year dummies included. Robust standard errors in parentheses. ** significant at 5 per cent; *** significant at 1 per cent.

substitutes (see, for example, Sinai and Waldfogel, 2004). Glaeser and Gottlieb (2006) also find positive agglomeration economies for drinking out but negative effects for eating out.[11] They also find that individuals in central cities are more likely to go to museums and concerts.

4.2 Social Interaction

The results for social interaction are displayed in Table 3. The first column shows the results for trust. According to the estimates, people are significantly more trusting when they have higher income, better health, when they are educated, employed and own their dwelling. Women are more trusting than men. Interestingly, trust seems to be somewhat lower in small cities and no lower in large than in medium-sized cities. Glaeser and Gottlieb (2006), on the other hand, find lower trust in more densely populated cities. Results for the regression of the number of close friends are displayed in the second column of Table 3. As one might expect, people have more friends (or report having more friends) when they have higher income and are in better health. According to the estimates, the number of friends in small communities is lower and in large cities higher than in mid-sized cities, but not significantly so. Glaeser (2000), in contrast, finds that there is a negative correlation between city size and the number of close friends. The third column shows evidence that people interact with their friends more when they live in large cities. Individuals living in mid-sized and small cities do not report significantly different patterns of interaction. This contrasts with Glaeser and Gottlieb (2006), who find individuals in central cities are less likely to visit their friends.

Results for concern about crime are displayed in the fourth column of Table 3. Individuals are more concerned about crime the lower their income, the worse their health, the older they are, the fewer children they have and when they have a partner. Homeownership seems to decrease worries about crime.[12] These results seem somewhat peculiar, but note that the question refers to general worries about crime, not the individual risk. Interestingly, community size does not significantly affect worries about crime. The fifth column shows results from the regression of leaving one's door unlocked. Here, we get the expected effects: the larger

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Table 3. Social interaction

	Trust	Friends	Visit friends	Crime	Door	Partner
Female	0.078 (0.024)***	−0.104 (0.058)*	0.107 (0.016)***	0.221 (0.013)***	-0.014 (0.021)	-0.309 (0.027)***
Partner	0.012 (0.040)	0.088 (0.083)	−0.411 (0.033)***	0.217 (0.027)***	0.006 (0.037)	
Log personal income	0.126 (0.034)***	0.260 (0.095)***	0.074 (0.024)***	−0.086 (0.022)***	−0.009 (0.036)	0.006 (0.028)
Current health	0.383 (0.019)***	0.394 (0.049)***	0.154 (0.014)***	−0.126 (0.012)***	−0.041 (0.018)**	−0.015 (0.014)
Age	−0.009 (0.005)	−0.030 (0.011)***	−0.106 (0.005)***	0.015 (0.001)***	0.000 (0.006)	0.031 (0.002)***
Age squared	0.000 (0.000)***	0.000 (0.000)**	0.001 (0.000)***	−0.000 (0.000)***	−0.000 (0.000)**	−0.000 (0.000)***
Unemployed	−0.305 (0.058)***	−0.102 (0.140)	0.099 (0.036)***	0.028 (0.039)	−0.127 (0.058)**	0.056 (0.044)
Children	0.025 (0.019)	−0.025 (0.070)	−0.019 (0.015)	−0.050 (0.013)***	0.139 (0.020)***	0.968 (0.027)***
Owner	0.153 (0.036)***	0.252 (0.074)***	−0.023 (0.029)	−0.046 (0.025)*	0.283 (0.038)***	0.448 (0.040)***
Log years of education	0.828 (0.077)***	0.969 (0.247)***	−0.227 (0.064)***	−0.728 (0.069)***	0.783 (0.080)***	1.023 (0.100)***
Small city	−0.158 (0.069)**	−0.007 (0.158)	−0.069 (0.056)	0.079 (0.048)	0.227 (0.070)***	−0.033 (0.051)
Big city	0.036 (0.052)	0.313 (0.206)	0.108 (0.034)***	−0.063 (0.046)	−0.192 (0.057)***	−0.108 (0.040)***
East	−0.374 (0.048)***	−0.315 (0.119)***	−0.581 (0.033)***	0.629 (0.035)***	−0.065 (0.057)	0.118 (0.044)***
Constant	−1.115 (0.937)	−2.804 (0.358)***				
Observations	21 325	19 123	45 024	157 346	21 325	127 898
Log likelihood	−21 561.88	− 56 330.73	−133 276.32	−25 828.34	−66 033.40	
R^2	0.02					

Notes: Year dummies included. Robust standard errors in parentheses. *significant at 10 per cent; **significant at 5 per cent; ***significant at 1 per cent.

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Table 4. Social capital

	Member	Participate	Interest in politics
Female	−0.735 (0.032)***	−0.311 (0.022)***	−0.802 (0.018)***
Partner	0.085 (0.034)**	−0.068 (0.032)**	0.007 (0.022)
Log personal income	0.456 (0.033)***	0.099 (0.026)***	0.358 (0.019)***
Current health	−0.005 (0.018)	0.069 (0.018)***	0.073 (0.010)***
Age	0.089 (0.006)***	0.050 (0.004)***	0.025 (0.001)***
Age squared	−0.001 (0.000)***	−0.000 (0.000)***	−0.000 (0.000)***
Unemployed	−0.493 (0.057)***	−0.093 (0.037)**	−0.102 (0.025)***
Children	0.055 (0.017)***	0.022 (0.021)	0.013 (0.017)
Owner	0.207 (0.033)***	0.388 (0.029)***	0.154 (0.023)***
Log years of education	1.138 (0.073)***	1.304 (0.065)***	2.899 (0.049)***
Small city	0.002 (0.072)	0.273 (0.059)***	−0.032 (0.049)
Big city	−0.039 (0.058)	−0.019 (0.043)	0.154 (0.038)***
East	−0.126 (0.054)**	−0.082 (0.037)**	−0.103 (0.032)***
Constant	−9.279 (0.345)***		
Observations	47 299	111 969	158 010
Log likelihood	−26 156.30	−56 773.98	−169 093.32

Notes: Year dummies included. Robust standard errors in parentheses. **significant at 5 per cent; ***significant at 1 per cent.

the city, the less often individuals leave their door unlocked. Thus, while concern about crime shows no direct effect of agglomeration, revealed actions do show the expected pattern. Again, since the crime question concerns general worries about crime, it may simply be that big-city residents perceive the general crime risk as being lower while they do see themselves as city residents to be more at risk and act accordingly.

The idea that cities function as matching markets is examined in the last column of Table 3. The results are interesting: in larger cities, the probability of having a partner is significantly lower and, in small cities, it is not significantly different from mid-sized cities. This would not seem to be consistent with increasing returns to scale in matching. A more sophisticated analysis of cities as marriage markets is presented by Gautier *et al.* (2005). They argue (and present evidence to the effect) that individuals should come to cities to look for a partner, but when they have found one, they should move to smaller cities where housing is cheap. Hence, what could be at work here is the effect that individuals with partners are less likely and singles who are looking for a partner more likely to live in cities.

4.3 Social Capital

Table 4 displays some results on 'social capital' (see also Glaeser, 2000). According to the results shown in the first column, the pattern of membership in an organisation does not seem to differ according to city size. Glaeser (2000) and Glaeser and Gottlieb (2006), on the other hand, find that individuals in larger cities are less likely to be members of an organisation or to have attended a club meeting. The second column shows evidence that individuals in small cities participate more in politics and civic matters, which seems to be evidence in favour of Putnam's (2000) thesis. Finally, the last column of the table shows that individuals in cities with more than 100 000 inhabitants are significantly more likely to be interested in politics. This agrees with Glaeser and Gottlieb's (2006) finding.

4.4 Satisfaction

Finally, let us look at the link between city size and satisfaction. The literature has used answers to happiness questions as proxies of individual utility (see Frey and Stutzer, 2002). As outlined in section 2, if individuals

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are mobile between cities, urban economics predicts that agglomeration diseconomies through housing and commuting costs have to be balanced by agglomeration economies in other areas, such as higher wages or social agglomeration economies. A test of that hypothesis can be performed by examining individual satisfaction with life in general and certain specified domains such as work, dwelling, health and the supply of goods and services. Results are shown in Table 5.

In general, the regressions show higher satisfaction for women, wealthier and healthier individuals. The other variables have effects which seem to differ between categories. Education is insignificant in almost all regressions. The results for city size vary between the different domains. Both in small and in large cities, satisfaction with health seems to be lower than in mid-sized cities. There seems to be an inverse relationship between city size and job satisfaction, which contradicts the idea of general productive agglomeration economies. Satisfaction with dwelling is lower in big cities, which would be consistent with the general urban model that housing markets become congested in denser areas. The second column shows that the larger the city one lives in, the higher the reported satisfaction with the local supply of goods and services. This is consistent with the new economic geography, which emphasises agglomeration economies in consumption. This new test therefore provides direct evidence in support of the NEG models using Dixit–Stiglitz preferences. In the next section, I will check whether the results hold up to tests which attempt to deal with unobserved heterogeneity or sorting.

Finally, the first column of Table 5 shows results for overall life satisfaction. After controlling for individual characteristics, the table shows that individuals in large cities report lower satisfaction, while those in small cities are not significantly less satisfied with their life than those in mid-sized cities. This seems to be consistent with Glaeser's (2000) finding that life satisfaction decreases with city size. Stutzer and Frey (2004) analyse the effect of commuting on happiness and find that commuters enjoy significantly lower satisfaction than non-commuters, which they interpret as evidence that the basic tenet of location theory—equalisation of utility levels—does not hold. The current result seems to add another piece to that puzzle. In the next section, we will see whether that result stands up to additional testing.

In the present context, I also tested whether commuting might have something to do with the effect of city size on satisfaction. However, while commuting seems significantly to reduce satisfaction with all domains, except interestingly job satisfaction, the results of city size are basically unaffected.

5. Dealing with Sorting

As argued earlier, individuals may sort into cities based on individual character traits such as their sociability. These individual character traits would thus be correlated with city size and, hence, OLS estimates would be biased and inconsistent. Moreover, if individuals move to cities based on agglomeration effects, city size will be correlated with the error term in regression equations of agglomeration effects and, again, OLS estimates will be biased. Henderson (2003) performs a variety of tests in his study of productive agglomeration economies. He concludes that instruments are generally weak and that (plant) fixed effects are most likely to take care of issues of sorting. I will present fixed effects estimates in sub-section 5.2. Nonetheless, I will also try to address sorting from another perspective: the differentiation between stayers and movers.[13]

5.1 Movers Versus Stayers

The basic sorting problem is that individuals might sort into cities based on individual characteristics which would then be correlated with agglomeration effects. Hence, one would expect that results should differ according to whether or not individuals have moved to,

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Table 5. Satisfaction

	Life	Goods	Work	Dwelling	Health
Female	0.146 (0.012)***	0.033 (0.010)***	0.044 (0.015)***	0.166 (0.012)***	0.046 (0.011)***
Log personal income	0.355 (0.020)***	0.122 (0.025)***	0.256 (0.027)***	0.268 (0.020)***	0.040 (0.014)***
Current health	0.969 (0.013)***	0.291 (0.009)***	0.696 (0.012)***	0.362 (0.010)***	2.304 (0.014)***
Age	0.012 (0.001)***	0.016 (0.001)***	0.000 (0.001)	0.018 (0.001)***	-0.007 (0.001)***
Age squared	-0.000 (0.000)***	−0.000 (0.000)***	0.000 (0.000)	−0.000 (0.000)***	0.000 (0.000)***
Unemployed	−0.903 (0.035)***	−0.100 (0.029)***	−2.109 (0.064)***	−0.177 (0.025)***	−0.120 (0.027)***
Children	0.012 (0.010)	−0.001 (0.009)	0.067 (0.011)***	−0.056 (0.012)***	0.027 (0.008)***
Partner	0.266 (0.027)***	−0.041 (0.018)**	0.017 (0.027)	0.154 (0.020)***	−0.068 (0.020)***
Owner	0.255 (0.020)***	−0.231 (0.024)***	0.109 (0.027)***	0.924 (0.022)***	0.087 (0.015)***
Log years of education	0.011 (0.047)	−0.011 (0.044)	0.059 (0.045)	−0.100 (0.052)*	−0.021 (0.041)
Small city	−0.108 (0.042)**	−0.713 (0.064)***	−0.061 (0.037)	−0.043 (0.044)	−0.107 (0.030)***
Big city	−0.027 (0.030)	0.189 (0.052)***	−0.055 (0.028)**	−0.141 (0.040)***	−0.063 (0.025)**
East	−0.631 (0.027)***	−0.414 (0.039)***	−0.211 (0.028)***	−0.275 (0.033)***	−0.342 (0.025)***
Observations	157 993	157 102	96 332	157 392	157 956
Log likelihood	−277 811.23	−337 376.48	−189 620.76	−297 513.97	−262 437.34

Notes: Year dummies included. Robust standard errors in parentheses. *significant at 10 per cent; **significant at 5 per cent; ***significant at 1 per cent.

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for example, larger cities. In the GSOEP, there are records of whether individuals still live in their place of birth.[14]

In this sub-section, I briefly discuss results from separate regressions for stayers (who still live in their place of birth) and movers, to see whether sorting indeed plays a role. For reasons of space, I will confine the discussion to the pooled regressions on the satisfaction variables.[15] There are some differences in the satisfaction of movers and stayers. While the difference in job satisfaction between stayers and movers is significant, it is small (6.96 for stayers, 7.00 for movers). Further, movers seem to be significantly more satisfied with goods supply (mean 6.46 versus 6.21 for stayers) and with their dwelling (7.97 versus 7.55). For overall satisfaction, movers also report significantly higher levels (7.02 versus 6.97) but, again, the difference is relatively small. By contrast, stayers are more satisfied with their health (6.76 versus 6.53 for movers).

To see whether these results are driven by differences in personal characteristics, in Table 6, I present the results from separate regressions for movers and stayers. For satisfaction with health and goods and services, the effects of city size go in the same direction and are significant for both stayers and movers. For the other categories, however, results differ significantly between the stayers and movers subsamples. For satisfaction with work, stayers show significantly lower satisfaction in small cities and movers in big cities. For satisfaction with dwelling, both movers and stayers report lower satisfaction in large cities, but the effect of small cities is negative for stayers and positive (albeit insignificant) for movers. Finally, for overall life satisfaction, the results for stayers and movers also differ: while the effect of small cities is negative for both groups, it is smaller and less significant for movers; the effect of large cities is negative for movers and positive but insignificant for stayers. Thus, it appears that the movers experience somewhat higher satisfaction with their dwelling and the supply of goods than stayers. However, movers also seem to realise lower agglomeration effects than stayers. The results also indicate, however, that sorting does not change the effects of city size fundamentally.

5.2 Fixed Effects Estimates

In order to control for individual heterogeneity, in this sub-section I present results from fixed effects regressions. Identification of the effect of city size is now based on those individuals for whom city size is not constant in the time-period under consideration. In the entire sample, there are about 40 000 individuals for whom community size changes during the 11 years considered, so there is enough variation to identify the effects of city size.

Table 6. Satisfaction (movers vs stayers)

	Small city	Big city	Observations	Log likelihood
Life (stayers)	−0.094 (0.023)***	0.016 (0.015)	70 965	−124 017.26
Life (movers)	−0.079 (0.031)**	−0.052(0.017)***	52 506	−92 100.31
Goods (stayers)	−0.631 (0.023)***	0.238 (0.014)***	70 489	−152 642.73
Goods (movers)	−0.763 (0.032)***	0.190 (0.016)***	52 248	−111 664.49
Work (stayers)	−0.095 (0.030)***	−0.018 (0.018)	44 663	−87 641.84
Work (movers)	0.012 (0.042)	−0.053 (0.022)**	29 288	−57 710.01
Dwelling (stayers)	−0.086 (0.023)***	−0.090 (0.015)***	70 568	−132 097.57
Dwelling (movers)	0.045 (0.031)	−0.154 (0.017)***	52 423	−96 582.32
Health (stayers)	−0.086 (0.023)***	−0.052 (0.015)***	70 930	−117 263.33
Health (movers)	−0.114 (0.031)***	−0.030 (0.017)*	52 505	−87 446.76

Notes: Year dummies and controls included. Robust standard errors in parentheses. *significant at 10 per cent; **significant at 5 per cent; ***significant at 1 per cent.

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Since the dependent variables considered here are categorical, I use fixed effects conditional logit estimates as described in section 3.2. This does have some drawbacks. Foremost, a lot of information is lost, since there are now individuals with no change in category over time who can no longer affect the estimation results.[16] Secondly, reducing the number of categories to two obviously reduces the precision of the estimates. Therefore, I use the conditional fixed effect logit estimator for variables coded in five or less categories, and fixed effects OLS for the other variables, in particular, the satisfaction variables.[17]

Consumption. The results from fixed effects estimates for consumption variables are displayed in Table 7. In general, the results are in line with those of the pooled regressions, although they are not as strongly significant. The big-city variable still has a significantly positive effect on cinema and concert. For dining out, the effects of city size are insignificant, so that the positive effect found in the pooled regression may be due to unobserved characteristics of residents—i.e. individuals who particularly like dining out may move to big cities.

Social interaction. The results from fixed effects regressions for the variables of social interaction are shown in Table 8. The results are somewhat different from the pooled regressions. In particular, city size now shows no statistically significant effect on visiting friends. On the other hand, worries about crime are lower in small cities when fixed effects are controlled for, while without fixed effects there is no such effect. The effect of big cities on the probability of living with a partner disappears once fixed effects are controlled for. Hence, here too, a sorting effect may be at work.

Social capital. Table 9 shows fixed effects estimates for our variables of 'social capital'. These results differ in some respects from the pooled regressions. The coefficients for city size are interesting: residents of larger cities are more likely to participate in civic matters and small-city residents are marginally less interested in politics than those in medium-sized cities. In sum, when controlling

Table 7. Consumption (FE logit)

	Dine out	Cinema	Concert
Smallcity	0.029 (0.312)	−0.251 (0.294)	−0.010 (0.222)
Bigcity	0.196 (0.144)	0.238 (0.119)**	0.316 (0.107)***
Observations	5 802	24 705	24 666
Log likelihood	−2 060.09	−6 208.30	−5 464.97

Notes: Year dummies included. Robust standard errors in parentheses. **significant at 5 per cent; ***significant at 1 per cent.

Table 8. Social interaction (FE logit)

	Visit friends	Crime	Partner
Small city	−0.102 (0.368)	−0.433 (0.197)**	−0.584 (0.885)
Big city	0.159 (0.141)	−0.121 (0.086)	−0.294 (0.271)
Observations	6 058	25 808	4 623
Loglikelihood	−2 142.56	−10 665.99	−1 395.60

Notes: Year dummies included. Robust standard errors in parentheses. **significant at 5 per cent.

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Table 9. Social capital (FE logit)

	Member	Participate	Interest in politics
Small city	−0.413 (0.423)	0.305 (0.301)	−0.410 (0.218)*
Big city	0.134 (0.200)	0.584 (0.124)***	0.066 (0.090)
Observations	14 425	24 673	24 552
Log likelihood	−2 044.04	−3 844.34	−9 905.05

Notes: Year dummies included. Robust standard errors in parentheses. *significant at 10 per cent; ***significant at 1 per cent.

Table 10. Satisfaction (FE)

	Life	Goods	Work	Dwelling	Health
Small city	−0.005 (0.041)	−0.285 (0.101)***	−0.007 (0.073)	0.090 (0.070)	−0.001 (0.040)
Big city	−0.041 (0.026)	0.091 (0.043)**	0.009 (0.045)	−0.175 (0.042)***	−0.028 (0.025)
Observations	127 637	126 928	75 450	127 213	127 620
R^2	0.65	0.53	0.61	0.58	0.76

Notes: Year dummies included. Robust standard errors in parentheses. **significant at 5 per cent; ***significant at 1 per cent.

for individual heterogeneity, it does not seem that social capital is lower in larger cities. This would seem to be at odds with the hypothesis advanced by Putnam (2000) and the evidence in Brueckner and Largey (2007).

Satisfaction. The fixed effects estimates for satisfaction regressions are in Table 10. Satisfaction with work and health is not significantly affected by city size anymore once individual fixed effects are controlled for. Satisfaction with dwelling, however, does fall with city size. Also, satisfaction with the supply of goods and services increases significantly with city size, as it does when fixed effects are not controlled for. Finally, individual satisfaction with life does not seem to depend on city size once fixed effects are included. Thus, one cannot reject the hypothesis that individual mobility leads to an urban equilibrium where individuals cannot improve their utility by moving to a different size of city. The results are thus consistent with the hypothesis that diseconomies of agglomeration in housing markets are balanced by agglomeration economies in consumption.

6. Conclusion

This paper has tried to shed some light on social interaction economies generated by agglomeration. Individuals, it is argued, benefit from being close to other consumers, not only because they may then be more productive, but also from the benefits of interacting with others socially. These social agglomeration externalities may offset agglomeration diseconomies—for example, in housing markets and commuting. The paper has examined agglomeration effects in consumption, social interaction and social capital, using a variety of indicators from survey data. These survey data are useful since 'hard' data on social interaction are difficult to obtain.

The results are somewhat varied, but there is clear evidence of agglomeration externalities in consumption. This is a significant finding given that much of the 'new economic geography' is based on this type of externalities (see Baldwin *et al.*, 2003; Fujita *et al.*, 1999, for surveys). Moreover, I have presented some illustrative evidence on agglomeration economies from satisfaction

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responses. The idea was that individual mobility should lead to an equalisation of satisfaction across different city sizes. Agglomeration economies in some areas, say consumption or social benefits, or productive economies, should be balanced by diseconomies in other areas, such as housing markets. Indeed, I find that this hypothesis cannot be rejected.

The results point to the potential importance of agglomeration economies in consumption and social interaction for individual location decisions. I have tried to control for the possibility of sorting of individuals into cities, but future research may shed more light on this topic by using different data and looking for better instruments. Also, the nature of the data necessarily narrowed the focus of the study. Deeper analyses of the causal relations between consumption, social interaction and city life must therefore be left to future research.

Notes

1. It would undoubtedly be interesting to relate the different findings between this study and Glaeser and Gottlieb's (2006) to differences in things such as the spatial organisation of cities in the US and Germany, differences in retail structures and so on. However, this clearly cannot be done with the current data and any such analysis must be left for future research.
2. Focusing on city size does not mean that other facets of cities such as the diversity of the resident population are in any way unimportant. The data used here, however, do not permit the use of variables other than city size. Also, it seems useful to start with a narrow question before broadening the analysis to more diverse topics.
3. The trust indicator used in this study is available only for one year so that I cannot control for unobserved heterogeneity via fixed effects.
4. The term matching as used here applies to all social relations. Thus whether individuals seek a partner in the 'traditional' marriage market or in gay or lesbian markets, say, the idea that large cities facilitate matching will apply. The same applies to individuals of diverse ethnicities who may seek to live with individuals of the same ethnicity.
5. Putnam (2000) argues, however, that suburbanisation, rather than urbanisation, is the culprit for the alleged decline in social capital. Still, his thesis is that there is more social capital in smaller (and less suburbanised) communities.
6. See Haisken-DeNew and Frick (2003) for a description of the GSOEP.
7. In the GSOEP, answers are coded in the order they appear on the questionnaire. Hence, daily would be coded as 1, once a week as 2 and so on. In all these cases, I recoded variables such that if an activity is carried out 'more often' or someone agrees 'more' with a statement, they receive a higher number.
8. For binary variables, there is only one category and hence only one cut-off point in equation (4).
9. The assumption is that error terms are independent between counties but dependent among individuals living in the same county. Estimation uses Stata's cluster option.
10. Homeownership may in reality pick up the effect of wealth, which is not controlled for.
11. The consumption regressions in Glaeser and Gottlieb (2006) distinguish between central-city and suburban residents and not cities of different sizes. However, since suburbs are less densely populated than central cities, this is also an instance of agglomeration economies.
12. This may be due to a negative association between the percentage of rental housing and crime rates in an area.
13. The working paper version of this paper also contains results from instrumental variables regressions, where lagged city size is used as an instrument for current city size.
14. Note, however, that this information is not recorded for every person in every year, so it is possible that a person who reported living at her place of birth when this question was asked moved later on and this is not recorded in the survey. The possibility of discarding those years after this question was asked is, however, problematic since it would excessively reduce sample size.
15. More detailed results are available upon request. In general, the other results display less variation between stayers and movers than the satisfaction regressions. This may indicate that the satisfaction regressions suffer most from potential sorting. Since it is most likely that individual migration decisions are based on broad indicators of satisfaction and not on more specific categories of agglomeration effects, it would seem plausible that sorting should play the strongest role for satisfaction.

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16. But, as noted earlier, the loss of information is reduced by the use of individual cutoffs.
17. Ferrer-i-Carbonell and Frijters (2004) and Stutzer and Frey (2004) show that the results of happiness regressions do not differ much between conditional logit and OLS regressions.

References

BALDWIN, R. E., FORSLID, R., MARTIN, R. *ET AL*. (2003) *Economic Geography and Public Policy*. Princeton, NJ: Princeton University Press.

BRUECKNER, J.K. and LARGEY, A.G. (2007) Social interaction and urban sprawl, *Journal of Urban Economics*, forthcoming.

CHARLOT, S. and DURANTON, G. (2004) Communication externalities in cities, *Journal of Urban Economics*, 56, pp. 581–613.

CLARKE, D. B. (2003) *The Consumer Society and the Postmodern City*. London: Routledge.

DURANTON, G. and PUGA, D. (2004) Microfoundations of urban agglomeration economies, in: J. V. HENDERSON and J.-F. THISSE (Eds) *Handbook of Regional and Urban Economics*, *Vol. 4*, pp. 2063–2117. Amsterdam: Elsevier.

FERRER-I-CARBONELL, A. and FRIJTERS, P. (2004) How important is methodology for the estimates of the determinants of happiness?, *Economic Journal*, 114, pp. 641–659.

FLORIDA, R. (2005) *Cities and the Creative Class*. London: Routledge

FREY, B. S. and STUTZER, A. (2002) What can economists learn from happiness research?, *Journal of Economic Literature*, 40, pp. 402–435.

FUJITA, M. (1988) A monopolistic competition approach of spatial agglomeration: differentiated product approach, *Regional Science and Urban Economics*, 18, pp. 87–124.

FUJITA, M., KRUGMAN, P. and VENABLES, A. J. (1999) *The Spatial Economy: Cities, Regions, and International Trade*. Cambridge, MA: MIT Press.

GAUTIER, P., SVARER, M. and TEULINGS, C. (2005) *Marriage and the city*. Working Paper No. 2005-01, Centre for Applied Microeconometrics, University of Copenhagen.

GLAESER, E. L. (2000) The future of urban research: non-market interactions, *Brookings-Wharton Papers on Urban Affairs*, 1, pp. 101–150.

GLAESER, E. L. and GOTTLIEB, J. D. (2006) Urban resurgence and the consumer city, *Urban Studies*, 43, pp. 1275–1299.

GLAESER, E. L. and SACERDOTE, B. (1999) Why is there more crime in cities?, *Journal of Political Economy*, 107, S225–258.

GLAESER, E. L., KOLKO, J. and SAIZ, A. (2001) Consumer city, *Journal of Economic Geography*, 1, pp. 27–50.

HAISKEN-DENEW, J. P. and FRICK, J. (Eds) (2003) *Desktop companion to the German Socio-Economic Panel Study (GSOEP)*. German Institute for Economic Research, Berlin (www.diw.de/deutsch/sop/service/dtc/dtc.pdf).

HENDERSON, J. V. (2003) Marshall's scale economies, *Journal of Urban Economics*, 53, pp. 1–28.

JAYNE, M. (2005) *Cities and Consumption*. London: Routledge.

JAYNE, M. (2006) Cultural geography, consumption and the city, *Geography*, 91, pp. 34–42.

KRUGMAN, P. (1991) Increasing returns and economic geography, *Journal of Political Economy*, 99, pp. 483–499.

MOULTON, B. R. (1990) An illustration of a pitfall in estimating the effects of aggregate variables on micro units, *Review of Economics and Statistics*, 72(2), pp. 334–338.

PUTNAM, R. D. (2000) *Bowling Alone*. New York: Simon & Schuster.

ROSENTHAL, S. S. and STRANGE, W. C. (2004) Evidence on the nature and sources of agglomeration economies, in: J. V. HENDERSON and J.-F. THISSE (Eds) *Handbook of Regional and Urban Economics*, *Vol. 4*, pp. 2119–2172. Amsterdam: Elsevier.

SINAI, T. and WALDFOGEL, J. (2004) Geography and the Internet: is the Internet a substitute or a complement for cities?, *Journal of Urban Economics*, 56, pp. 1–24.

STUTZER, A. and FREY, B. S. (2004) *Stress that doesn't pay: the commuting paradox*. Working Paper No. 151, Institute for Empirical Research in Economics, University of Zurich.

TABUCHI, T. and YOSHIDA, A. (2000) Separating urban agglomeration economies in consumption and production, *Journal of Urban Economics*, 48, pp. 70–84.

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