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Culturally Clustered or in the Cloud? Location of Internet Start-ups in Berlin

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Abstract
Knowledge based firms like IT companies do neither have a capital- nor a land intensive production. They predominantly rely on qualified labour and increasingly depend on the location of its (potential) employees. This implies that it is more likely that firms follow workers rather than the other way around. Contributing to the literature of firm location and consumer cities I empirically test the amenity oriented firm location hypothesis. In particular I investigate whether Berlin internet start-up firms, representing a footloose knowledge-based service industry, locate in urban amenity-rich places. Identification builds on the sudden fall of the Berlin Wall. The intra-city analysis yields a significant impact of urban amenities on the location of internet start-up. A comparison with other service industries suggests that amenities are significant to the location choice of creative sectors whereas no effect can be observed for non-creative firms.

Keywords: Firm location, urban amenities, consumer city, internet start-ups, entrepreneurs, Berlin
JEL classification: R30, D22, L26

1 Introduction

In the past, manufacturing firm location was characterised by classic/first nature type location factors like natural advantages, cheap land and labour, or later physical infrastructure. Today's knowledge-based economy, however, is based on the idea of generating and quickly spreading innovation. IT companies for instance have neither a capital- nor a land intensive production. They are highly footloose thanks to portable computers and wireless internet. Due to these technological improvements as well as a significant reduction of travel and transport costs over the last decades New Economy firms and its employees are theoretically able to live/work anywhere (Kotkin, 2000). As qualified labour becomes the most important (and sole) input for service firms these companies increasingly depend on the location of their (potential) employees. This would imply that firms follow their workers and not the other way around (Kolko, 1999).

Highly qualified and "creative" individuals have a strong preference for a rich social and cultural life (Florida, 2002). According to social science, these creative heads can be assigned to a new social milieu which has evolved over the last years. They have been labeled "movers and shakers" ("Experimentalisten"), the unconventional creative avantgarde, the new Bohemia (Sinus Sociovision GmbH, 2011). Members of this milieu are very individualistic, digitally networked and highly mobile in geographical as well as in mental scope. I consider this milieu as the driver of a currently observable start-up boom in Berlin and expect them to be attracted by a distinct provision of urban amenities.

Since the provision of urban amenities like theatres, bars or clubs involve high fixed costs a critical mass is needed which is easier reached in dense urban areas. Cities have therefore been more and more regarded as a place of consumption than of production (Glaeser et al., 2001). Cities are not only endowed with a higher level of amenities, their citizens also consume urban amenities more often (Glaeser & Gottlieb, 2006).

If service firms follow skilled labour those firms act as amenity-maximising agents when deciding where to locate (Gottlieb, 1995). Amenities can therefore become an important economic asset for a city. Even though the important role of amenities is accepted in the urban economic literature, most amenities tested empirically do not explain the whole story. Quality of life indices based on compensating differentials implicitly control for amenities (Gabriel & Rosenthal, 2004; Chen & Rosenthal, 2008). They, however, do not allow for the explicit determination of what exact amenity drives an effect. Measures of local amenities like distance from a major coast and average annual precipitation (Kolko, 1999) or other climate amenities like July/January temperature (Glaeser et al., 2010) have the advantage (for the researcher) of being purely exogenous but ignore the discussion on urban consumption amenities. It is questionable whether these amenities are able to attract a young footloose generation – the movers and shakers – founding

and working for internet firms. As economic conditions and technology change, society changes as well.

Measures which might be more appropriate are, for instance, the cuisine variety a location offers (Schiff, 2013), or music nodes and clubs (Ahlfeldt, 2011a). However, since urban amenities are man-made, they are highly endogenous. Estimates are therefore most likely subject to severe omitted variable biases. This might be a reason why there are very few attempts to include endogenous amenities in econometric analyses.

Motivated by this lack of empirical evidence I contribute to the literature of firm location and consumer cities by testing the amenity oriented firm location hypothesis: Knowledge-based service industries locate at urban amenity-rich places. I follow the urban amenity definition proposed by Glaeser et al. (2001). They distinguish between four types of urban amenities: (1) local service/consumption goods like restaurants, bars, theatres etc., (2) aesthetics and physical appearance, (3) locally provided public goods like schools, and (4) speed in terms of travel time (for instance due to a developed transport infrastructure). In particular, I concentrate on the first type of urban amenities. Throughout the paper I label the composite of local consumption goods as cultural amenities.

I test the stated hypothesis empirically by looking at the rise of the internet industry in Berlin over the last years. First of all, internet firms provide a perfect example of the knowledge-based service sector which is highly footloose. Secondly, potential labourers as well as the firms' entrepreneurs can be characterised as relatively young, highly qualified and somehow creative individuals who are expected to be attracted by urban/cultural amenities. Thirdly, limiting the analysis to start-ups enables the assumption of taking the existing economic environment as given. The location choice is expected to be unconstrained by previous firm decisions (Rosenthal & Strange, 2003). And finally and most importantly, I use the sudden fall of the Berlin Wall as a source of exogenous variation. Nowadays, Berlin is globally known as having an open, creative and artistic environment which is regarded as fertile ground for innovation. A specific subculture has evolved in the aftermath of German reunification which still strongly affects today's cultural scene. The subcultural development originates from the open, chaotic and tolerant environment after the fall of the Berlin Wall. The "wild east" with its political vacuum and abandoned places became home to artists and creatives (Schwannhäußer, 2007). I make use of this very particular subcultural development and use proximity to the former Wall as well as squat density as instrumental variables for the presumably endogenous current endowment of cultural amenities. The applied instruments are assumed to affect the location of internet start-ups only indirectly via the cultural amenity channel conditional on a large set of controls like land values or centrality. The exclusionary restriction is strengthened by the time dimension and the fact that the internet was not used commercially/by the

general public during the fall of the Iron Curtain but only became popular at the end of the 1990s.[1]

Previous studies particularly looking at the location of IT firms mainly concentrate on the co-location of those firms due to agglomeration economies. Knowledge spillovers have for instance been found for the computer gaming industry (Claussen et al., 2010) but also for software firms in Oslo (Isaksen, 2004) and the Silicon Valley (Kolko, 2001). However, there is a lack of studies investigating the role of cultural amenities on the location decision of firms. It is the author's intention to fill this gap by testing the amenity maximising hypothesis in a within-city analysis. To the best of the author's knowledge there are only a few within-city studies when explaining the location of firms. An exception builds Rosenthal & Strange (2005) who look into the geography of entrepreneurship in the New York Metropolitan Area. Another example is the work by Arzaghi & Henderson (2008) who investigate the location choice of advertising agencies. They also use New York City for their intra-urban analysis and find evidence for a clustering of agencies. Within-city analyses generally try to understand the location choice on a micro-level and thus might reveal specific forces being at work only at a very fine spatial level. Detailed reasons in favour of an intra-urban analysis are provided in the appendix.

The next section (Section 2) provides an overview over the development of the internet industry in Berlin as well as the city's cultural development. I give more reasons why I use Berlin as a case study. In Section 3, I present a theoretic model of a footloose start-up to motivate my empirical strategy which I develop in Section 4. I also provide an overview of the data I use and report the empirical results. Previewing my results, I conclude in the final Section 5 that cultural amenities indeed affect the internet start-up location.

2 Internet industry in Berlin

This section provides a brief overview over Berlin's growing IT sector and sums up the recent history to motivate the identification strategy.

2.1 (Sub-) Cultural rise after re-unification

The fall of the Berlin Wall in 1989, which had run through the heart of pre-WWII Berlin, reshaped the city's geography. Former border locations like West Berlin's Kreuzberg as well as today's Mitte and Prenzlauer Berg in the East were all of a sudden in the new geographical centre of the city, causing a re-newed interest in the historical CBD. Looking

[1] In fact, in 1993 the National Center for Supercomputing Applications (NCSA) at the University of Illinois Urbana-Champaign released Mosaic - the first browser which made the internet available for the general public (Vetter et al., 1994).

at rents, Ahlfeldt et al. (2012), for instance, observe a re-emergence of the former rent gradient towards East Berlin's district of Mitte.

Due to the fall of the Iron Curtain Berlin's population suddenly rose from 2.1 million (West) or 1.3 million (East) in 1989 to 3.4 million. This implies a sudden increase in economic mass and market size. Accessibility to a wide range of physical amenities (parks, water bodies), social amenities (friends and family) and cultural amenities also experienced a strong rise. A higher number of residents and tourists[2] decreases the cost of provision of certain cultural and public goods. This is of special interest for service industries providing local non-tradable goods since they are characterised by high consumer transport costs as well as by a required critical mass due to high fixed costs (Schiff, 2013). Assuming that customer's willingness to travel to e.g. restaurants is described by a steep spatial decay (i.e. they are not willing travel far), these places will cluster in central areas additionally allowing for a greater variety (Fujita, 1988; Glazer et al., 2003).

Owing to underinvestments of the local GDR government in historical built-up structure, a lot of East Berlin buildings were abandoned, rents were low. Empty houses, the political vacuum and the new tolerant, open environment drew in artists as well as squatters[3] (e.g. in Prenzlauer Berg or Mainzer Straße in Friedrichshain) and eventually students. Abandoned warehouses and industry complexes provided free/open space for artists and cultural events. A lot of techno music clubs were established in empty buildings. Night life was young and vivid. Enforced closing times did not exist (and still do not). This pioneering development has been increasingly commercialised over the years: In the summer of 1999 the techno parade "Love Parade" attracted more than 1.5 million visitors. Electronic music clubs like Berghain located in the district of Friedrichshain ranked as number one techno club in the world in 2009 (DJ Mag, 2009). Nowadays, the city attracts easyjetters (Rapp, 2009) from all over Europe. However, this young, mobile and often highly skilled generation do not always return to their home countries but stay in Berlin, settle and look for jobs. It is the quality of life which is an often quoted argument for start-ups locating in Berlin. As O'Leary, partner at the venture capitalist Earlybird, puts it:

> "There is no other place in the world where I can find such a bunch of creativity and freedom."

His company as well as fellow venture capital funds invested more than in EUR 136m. during the first three quarters of 2012.

[2]On June 20th, 1991 German Parliament decided to move the capital of reunified Germany from Bonn back to Berlin.

[3]Who yet might be considered as the pioneers of today's gentrification (Clay, 1979; Friedrichs, 2000).

2.2 Berlin discovers the internet

By mid-1999 the German internet industry was lagging behind the US economy by five years (McGrane, 2000). It was exactly in that year that the German internet economy kicked off after the Samwer brothers sold their first German internet start-up to a US company. After having experienced the work and management environment in Silicon Valley, in 1999 the three brothers founded the online auction house alando.de in a backyard in Berlin-Kreuzberg. Only six months later they sold the company for US-$43 million to eBay. This can be regarded as the start of the Berlin internet economy. From that moment on Berlin transformed itself into Germany's Mecca for young internet entrepreneurs.

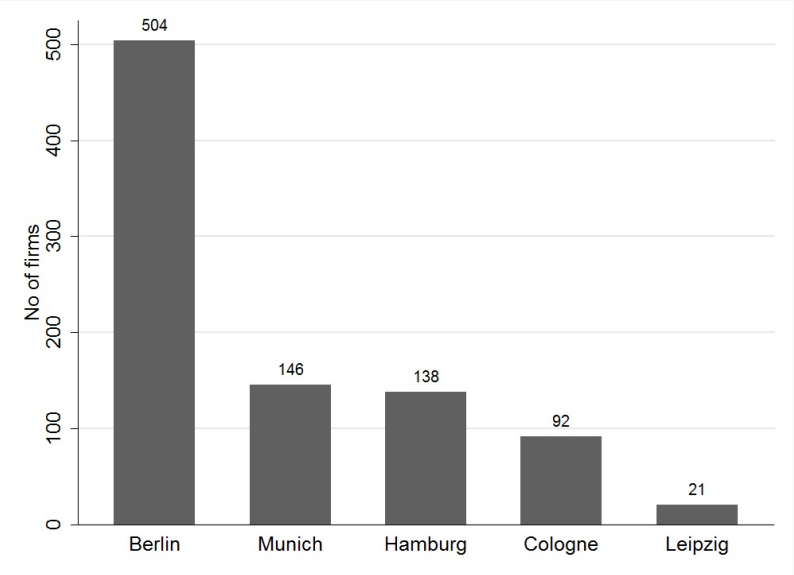
Quickly, agglomeration economies came into play. From the very beginning, the Samwer brothers tried to establish strong linkages within the Berlin founder community. Start-up Lounges, weekly breakfast rounds and seminars were supposed to foster the exchange of ideas and experience regarding the founding process. Following classic Marshallian externalities, spillovers and a highly specialised labour market support the development of the local internet industry. In a sector which is characterised by mainly young companies bearing a high risk to failure, the exchange of experience is of even greater importance compared to "mature" industries.

Additionally, the young sector was spurred by important financial as well as technological developments: The introduction of the "Neuer Markt" (1997) - German equivalent to US Nasdaq - made it easier for the new start-ups to raise capital from venture capitalists. Moreover, internet became cheaper, faster and, with the introduction of Apple's iBook in 1999, even footloose. The iBook was the first portable computer with integrated wireless network (WiFi) which not only allowed for saving costs on local cable network infrastructure but also from that moment on programmers were able to work from anywhere. Companies like SoundCloud for instance even started off in bars (Sankt Oberholz), enjoying the social environment and saving on renting office space. Silicon Valley's garages are Berlin's bars.

According to the US technology magazine Wired (McGrane, 2000), the very first internet start-ups settled in Berlin mainly for two reasons: (i) cheap rents in centrally located backyards, and (ii) a cultural scenery and night life which was as vivid and unshaped as the entrepreneurs themselves; both being the outcome of the reunification process.

There are more than 5,700 firms with over 50,000 employees working in the IT and communication sector (Berlin Business Location Center, 2012b). A lot of international investors, mainly venture capitalists and business angels, not only visit Berlin but move to the city to financially support and collaborate with local start-ups. During the past years an increasing number of internet start-ups settled in Berlin, making the city the

Figure 1: Number of internet start-ups per city.



Source: Gründerszene (2013).

nation's biggest home to internet firms. According to the online database provided by the start-up network Gründerszene (2013), Berlin, with more than 504 internet start-ups, is by far the sector's most important city, followed by Hamburg (138) and Munich (146, see also Figure 1 on page 7). The birth of the Berlin internet economy does not look like being the result of an historic accident (Krugman, 2010). Recent anecdotal evidence instead tells us that the initial firm births are linked to the city's rich endowment of distinct cultural amenities. The first-movers are then expected to be followed by new start-ups which on the one hand also want to benefit from amenities and on the other hand from agglomeration economies of the newly created internet cluster. Given the above described development, Berlin serves as a perfect city to empirically test the stated firm amenity maximiser hypothesis.

3 Footloose start-up model

This section introduces a model of a footloose start-up in order to derive an estimable equation. It is based on the firm model introduced by Crozet et al. (2004), which has also been used by Brülhart et al. (2012). The idea is to derive a profit function, that describes a firm's profitability depending on its location. In contrast to an industrial manufacturer a footloose web firm is generally not bound to its initial location choice but is theoretically able to reconsider its decision. Since most start-ups follow a strategy of growth with an increasing number of employees the firms are moreover expected to rethink their location due to capacity reasons as they grow older.

The profit function consists of factors varying over location i and across sectors j. Quantity is set to be the strategic variable of a representative firm. Assuming monopolistic competition, Q_{ij} is defined as the quantity of product j demanded from location i by 'the world'. Quantity demanded relies on a generalised Cobb-Douglas utility function and is given by:

$$Q_{ij} = \frac{\alpha_j m_i^{\gamma_j}}{p_{ij}^{\delta_j}}, \tag{1}$$

with α_j as the share of income spent on the particular good (of sector j), m_i denotes the (exogenous) income of the consumers demanding goods from location i, γ_j is the income elasticity and δ_j the price elasticity for sector j. The demand is satisfied by the firms at a price p_{ij}. Now suppose that firms have identical production costs when producing in the same location; a reasonable assumption for internet industries. Following that assumption, individual firms' quantities will be equal.

$$Q_{ij} = N_{ij} q_{ij}, \tag{2}$$

where N_{ij} is the number of firms on the market. Ignoring any taxes, a representative firm's profit function producing and selling at location i is given by:

$$\pi_{ij} = (p_{ij} - c_{ij}) q_{ij}, \tag{3}$$

where c_{ij} is a unit production cost function. It is now possible to derive the total equilibrium quantity Q_{ij}^* and the equilibrium price p_{ij}^* using (1) and adding first-order conditions over the N firms:[4]

$$Q_{ij}^* = N_{ij} q_{ij} = \frac{\alpha_j m_i^{\gamma_j}}{p_{ij}^{\delta_j}} \left(\frac{N_{ij}\delta_j - 1}{c_{ij}\delta_j} \right)^{\delta_j} \tag{4}$$

$$p_{ij}^* = \frac{N_{ij}\delta_j}{N_{ij}\delta_j - 1} c_{ij} \tag{5}$$

The following profit function can be obtained when plugging in p_{ij} and q_{ij}:

$$\pi_{ij} = \frac{\alpha_j m_i^{\gamma_j}}{N_{ij}^{\delta_j + 1}} \left(\frac{\delta_j}{N_{ij}\delta_j - 1} c_{ij} \right)^{(1-\delta_j)} \tag{6}$$

Assuming a price elasticity greater than one, $\delta_j > 1$, profits increase with consumers' expenditure/market size and decrease with production costs and number of active firms/competition.

[4] See Crozet et al. (2004) for a more detailed derivation.

Let firms be price takers on the input market and let the unit cost be defined as function of the number of firms (N_{ij}), wages (w_{ij}), which both vary over location and sector, location variant rents (r_i) and location invariant capital cost (k):

$$c_{ij} = N_{ij}^{-\theta_j^N} w_{ij}^{\theta_j^w} r_i^{\theta_j^r} k^{\theta_j^k}, \tag{7}$$

where θ_j^N, θ_j^w, θ_j^r and θ_j^k denote the respective input shares. Unit costs rise with wages, office rents and capital cost and fall with the number of other firms due to agglomeration economies. Even though a start-up might be very small and employ only the entrepreneur in the very beginning, it is expected to grow quickly. As creative and qualified workers are essential assets for this sector, firms consider (future) employees' wages from the beginning on. The wage is determined by vector E_j, a composite of (unobservable) worker individual specific characteristics like education, work experience etc., and a location variant amenity shifter A_i, capturing the stock of cultural amenities surrounding location i. For simplicity, I assume that E_j is location invariant and identical within sectors:[5]

$$w_{ij} = E_j A_i^{-\tau_j}, \text{ with } \tau_j > 0, \tag{8}$$

where τ_j describes how strongly amenities are capitalised into wages and varies across sector j. Wages might decline with the endowment of amenities for two reasons: (i) workers (including the entrepreneur) are willing to work at lower wages if they get compensated by amenities (Rosen, 1979; Roback, 1982; Blomquist et al., 1988; Gyourko & Tracy, 1991; Gottlieb, 1995), and (ii) spill-overs due to face-to-face contact in bars, coffee shops etc.[6] The latter idea is closely related to Storper & Venables (2004) who consider the face-to-face contact as a key element of urban concentration. Especially creative industries require the exchange of ideas and information. Urban amenities like bars provide an external location to hold meetings. A third-party location might be preferred due to a lack of office space (especially for young start-ups), its neutral character or due to the preference for a more relaxed, creative, stimulating environment. Substituting wages into the unit cost leaves us with:

$$c_{ij} = N_{ij}^{-\theta_j^N} (E_j A_i^{-\tau_j})^{\theta_j^w} r_i^{\theta_j^r} k^{\theta_j^k} \tag{9}$$

[5] Admittedly a strong assumption but reasonable when taking into account the relatively high homogeneity of the sector (all young, IT specialists etc.).

[6] The relation is more indirect where it is assumed that spill-overs boost workers' productivity making labour cheaper in relative terms.

Plugging the unit cost into the maximised profit function and assuming a sufficiently large number of firms yield the following expression:

$$\pi_{ij} = \alpha_j m_i^{\gamma_j} N_{ij}^{\theta_j^N(\delta_j-1)-2} r_i^{\theta_j^r(1-\delta_j)} (E_j A_i^{-\tau_j})^{\theta_j^w(1-\delta_j)} k^{\theta_j^k(1-\delta_j)} \frac{\delta_j}{\delta_j - 1}^{1-\delta_j} \tag{10}$$

Log-linearizing the maximised profit function results in:

$$\begin{aligned} \ln \pi_{ij} = {} & \ln \alpha_j + \gamma_j \ln m_i + (\theta_j^N(\delta_j - 1) - 2) \ln N_{ij} + \theta_j^w(1-\delta_j) \ln E_j - \tau_j \theta_j^w (1-\delta_j) \ln A_i \\ & + \theta_j^r(1-\delta_j) \ln r_i + \theta_j^k(1-\delta_j) \ln k + (1-\delta_j) \ln \frac{\delta_j}{1-\delta_j} \end{aligned} \tag{11}$$

Assuming homogeneous sectors and mobile firms, profits are equal at every location, spatial equilibrium then requires amenities to be capitalised into wages and rents. The location choice is independent of any amenity endowment. Empirically, amenities and rents should have no significant effect.

$$\frac{\partial \pi_i}{\partial A_i} = 0 \tag{12}$$

However, assuming firm heterogeneity, especially with respect to amenity appreciation ($\tau_j > 0$), the results are expected to differ over sectors. Since I am particularly focussing on internet start-ups the following key hypothesis can be formulated:

$$\frac{\partial \pi_{ij}}{\partial A_i} > 0 \tag{13}$$

A footloose start-up acts as amenity maximiser when deciding on a firm location if profits rise with cultural amenities.

4 Empirical analysis

4.1 Empirical approach

Based on the log-linearized version of the profit function developed in Section 3 the following estimable equation can be formulated:

$$\ln \pi_{ij} = \beta_0 + \beta_{1i} \ln N_{ij} + \beta_{2i} \ln A_i + \beta_{3i} \ln r_i + \beta_{4i} \ln G_i + \beta_{5j} + \ln v_{ij} \tag{14}$$

Capital cost and income are dropped as both factors are spatially not restricted to the city of Berlin. Employee characteristics E_j are also not included as regressors for the above stated reasons. G_i stands for a number of controls which are going to be discussed

in the data section (Section 4.3). β_{5j} are sector fixed effects, absorbing sector specific unobservables. The equation can be estimated by a conditional logit model when the added stochastic term $\ln v_{ij}$ is assumed to follow an i.i.d. extreme-value type 1 distribution. As I only test the firm model for internet start-ups which all belong to the same sector, the estimable equation needs to be slightly adopted, where sector fixed effects are absorbed by the constant and N_i denotes the number of firms in all sectors.

$$\ln \pi_i = \beta_0 + \beta_{1i} \ln N_i + \beta_{2i} \ln A_i + \beta_{3i} \ln r_i + \beta_{4i} \ln G_i + \ln v_i \tag{15}$$

The conditional logit model serves as a well-established econometric framework when it comes to the estimation of firm location decisions. It is based on McFadden's (1974) random utility maximisation which was adapted to a random profit maximisation problem by Carlton (1983). Consider an investor or entrepreneur j who chooses a location i out of a set of spatial choices I for setting up a new firm. The profit π_{ij} the entrepreneur j derives at location i is composed by a deterministic U_{ij} and a stochastic term ε_{ij}:

$$\pi_{ij} = U_{ij} + \varepsilon_{ij} \tag{16}$$

Location i will be prefered over k if:

$$\pi_{ij} > \pi_{ik}, \forall k,\ k \neq i \tag{17}$$

The probability that location i is chosen by the entrepreneur is given by:

$$P_{ij} = \text{Prob}(\pi_{ij} > \pi_{ik}), \forall k,\ k \neq i \tag{18}$$

Assuming independently distributed error terms and additionally following a Weibull distribution results in the conditional logit formulation

$$P_{ij} = \frac{\exp(U_{ij})}{\sum_{k=1}^{K} \exp(U_{ik})}, \tag{19}$$

where the deterministic component U_{ij} is assumed to be a linear combination of explanatory variables.

In the past, conditional logit models could not consider the full set of location choices when the set was large. To avoid cumbersome estimations Guimarães et al. (2000) used smaller choice sets which were selected randomly. The size of choice sets increases with the fineness of the spatial level, such as statistical blocks, as in this work. To be able to use all information and allow for the replicability of the results, Guimarães et al. (2003) have shown that it is possible to obtain equivalent coefficients for the conditional logit model when estimating it using a Poisson count model. By assuming that each location decision

is determined by a vector of choice-specific attributes which are common to groups of individuals (or in this case of firms), the log-likelihood function of the conditional logit model is identical to the Poisson log-likelihood up to a constant. It is therefore possible to estimate the profit function using a Poisson model with the number of firms in each location n_i as dependent variable.

$$E(n_i) = \lambda_i = \exp(\beta_0 + \beta_{1i} N_i + \beta_{2i} A_i + \beta_{3i} r_i + \beta_{4i} G_i) \tag{20}$$

The conditional logit model relies on the independence of irrelevant alternatives (IIA) assumption. This means that consistent estimates require the stochastic terms to be independent across locations. The location decision between two alternatives is not allowed to change when a third alternative location is added or changed. An entrepreneur must therefore theoretically be able to compare all locations available in the choice set. The finer the spatial level, the more alternatives there are, increasing the likelihood of violating the IAA. This is in line with Figueiredo et al. (2002), who argue in their paper on location decisions of Portuguese entrepreneurs that entrepreneurs choose firm locations close to where they live. They know the area better and finding a new location implies additional search costs. That is another reason for investigating the location choice problem in an intra-city framework. I assume that within a city an entrepreneur is able to compare all potential locations.

Another violation of the IIA assumption might occur when there are unobserved location characteristics that are spatially correlated. I therefore include location fixed effects to control for any spatially-fixed unobservables by adding a set of location dummies d_v (Brülhart et al., 2012).

As previously established, the above derived profit function can be estimated using a Poisson model. The Poisson estimator, however, relies on the strong assumption that the conditional mean equals the conditional variance, VAR(Y|X) = E(Y|X). In practice this assumption is often violated and the data at hand suffer from overdispersion, i.e., the variance exceeds the expected value. Very often there is also a larger number of zeros, as described by the Poisson distribution. I therefore weaken the Poisson assumption and apply a Poisson Pseudo-Maximum Likelihood (PPML) estimator as originally suggested by McCullagh & Nelder (1989) and later by Santos Silva & Tenreyro (2006).

A PPML estimator requires two specifications: the functional form of the conditional expectation E(Y|X) and of the conditional variance VAR(Y|X). The conditional mean is defined as above (now plus voting precinct dummies d_v):

$$E(n_i \mid N_i A_i r_i G_i d_v) = \exp(\beta_0 + \beta_{1i} N_i + \beta_{2i} A_i + \beta_{3i} r_i + \beta_{4i} G_i + \beta_{5i} d_v) \tag{21}$$

Assuming the conditional variance to be proportional to the conditional mean, VAR(Y|X) $\propto$ E(Y|X), it is possible to estimate $\tilde{\beta}$ by solving the following set of first-order-conditions:

$$\sum_{n=1}^{N}[n_i - \exp(\tilde{\beta_0} + \tilde{\beta_{1i}}N_i + \tilde{\beta_{2i}}A_i + \tilde{\beta_{3i}}r_i + \tilde{\beta_{4i}}G_i + \tilde{\beta_{5i}}d_v)]N_iA_ir_iG_id_v = 0 \tag{22}$$

$\tilde{\beta}$s are a Generalized Method of Moments (GMM) estimators and consistent when the conditional mean is correctly specified. If the assumption about the proportional relation between conditional expectation and variance is violated, the standard errors of the estimates are inefficient, whereas the estimated coefficients are not affected. All inference has therefore been based on Eicker-White robust standard errors.

The way the weights have been defined, the PML estimator is numerically equal to the Poisson pseudo-maximum likelihood (PPML) estimator. Therefore I obtain consistent estimates based on a Poisson likelihood function without requiring the dependent variable to be made of integers (Gourieroux et al., 1984). Building on large sample asymptotic, the PPML approach has been proven to be efficient and robust (Gourieroux et al., 1984; Santos Silva & Tenreyro, 2006, 2011).

4.2 Identification

The inclusion of cultural amenities in the empirical model raises obvious endogeneity concerns mainly because their existence highly depends on demand from economic subjects. There are two potential types of endogeneity. Firstly, estimates might suffer from a simultaneity bias. It becomes difficult to disentangle whether cultural amenities attract firms or whether causality runs the other way around. Secondly, the likelihood of unobservables in the error term which affect both internet start-ups and amenities is very high.

The suggested identification strategy to deal with these endogeneity concerns is twofold. First of all, I control for location fixed effects by adding a set of location dummies. Due to the spatial scope of the expected unobservable fixed effects, the geographic bodies of the location controls must be sufficiently fine. I use voting precincts from 2008 to control for fixed effects. There are 1,201 precincts for 15,937 statistical blocks. Voting precincts are by definition supposed to reflect homogeneity in terms of demographics (Berliner Parlament, 2008). They have previously been used by Ahlfeldt (2013) as unit of analysis to represent a self-contained neighbourhood. The voting precincts are therefore expected to soak up any unobservable fixed effects. As there are only about 600 start-ups distributed over the whole of Berlin, fixed effects are restricted to voting precincts with at least five firms.

I secondly follow an instrumental variable strategy. I make use of the fall of the Berlin Wall and interpret it as a natural experiment. The historic event was not foreseen by any market players[7] and can therefore be regarded as an exogenous shock (Redding et al., 2011). Distance to the Wall has often been used to capture market inaccessibility during the division: Redding & Sturm (2008) for instance analyse the "cost of remoteness" (i.e. the loss of market access) on a regional level by exploiting the distance from West German cities to the new border. On an intra-city level, Ahlfeldt et al. (2012) find that West Berlin land prices, employment and residential concentration experience a significant drop in close proximity to the Wall compared to locations further out. After reunification, however, they observe a resurgence of the historic CBD and hence a reemerging land prices and employment gradient with respect to the former Wall. Following this line of literature, I use distance to the former Berlin Wall to instrument cultural amenities. The underlying assumption is that inaccessible, isolated border locations attracted artists and squatters during the end of the 1980's and early 1990's who opened up underground clubs and bars. There is ethnological evidence that a specific subculture has evolved in the aftermath of German reunification, predominantly in the "wild east" with its political vacuum and abandoned places (Schwannhäußer, 2007). Over time, these sub-cultural amenities transformed themselves into mainstream amenities which are expected to attract today's creative firms. The identifying assumption of this strategy is that proximity to the Wall has no direct effect on the location choice of internet start-ups, only indirectly via the amenity channel. Identification is conditional on a large set of control variables, where the inclusion of a historic CBD dummy as well as land values from 1992 are of special importance. They control for the link between proximity to the Wall and today's cultural amenities neither being driven by centrality (Ahlfeldt et al., 2012) nor lower rents after re-unification. The exclusionary restriction is backed-up by the time dimension and the fact that the internet was not used by the general public at the beginning of the 1990s. The IV PPML estimator then solves the following first order condition (Tenreyro, 2007):

$$\sum_{n=1}^{N} \left[n_i - \exp(Y_i \bar{\beta}) \right] z_i = 0 \tag{23}$$

For robustness reasons I suggest a second set of instruments which is admittedly weaker in terms of the exclusionary restriction. Following the previous line of argumentation, I use the location of (i) squatted buildings since 1987 as well as (ii) historical cultural amenities for 1998/1999 and (iii) for 1936 to instrument the current level of amenities. Firstly, squatters reflect the immigration into the new, open, tolerant areas. Together with artists and students they are considered to be the pioneers of the gentrific-

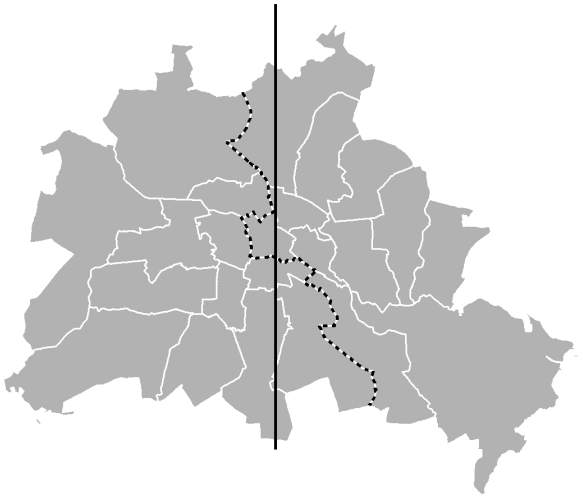
[7] According to opinion polls, less than ten percent of the West German population expected the re-unification (Herdegen, 1992).

ation (Clay, 1979; Friedrichs, 2000). They are the first ones to open (sub-)cultural bars and clubs. However, they develop the area for themselves without any intentions of making the area a hip place which would drive up rents in the long-run. Secondly, 1998/99 cultural amenities directly capture the young, open techno scene. The idea is that today's cultural life originates from a subculture which developed during the 1990s provoked by German reunification. And finally, the historic amenities from 1936 are motivated by the idea that there is some path dependency in the development of amusement areas. Neighbourhoods which were known for their endowment of bars and for their nightlife in 1936 are expected to be still equipped with urban amenities today. Even though I consider this latter set of instrumental variables as weaker in terms of the exclusionary restriction, they at least allow for circumventing simultaneity. Squatted houses and 1998/99 cultural amenities are a result of the reunification years and no direct link to internet firms can be established. By that time, the number of internet users was still very small; mobile computers and wireless internet connection scarcely available.

While the exclusionary restriction is fairly reasonable in terms of the time dimension, one might be worried about the spatial dimension. Potential concerns are that the Berlin Wall only captures centrality or/and the distance measure is correlated with unobservables driving the estimates. Moreover, one might question the randomness of the location of the wall. To address these concerns I employ the instrumental variable strategy conditional on controls, whereas centrality should in particular be captured by a dummy indicating whether a block lies inside the historic CBD from 1933. Additionally, transport controls, an East Berlin dummy, spatial trends and, above all, the aforementioned voting precinct fixed effects are expected to pick up any remaining centrality forces determining firm location. I run a number of additional robustness checks, where I compare distance from a block to the CBD (centrality) to cultural amenities in terms of explaining start-up location.

Berlin's distribution into four sectors after World War II was decided during the Conference of Yalta held February 4-11, 1945. It is a result of negotiations between Roosevelt, Churchill and Stalin. The sector's border and hence the Berlin Wall followed old definitions of Gross Berlin (1920). If East and West only wanted to split the city in half, the border would always run through the centre and thus would always be correlated with centrality. If start-up location was not determined via the amenity channel by the Wall but only by centrality or any other unobservables correlated with the instrument, a placebo Wall which vertically cuts the city in half should also give significant estimates. I therefore re-run the benchmark model using a placebo Wall as indicated by Figure 2 on page 16. In alternative fixed effect specifications I use an old district definition as well as municipality location fixed effects which both share the same borders with the former Wall. As firm location is only explained by within district/municipality variation a potential unobservable effect is additionally hindered.

Figure 2: Placebo Wall



Notes: The placebo Wall is indicated by the solid line, the dotted line marks the actual Berlin Wall.

To support the case that firms/sectors are heterogeneous and therefore rely on different sets of location factors, I re-run the benchmark specification for a set of placebo service firms. The idea is that cultural amenities more strongly drive the location of young, creative web start-ups than of other knowledge-based service industries. These placebo models can also be interpreted as additional robustness tests with respect to centrality or unobservables which might be correlated with distance to Wall.

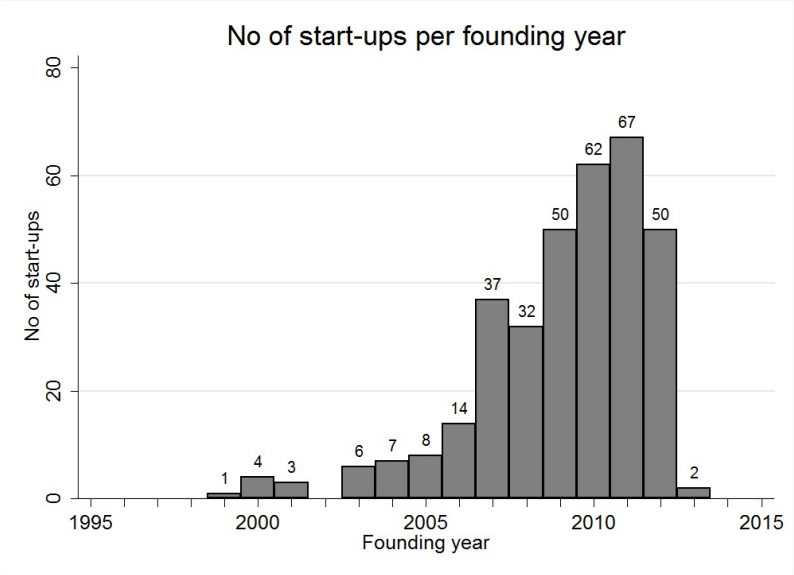
4.3 Data

4.3.1 Dependent variable

To determine the location factors of internet start-ups I use the number of web firms per statistical housing block as dependent variable. The regressand's count data character further encourages the Poisson estimation approach. The statistical blocks are the unit of analysis. The city is structured into 15,937 of these statistical housing blocks. The firm data originate from two sources: As primary source, I extracted firm information of all firms listed in the online database provided by Gründerszene (2013). Gründerszene is a magazine as well as an online platform for the German web economy and its start-ups which was founded in 2006.[8] The firm addresses were geocoded and processed in a geographic information system (GIS) environment. As a second source, I used the Berlin start-up map which maps Berlin Web 2.0 start-ups. It is accessible via the Berlin Business Location Center (2012a), a public business promoter and location marketing office owned

[8]Even though there might be a number of already more mature firms, I follow the Gründerszene classification and consider all firms listed as start-ups, and thus as a homogeneous group of young web bound firms.

Figure 3: Number of internet start-ups per founding year



Notes: Information on the founding year are only available for about 58% of the total sample.

by the state of Berlin. The data from the two different sources were merged and double entries deleted. The sample represents a total of 600 internet start-ups listed in April 2013. 345 of these firms provide information on their founding date. As indicated by Figure 3 on page 17, first internet firms started settling in Berlin at the end of the 1990's, whereas the development took off around 2007.

4.3.2 Cultural amenities

Data on current cultural amenities were taken from OpenStreetMap (2013). It is argued that the potential self-selection by uploading spatial data to OpenStreetMap reflects people's perception of their surroundings and, contrary to causing biases, reveals preferences. There might be a bias, however, if web entrepreneurs themselves report amenities. This would further support the application of an IV estimator. I take into account mainstream as well as subcultural amenities. Cultural amenities include bars/pubs, cinemas, theatres, clubs, operas, beer gardens, cafés, restaurants and art places.

Not the actual number of amenities is of people's interest but the mass of cultural amenities they are surrounded by. A potential amenity indicator should therefore be able to capture the number of amenities within a certain proximity, whereas amenities nearby should get a stronger weight. Since the definition of the amenity measure already implies a certain assumption and hence affects the results, I briefly discuss three different measures I use. First of all, I compute kernel densities around each point representing a cultural amenity (Silverman, 1986), applying a radius of 2 km. This radius goes back to Gibbons & Machin (2005) who predict a distance of 2 km as being the maximum distance

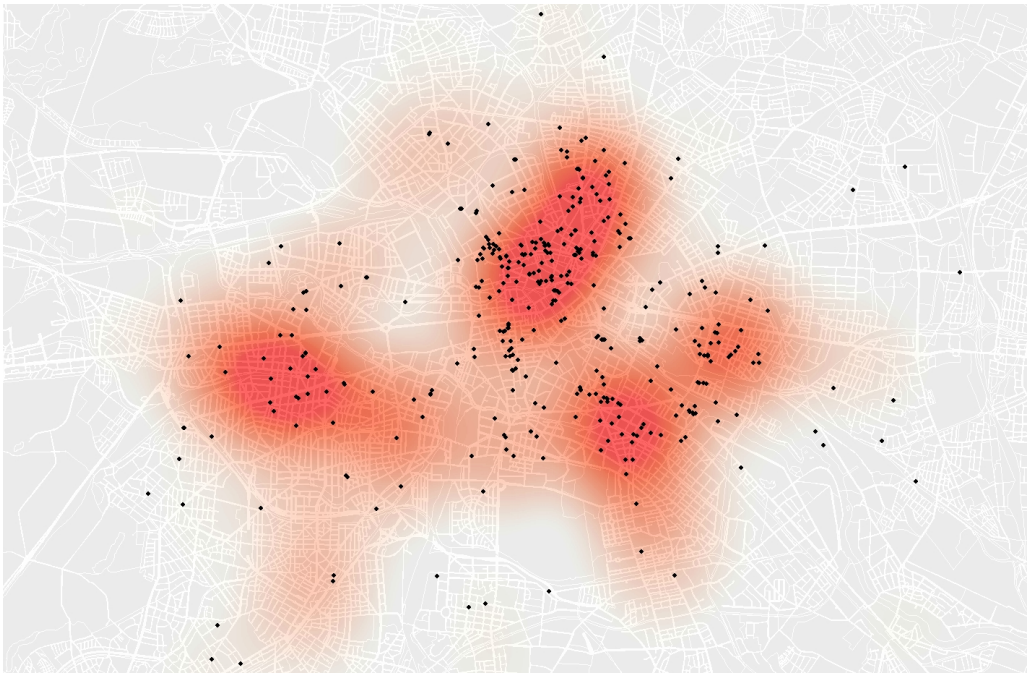
people are willing to walk to the nearest station and has already been used in the context of urban amenities by Ahlfeldt, Moeller et al. (2013). Even though the density measure fulfills the above stated requirements, estimate interpretation is rather abstract and not intuitive. I therefore secondly employ a gravity based accessibility measure as suggested by (Fujita & Ogawa, 1982):

$$A(i) = \sum_{l} A_l e^{-bd(i,l)},\ i \neq l \text{ and } d_{ll} = \frac{1}{3}\frac{\sqrt{Area_i}}{\pi}, \tag{24}$$

where the access to cultural amenities in block i, $A(i)$, is defined by the number of other amenities at all other surrounding locations l spatially discounted by a decay parameter b and $d(i,l)$ a measure of distance between i and l. As public transport plays a major role in moving people in big and dense cities, Euclidean distances only provide a rough estimation of proximity to other firms. However, replicating the transport network places a strong weight on the location of public transport stations, which most likely picks up correlated unobservables. I therefore stick to the straight line distances between block centroids. Assuming that start-ups are only attracted by amenities in their close neighbourhood, I apply a distance decay parameter of two which is supposed to capture walking speed (Ahlfeldt, 2011b). For robustness tests I thirdly create buffer rings of various radiuses around each block centroid and use the number of amenities which fall inside a ring.

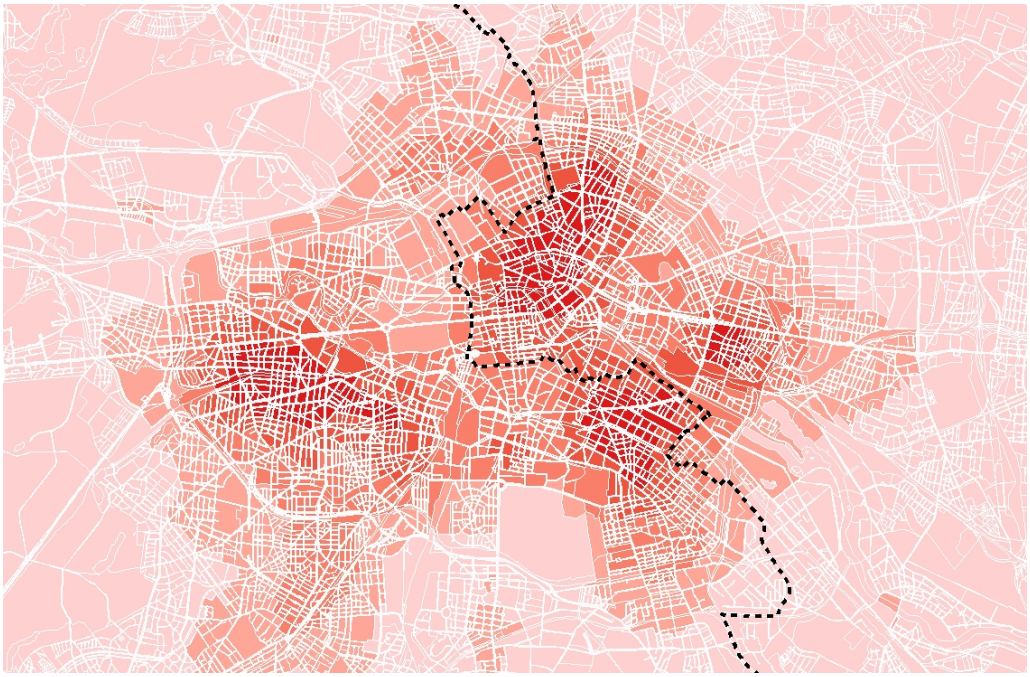
To sum up, each of the measures suggested comes with certain advantages and disadvantages. The application of all three of them helps to get a better understanding of the forces at work. Their application is hence regarded as a robustness check, controlling whether the estimates are independent of the measure chosen. The distribution of internet start-ups (points) and density of cultural amenities is illustrated by Figure 4 on page 19. Proximity to the Berlin Wall is computed for every block centroid. I calculate straight line distances as well as a potentiality measure similar to the access to cultural amenities, as indicated by equation (24). To motivate the first stage, illustrative evidence for today's endowment of former border locations with cultural amenities is given by Figure 5 on page 19, jointly showing the Berlin Wall and access to cultural amenities. A similar map motivating the application of squat density as a secondary instrument is shown in the appendix (Figure A.1 on page 40). For the secondary set of instruments I use historical cultural amenities of 1998/1999 and squatted houses since 1987. Squatted buildings are taken from Hausbesetzungs Geschichte Berlin (2010). For 1998/99, mainstream bars, clubs, theatres and restaurants were extracted from Siebenhaar et al. (1998), a guide book especially designed for young people on behalf of the state of Berlin. A detailed and ethnological analysis of Berlin's subculture and the origins of the Berlin techno underground scene is provided by Schwannhäußer (2007). She refers to a website Verblichene Locations (1999) listing the locations of subcultural Berlin and its

Figure 4: Distribution of start-ups and cultural amenities



Notes: Black dots denote the location of web start-ups based on Gründerszene (2013) and Berlin Business Location Center (2012a). Red amenity clouds represent the amenity density measure with a radius of 2 km (Silverman, 1986), with dark red indicating a high amenity density.

Figure 5: Berlin Wall and access to cultural amenities



Notes: Black solid line denotes the Berlin Wall. Cultural amenities are aggregated at a statistical block level using the accessibility measure from equation (24) with dark red indicating a high accessibility to amenities.

events before the gentrification process kicked in. Another list of historical amenities from 1936 was compiled from the guide book Baedeker (1936). The collection is significantly smaller and contains theatres, operas, operettas, vaudevilles, cabarets and cinemas. The extracted data were geocoded and processed as described above.

4.3.3 Control variables

According to the empirical specification (22) the number of internet start-ups is not only determined by cultural amenities but also by the number of other firms inside a block, the rent as well as a set of control variables. The number of firms is proxied by the total employment inside a block (i.e. across all sectors). The variable can be considered to capture localised general agglomeration/urbanization economies (Arzaghi & Henderson, 2008) as a large number of employees suggests a strong economic activity. The coefficient is expected to be positive if localised agglomeration economies positively impact on internet firms. A negative coefficient would reflect the competitive aspect of being closely located to other firms. As noted above, internet firms offer online services and users are not required to be physically close. In contrast to offline firms I do not control for any other market potentiality in the classic sense. Anecdotal evidence sees low rents as one of the main drivers of the Berlin web 2.0 boom. I use standard land values from 1992 per square metre as measured by the German committee of valuation experts (Gutachterausschuss für Grundstückswerte in Berlin, 1992). Data were spatially smoothed using an inverse distance weighting. I particularly include data from 1992 to reflect the spatial pattern in land prices right after re-unification to make sure that the link between instruments and amenities is not confounded with, e.g., lower prices in former border regions. In an additional robustness specification, I replace 1992 land values by residential rent data from 2010 (Immobilien Scout, 2012) to assess today's role of rents for the location decision of start-ups.

I additionally control for further location factors which might determine the location of young internet firms. I control for the number of immigrants per block. Areas characterised by migration are expected to attract young entrepreneurs as they are signal of cultural variety and tolerance. Data come from the statistical office Berlin Brandenburg (Amt für Statistik Berlin-Brandenburg, 2011a,b). Berlin is home of a large number of knowledge-creating and –spreading institutions. Young start-ups are often founded as spin-offs of universities. I therefore expect a positive relation between firm location and proximity to universities and research institutes. To test this I calculate Euclidean distances between all statistical blocks and research institutes/universities in a GIS environment. Among cultural amenities, entrepreneurs might also be attracted by natural amenities. Proximities to water bodies and green spaces are therefore computed. Additionally, young founders might also have a need for exercising after work. I hence

control for the number sport facilities inside a block. These facilities include gyms, outdoor sport fields, swimming baths, and tennis courts (Gelbe Seiten Deutschland, 2012; OpenStreetMap, 2013). Especially in a capital like Berlin, historical districts can be of special interest. I therefore include a dummy variable to see whether a firm is located inside the historical CBD based on a definition from the historian Leyden (1933). Above all the dummy is supposed to control for centrality. As initially stated, the former eastern part of Berlin has especially attracted the movers and shakers, indicating a need to include a dummy variable which indicates whether a firm is located in the former east. In a recent review on the spatial concentration of entrepreneurship, Chatterji et al. (2013) note that entrepreneurship clusters might evolve from urban revitalisation projects. After re-unification 22 renewal areas were implemented to increase housing quality in Berlin. I therefore control for being located in one of the areas by adding an urban renewal dummy.[9] Transport accessibility is generally another important factor for the location of firms. For internet start-ups, however, transport serves more for commuting than in terms of market accessibility, since the output is usually a service good which is consumed or ordered "online". I therefore control for accessibility to public transport infrastructure by including kernel density measures of 2 km (Silverman, 1986) for bus, trams, the underground and light rail network (BVG, 2006). Moreover, I control for the disamenity effect of noise originating from trains, underground trains on overground tracks as well as tram and street noise. The data are taken from maps published by the Berlin Senate Department for Urban Development (2007) which indicates the level of noise on a highly disaggregated 10x10 meter grid. To control for spatial trends I also add X and Y coordinates to the estimation model.

I note that there are numerous co-variates, such as the number of sport facilities or of migrants inside a block which ignore any spatial relation to the surroundings. For example, a block might very well be located inside a multi-cultural neighbourhood even though the block's number of migrants is low. However, the inclusion of various measures relying on the same functional specification might cause multi-collinearity among regressors, which results in biased estimation results (Thill & Kim, 2005). The benchmark specification was therefore tested for multi-collinearity by computing variance inflation factors (VIF) (Kennedy, 2003).

4.4 Placebo firms

The selection of branches of other knowledge-based service industries is based on an overview provided by Eickelpasch et al. (2009) who analyse development perspectives for the service sector in eastern Germany. I hence rerun the benchmark model of the internet

[9] Data are gratefully provided by Ahlfeldt, Maennig & Richter (2013), who test whether there are any positive housing externalities originating from the planning instrument.

start-ups for consultancies, lawyers, insurance companies, financial advisors, agencies, engineering offices, publishers and architects. I consult the yellow pages for Berlin (Gelbe Seiten Deutschland, 2012) to obtain the postal addresses of all service firms. The data were processed in the same manner as the start-up information. Exemplary, agencies as well as of financial advisories are mapped jointly with cultural amenities in the appendix (Figure A.2 on page 41).

4.5 Results

4.5.1 Internet start-ups

To test the implications of the footloose start-up model I begin the analysis by estimating the regression model as outlined by equation (22). Table 1 on page 22 reports the key estimates for six different specifications (see extended Table A1 on page 43).

Table 1: Estimation results: Footloose start-up model

	(1) start-ups	(2) start-ups	(3) start-ups	(4) start-ups	(5) start-ups	(6) start-ups
log cult amen.	1.547***	0.885***	0.671***	1.195***	1.570*	1.351***
	(0.098)	(0.190)	(0.157)	(0.307)	(0.844)	(0.339)
employment		4E-4***	4E-4***	4E-4***	5E-4***	4E-4***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rent		-3E-5	-3E-5	-3E-5	-3E-5	4E-5
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Controls	No	Yes	Yes	Yes	Yes	Yes
FE	No	No	Yes	Yes	No	Yes
IV	No	No	No	Yes	Wall	Squat
N	15850	15850	15850	15850	15850	15850
OVERIDP				0.236		
F (first)				1775.682	1772.545	1788.466

Notes: Dependent variable is the number of start-ups inside a block, PPML Standard errors clustered on fixed effects in parentheses, * p<0.1, ** p<0.05, *** p<0.01, Instruments: distance to ("Wall"), squat density ("Squat"), Benchmark model (4) uses both instruments, OVERIDP denotes the p-value of Hansen's J statistic of the over-identification test.

I initially abstract from equation (22) by ignoring rents and other firms and by only focusing on the the effect of cultural amenities on the location of internet start-ups (column 1). I use the log of the amenities to facilitate the interpretation.[10] The transformation reduces the total number of observation by 87 to 15,850 remaining blocks. Cultural amenities significantly (at a 1% level) influence the location choice of internet start-ups.

[10] I also estimate the non-logarithmised density of cultural amenities as a robustness test, see Section 4.5.2.

In particular, a 1% increase in amenity density raises the probability of a firm locating inside a block by about 1.5%.

To control for alternative explanations, I add a set of control variables in specification (2). The likelihood of internet start-ups locating at a block due to the endowment with cultural amenities is reduced to 0.9%. Briefly discussing the controls, employment positively affects the location of internet start-ups, indicating the presence of localised agglomeration economies. Rents are insignificant in all specifications.[11] Migration positively affects the location of young web firms (see Table A1 on page 43). This is very much in line with the creative class defined by Florida (2002) being highly attracted by a tolerant surrounding. The migration effect stays robust in all specifications. As internet start-ups are knowledge-based firms, exchange with research institutions might be important. However, proximity to research institutes is positively correlated, i.e. the further away from a research institute the more likely a start-up location, throughout all specifications except the ones in columns (2) and (5) where distance to research institutes is insignificant. A similar negative relationship is found for proximity to universities. This is probably the case because the control variable does not distinguish between the type of school. It was argued that venture capitalists follow start-ups and co-locate close to their recipients. This is found to be highly significant. Estimates indicate that the probability of a start-up locating inside a block decreases by between 0.2% and 0.3% per km distance from venture capitalists, depending on the specification. Of the two natural amenities, distance to nearest water bodies and to green space, only the first one is significant and positively attracts web firms. Distance to green space is only significant and positively correlated in column (4). The provision of sport facilities is also found to positively affect firm location whereas exercising can be seen as a complement to cultural amenities in terms of leisure consumption. One unfortunate drawback of the sports measure is that it only takes into account the number of facilities inside a block due to the aforementioned multi-collinearity concerns. The transport controls are mainly insignificant with a few exceptions: Bus stops have a positive effect on firm location in specification (2). In the more demanding specifications, light rail stations attract start-ups (except in columns (2) and (5)). Noise disamenities have mixed effects. Noise originating from the underground running on overground tracks and trams positively affect start-up location. More intuitively, noise caused by the light rail system, trains and simple streets noise drive firms out. One explanation could be that trams and the two underground lines U1 and U2, which run on overground tracks, make relatively less noise than for instance normal trains. As indicated by the East Berlin dummy, new web firms are more likely to start a business in the former East, as suspected earlier. Moreover, start-ups are not particularly attracted

[11] In fact, rents only become insignificant when the controls are added. When solely included with local emplyoment (not shown), they have a negative impact on the firm location. This supports the controls' strength in term of explanation power.

by the historic CBD/centrality. There is no evidence that urban renewal zones attract entrepreneurs either: Once the instruments are introduced, the urban renewal dummy becomes insignificant. Additional controls for spatial trends (by the X-/Y-Coordinates) are all insignificant. Column (3) introduces location fixed effects at the voting precinct level. The cultural amenity coefficient decreases to 0.67.

Instruments (proximity to wall, squat density) for the endogenous amenity variable are introduced in specification (4). This model is regarded as the benchmark model. Cultural amenities continue to have a positive impact on the location decision of internet start-ups. A 1% increase in amenity density causes the likelihood of a firm location to rise by 1.2% still with a significance level of 1%. The economic significance is slightly smaller than in the baseline specification (1). The uninstrumented PPML estimates (2) and (3) are biased downwards. There might for instance be a general unobservable conservative attitude of people involved in the urban development process (planners, residents etc.) which slows down the creation of amenities (loud bars and clubs) and young start-ups. This attitude would underestimate the causal relationship between amenities and firm location and lead to an underestimation of the real effect if not addressed properly. The control variables are in line with general expectations indicating that start-ups are attracted by economic activity (employment, proximity to capital), tolerant (migration) and pleasant locations (proximity to water, noise disamenities). Finally, column (5) and (6) replicate the benchmark model but only using one instrument at a time, i.e. distance to Wall (5), and squat density (6) respectively. Restricting the IV to distance to Wall, the amenity coefficient is insignificant with fixed effects, probably because they soak up too much variation. That is why column (5) illustrates the estimates without location dummies. Amenities are significant at a 10% level. Using only squat density as instrument yields significant estimates (column 6).

Instrument validity relies on two requirements: (i) instruments need to be valid, i.e. uncorrelated with the error term, and (ii) relevant in terms of prediction power, so they require a high correlation with the endogenous regressors. The first requirement can generally not be tested. However, when the model is overidentified and there are more instruments than endogenous variables one can perform a test of overidentifying restrictions. As I instrument current cultural amenities using two different instruments, I test the null hypothesis that the applied instruments are jointly valid assuming that at least one instrument is exogenous. The computed Hansen's J statistic (OVERID) and its p-values (OVERIDP) do not reject the validity of the instruments (column 4). The evaluation of an instrument's strength is based on the F-statistic of the first stage regression. Stock et al. (2002) argue that the F-statistic should be greater than ten for a set of instruments to be relevant. The benchmark first-stage regressions pass this threshold. The full first-stage estimates are illustrated by Table A2 on page 46, where

column (1) refers to the benchmark specification and the remaining columns belong to robustness checks discussed in the next section.

4.5.2 Robustness

To ensure the robustness of the benchmark results I first test alternative start-up model specifications. I then perform a placebo test by running the benchmark model for eight alternative service sectors and compare the outcomes to the benchmark estimates.

Table 2: Estimation results: Robustness exercises (1)

	(1)	(2)	(3)	(4)	(5)
	# start-ups	# start-ups	# start-ups	# start-ups	# start-ups
log cult dens	0.673***	0.573	-0.644	1.121***	1.507***
	(0.160)	(1.035)	(1.446)	(0.405)	(0.459)
dist to CBD	0.007				
	(0.078)				
employment	4E-4***	4E-4***	4E-4***	5E-4***	4E-4***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rent	-4E-5	-4E-5	-3E-5	-1E-5	-3E-5
	(0.000)	(0000)	(0.000)	(0.000)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes
FE	voting	voting	voting	district	municipality
IV1		dist to CBD	placebo Wall	dist Wall	dist Wall
IV2				d. squat	p. squat
N	15850	15850	15850	15850	15850
OVERID		0.000	0.000	1.360	0.002
OVERIDP				0.244	0.968

Notes: PPML standard errors clustered on fixed effects in parentheses, * p<0.1, ** p<0.05, *** p<0.01. OVERID (OVERIDP) denotes Hansen's J statistic of the over-identification test (p-value).

To address the concerns that proximity to Wall only reflects centrality or is correlated with unobservables driving the results, I perform a first set of robustness exercises which are shown in Table 2 on page 25. The full table is in the appendix (Table A3 on page 48). In column (1) I control for centrality by including distance to CBD[12] instead of the historic CBD dummy in the uninstrumented PPML model. Unfortunately, it is not possible to include the centrality control variable in the IV model due to reasons of convergence. Distance to CBD is insignificant and the cultural amenity coefficient is almost identical to the estimates of the PPML model without the distance to CBD variable (column (3) Table 1 on page 22). Specification (2) uses distance to CBD and not to Wall as instrument. Centrality does not significantly attract web start-ups via the amenity

[12]Following standard practice for Berlin, I define the CBD to be at the intersection of Friedrich- and Leipzigerstraße (Ahlfeldt & Wendland, 2011).

channel. Proximity to a placebo wall which cuts the city vertically in two halves also yields insignificant estimates (column 3). Estimating the benchmark model with alternative location fixed effects that share borders with the Berlin Wall provides positive and significant amenity effect. Cultural amenities explain start-up location slightly weaker than in the benchmark model when using district fixed effects (column 4) and slightly stronger when using municipality fixed effects (column 5).

To ensure that the results are not driven by the applied indicators I re-run the benchmark specification using different measures of cultural amenity endowment and different instruments (Table 3 on page 28, extended Table A4 on page 51). In the first column, I use the non-logarithmised density of current cultural amenities which allows me to run the model on the full sample of 15,937 statistical blocks. The amenity density variable is highly significant and still positively affects the location choice of web firms. In columns (2)-(4) I capture the stock of current cultural amenities by a gravity-based potentiality measure with a distance decay of two which is supposed to capture walking speed (as suggested by Ahlfeldt (2011b)). The inherent assumption is that entrepreneurs are only attracted by amenities in their close neighbourhood. I first instrument current amenities using the benchmark instruments distance to Berlin Wall and squat density (specification 2). I then use distance to Wall and squat potentiality (specification 3) and both Berlin Wall and squat potentiality (specification 4) as instrumental variables. The instrumented cultural amenity estimates are all positive and significant at the 1% level. Finally, I make use of the historical cultural amenities. I create buffer rings of several distances around a block centroid and count the number of cultural amenities that fall inside a ring. This follows Arzaghi & Henderson (2008), who apply a similar indicator to capture the access to nearby advertising agencies as agglomeration measure. I define five (column 5) and four (column 6) rings moving out in increments of 500 metres up to 2,000 metres whereas specification (6) has an additional ring of 250 metres. The ring approach comes with the advantage of being intuitive to interpret. However, the variables might quite likely suffer from unobservables fixed effects in the error terms despite the use of voting precincts dummies and instruments. For data reasons, I am additionally only able to use the supposedly weakest set of instruments, the count of historical cultural amenities (1998/99) inside a ring. Moreover, the definition of the blocks is relatively heterogeneous compared to the definition of New York City census tracts (Arzaghi & Henderson, 2008). There might exist large blocks with the smallest buffer rings around the centroid still inside the block. Estimates should therefore be interpreted with particular caution. Estimation results for the two models are very similar. One additional cultural amenity in a ring between 500 and 1000 metres around a block centroid increases the probability of a firm location by 0.08%. In contrast, in the neighbouring ring (1000-1500m) the effect is negative and the likelihood decreases by 0.06-0.07% which might indicate the presence of multi-collinearity. In the specification reported in column (7), I use a density measure

of historical cultural amenities of 1936 as an instrument. Amenity estimates turn out to be insignificant. This is most likely due to the fact that the sample of 1936 amenities is very small. Column (8) makes use of the historic cultural amenities from 1998/99 again but this time as a standard kernel density measure with a radius of 2 km. Jointly instrumenting contemporary amenity density with the historic ones and proximity to Wall yields a positive amenity effect on the location of web firms. Their likelihood of locating inside a particular housing block increases by almost 1% if amenity density goes up by 1%. I eventually replace the 1992 land values with rent data from 2010 (column 9). The rent coefficient stays insignificant where the amenity effect is slightly larger than in the benchmark model.

Table 3: Estimation results: Robustness exercises (2)

	(1) start-ups	(2) start-ups	(3) start-ups	(4) start-ups	(5) start-ups	(6) start-ups	(7) start-ups	(8) start-ups	(9) start-ups
cult amenity	0.021***	0.014***	0.032**	0.031***			1.865	0.987**	1.590***
	(0.006)	(0.004)	(0.013)	(0.011)			(1.390)	(0.377)	(0.431)
ring 250m					0.013				
					(0.013)				
ring 500m					0.002	0.005			
					(0.009)	(0.006)			
ring 1000m					0.008*	0.008*			
					(0.004)	(0.005)			
ring 1500m					-0.006*	-0.007*			
					(0.004)	(0.004)			
ring 2000m					0.003	0.003			
					(0.002)	(0.002)			
employment	5E-4***	5E-4***	5E-4***	5E-4***	4E-4***	4E-4***	4E-4***	4E-4***	5E-4
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
land value	-3E-5	-2E-5	-1E-5	-3E-5	-1E-5	-1E-5	-5E-5	-3E-5	0.056
1992/rent	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.059)
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cult (X)	cult dens	cult pot	cult pot	cult pot	rings	rings	ln cult dens	ln cult dens	ln cult dens
IV1	dist Wall	dist Wall	dist Wall	p. Wall	hist rings	hist rings	cult 1936	cult 1998	dist Wall
IV2	d. squat	d. squat	p. squat	p. squat				dist Wall	d. squat
N	15937	15937	15937	15937	15937	15937	15850	15850	15850
OVERID	5.526	6.942	7.049	3.219	0.000	0.000	0.000	1.043	0.012
OVERIDP	0.019	0.008	0.008	0.073				0.307	0.911

Notes: Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01, OVERID (OVERIDP) denotes Hansen's J statistic of the overidentification test (and its p-value). IVs: dens denotes a density measure, dist a Euclidean distance measure, pot a potentiality measure, rings the amenity rings. Cult stands for the the cultural amenity to be instrumented. All specifications are estimated with the full set of controls, column (9) includes rents from 2010 (Immobilien Scout, 2012) instead of 1992 land values.

All instruments fulfill the overidentifying restrictions indicating their statistical validity. Referring to the first stage regressions (Table A2 on page 46) all instruments are also sufficiently strong. The instruments are all individually significant and have the expected coefficients. One exception is shown in column (4), where distance to Wall is positively correlated to the gravity-based cultural amenity measure, probably due to multi-collinearity. Interestingly, 1936 cultural amenities are negatively correlated with today's amenity endowment. This would imply that amenity rich areas have changed over time and amenities moved to other locations within the city. In fact, according to anecdotal evidence the entertainment industry was located more in the Western area around Kurfürstendamm during the 1930s (Leyden, 1933). Moreover, as stated before, the 1936 sample is very small and its application as an instrument not a very good robustness test. Nonetheless, the overall results of the robustness checks using alternative measures provide evidence for the attractive role cultural amenities play for the location choice of internet start-ups. However, I consider none of the models to be as good as the benchmark specification with respect to the identification.

4.5.3 Placebo firms

This paper tries to establish an empirical link between cultural amenities and firm location. It was argued that internet start-ups provide a perfect example for a footloose and knowledge-based firm. However, there might be other service sectors affected by an area's endowment with cultural amenities. I therefore re-estimate the benchmark model using eight alternative (placebo) service firms instead of the original internet start-ups. I assume that these firms face no cost of moving and re-adjust their location when attracted by other places which offer a better set of location factors. This, admittedly, is a simplifying assumption. However, compared to manufacturing industries, the moving of service firms usually only involves the relocation of office equipment. Moreover, it is important to note that the alternative service firms are (only) used as a placebo test to establish further robustness. Estimates are reported in Table 4 on page 30 (extended in Table A5 on page 53).

Table 4: Estimation results: Placebo firms

	(1) architects	(2) consultancies	(3) engineering	(4) insurance	(5) law	(6) publisher	(7) finance	(8) agencies
log cult dens	0.110	0.567***	-0.187	-0.221	-0.147	0.234	-0.551*	0.836**
	(0.196)	(0.216)	(0.336)	(0.465)	(0.176)	(0.376)	(0.320)	(0.333)
employment	3E-4***	3E-4***	3E-4***	3E-4***	3E-4***	3E-4***	3E-4***	4E-4***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rent	-5E-6	1E-4***	5E-5*	8E-5**	8E-5***	6E-5*	1E-4***	4E-5
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	15850	15850	15850	15850	15850	15850	15850	15850
OVERID	5.102	0.677	0.001	2.167	2.510	3.117	0.014	0.241
OVERIDP	0.024	0.410	0.974	0.141	0.113	0.077	0.906	0.624

Notes: Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01. Instruments: distance to Wall, squat density, OVERID (OVERIDP) denotes Hansen's J statistic of the overidentification test (and its p-value). There are at least ten law firms per voting precincts (instead of five).

Cultural amenities now only have an effect on the location of three out of the eight industries. In particular, cultural amenities only significantly determine the location of agencies as well as consultancies. A 1% increase in density raises the probability of an agency locating at a location by 0.84%, for consultancies the probability is 0.57%. The estimated probabilities are smaller than for internet start-ups. In contrast, firms offering financial services experience on average a negative effect and seem to get driven out by amenities. Their likelihood decreases by 0.55%.[13] I cannot observe any statistically significant effects for architects, engineering offices, law firms, publishers and insurance companies. The interpretation of the remaining variables is moved to the appendix (Section A.3) as they are not at the centre of this research.

Finally turning to the validity of the instruments, six out of the eight model specifications pass the test of overidentification. For architects as well as for publishers the null hypothesis of joint instrument validity must be rejected. The overidentification test must to be interpreted with care since it relies on the assumption that at least one instrument is exogenous. The test therefore only serves as a rough indicator for the validity of the applied instruments. First-stage regressions are reported in Table A6 on page 55. Theoretically, the first stage regression models for the latter eight service industries should be equivalent to the one for the internet start-up model. Practically however, the inclusion of voting precinct dummies slightly varies due to the distinct distribution of firms over the city. All F-statistics confirm the IVs' relevance for all models.

Complementing the main analysis of internet start-up location with the estimates for alternative service industries allows us to draw the following conclusions: First of all, the comparison serves as an additional robustness check in terms of the amenity effect being driven only by centrality. If the amenity variable was highly correlated with centrality, one would expect mature and financially more potent service firms to outbid young internet start-ups in the centre. Secondly, it rules out the competing hypothesis that the fall of the wall was associated with just a general growth in all sectors in locations near the Wall. Thirdly, the results indicate that the endowment of an area with cultural amenities cannot be regarded as a generalizable location determinant. The footloose start-up model as built above cannot be applied to any economic sector. In fact, it is only internet start-ups as well as agencies and thus rather creative industries which are positively affected by the cultural amenities measure. The remaining firms conversely do not incorporate amenities into their location choice. Companies in particular offering financial or juridical advice even shun amenity-rich locations. These remaining service industries can be considered as rather conservative in terms of the service they offer and potentially even in terms of their clients. The movers and shakers are more likely to be found among web firms and agencies than among financial service firms. This first group is literally the "creative

[13]The positive effect of amenities on agencies and the negative one on financial advisories is also reflected by Figure A.2 on page 41.

class" (Florida, 2002). Fourthly, the inter-sectoral comparison provides evidence on the existence of an urban "buzz" (Storper & Venables, 2004). Concentrated urban areas are characterised by a specific atmosphere (e.g. originating from cultural amenities or tolerance) which only affects very specific industries. Even if the applied instrumental variables were correlated with unobservables I was unable to control for, there would be some urban forces which particularly attract creative firms.

5 Conclusion

Cities have recently experienced a renaissance. People and firms are increasingly attracted by dense locations. Dense locations are usually characterised by a high endowment of cultural amenities like theatres, bars, restaurants or clubs. The provision of these amenities relies on high fixed costs turning cities intos centres of consumption. It was argued that especially young, highly-qualified and creative individuals are attracted by urban amenities. Knowledge-based service firms being highly dependent on qualified labour are therefore expected to act as amenity maximisers and to locate in amenity-rich areas.

I test this hypothesis by looking at the evolving internet start-up sector in Berlin which serves an example of knowledge-based service firms. Following an instrumental variable approach which makes use of the fall of the Berlin Wall as a quasi natural experiment, I try to fill the gap of missing studies empirically assessing the role of urban amenities. It was shown that cultural amenities positively impact on the location of start-ups; a one-percent increase in amenity density raises the probability of a start-up location by about 1.2%. These results are proven to be robust by estimating various specifications in terms of amenity measures and instruments applied.

It was also shown that the results do not generally apply to all service types. Conservative service sectors like law or financial firms are not found to be affected by an area's endowment with cultural amenities. It is more creative branches like agencies and, above all, internet firms which act as amenity maximisers. The paper therefore additionally provides evidence on the existence of an urban "buzz" (Storper & Venables, 2004). Concentrated urban areas are characterised by a specific atmosphere (e.g. originating from cultural amenities or tolerance) which affects very specific industries and not others. I find that these affected industries are closely related to the creative class.

Entrepreneurs are generally regarded as highly beneficial for a country's economy, both by economists as well as by politicians. They create new jobs, promote innovation and economic growth. Especially the IT and software sector is considered to be a key sector with great potentials. Hence, there are lot of different political initiatives to support entrepreneurs such as providing cheap office space, developing attractive credit programs or offering workshops on how to found a company. The results of this paper enable a different perspective on how to promote entrepreneurs. It was shown that cultural

amenities play an important role in attracting start-ups. This suggests an implementation of cultural-political initiatives in economic policy. Even though subcultural diversity might not be anticipated as economically beneficial in the short-run, its destruction might, however, stop attracting footloose creative heads in the long-run. Moreover, the results stand in contrast to artificially created science and technology parks in the periphery. Even though these parks are equipped with appealing incentives like cheap rents or access to the public transport network, it is not very likely that young innovative firms will relocate to the periphery but stay in developed, central and amenity-rich areas.

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A Appendix

This appendix complements the main paper. Section A.1 provides arguments in favour of an intra-urban analysis. Section A.2 reports additional information on the data used. The full tables of the empirical analyses providing all coefficient estimates are presented in Section A.3.

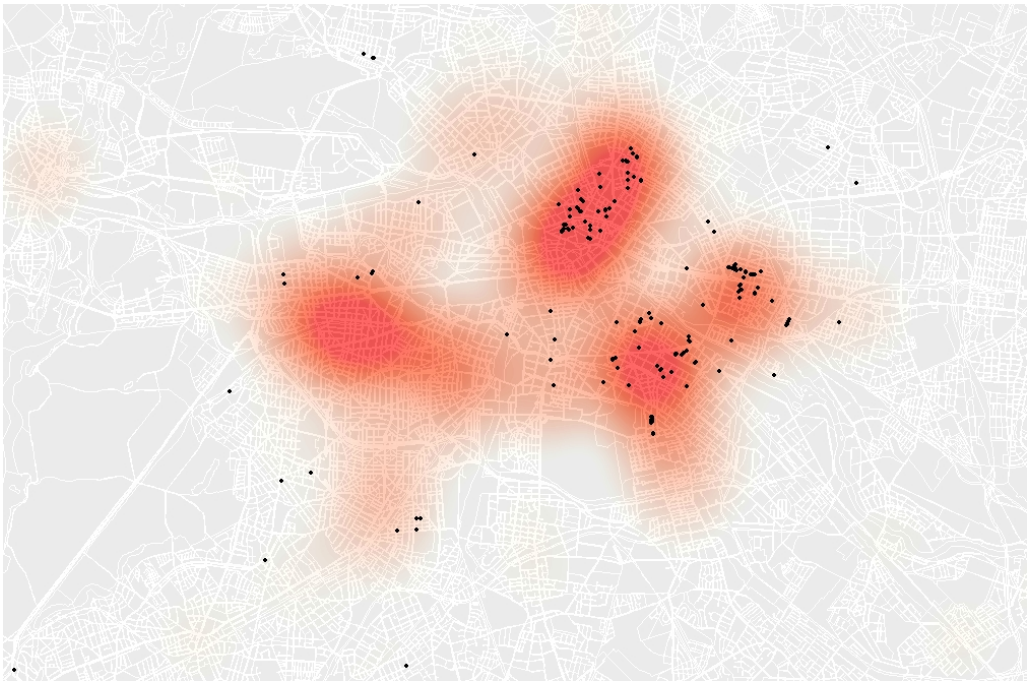
A.1 An intra-urban analysis

I also provide arguments in favour of an intra-urban analysis. So far, most research on the determinants of firm location has been carried out on a regional or metropolitan level. There are substantially fewer intra-urban analyses. An exception is represented by Rosenthal & Strange (2005) as well as Arzaghi & Henderson (2008), who both use census tract level data from New York City. Within-city analyses, however, provide interesting insights when it comes to the assessment of location factors. First of all, the availability of highly disaggregated data on a city level implies a high geographic variation compared to an analysis which is based on a country's variation in regions or provinces, as this number is usually comparably small. Secondly, there might be a lot of location factors which only affect locations at a very close distance. Especially when thinking of cultural amenities, it is reasonable to assume that their influence diminishes with a steep decay. Thirdly, using highly disaggregated data allows for including location fixed effects on a larger aggregation level to control for unobservables. And finally, as the paper's empirical approach builds on a conditional logit model, it must be ensured that the assumption of independence of irrelevant alternatives holds. An entrepreneur must theoretically be able to take all locations for setting-up his firm into consideration; a reasonable assumption in an intra-urban setting. After having made a case for using Berlin for an intra-urban analysis, I present a model of a footloose start-up.

A.2 Data

To motivate the first stage of the secondary instrument used in the analysis in the main text, squat density, Figure A.1 jointly maps the location of squatted houses, represented by the black dots, and the kernel density measure of cultural amenities. As reviewed in Section 2.1, a lot of abandoned buildings in proximity to the Berlin Wall and above all in the former Eastern part were squatted during the 1990s. There is a high number of squats (black dots) in the districts of Mitte, Prenzlauer Berg, Friedrichshain as well as Kreuzberg, whereas there are very few squatted houses in the proximity to Kurfürstendamm. The squats in the east are visually correlated with the red amenity clouds, strengthening the applicability of squat density as an instrument for cultural amenities.

Figure A.1: Distribution of squatted houses and cultural amenities.



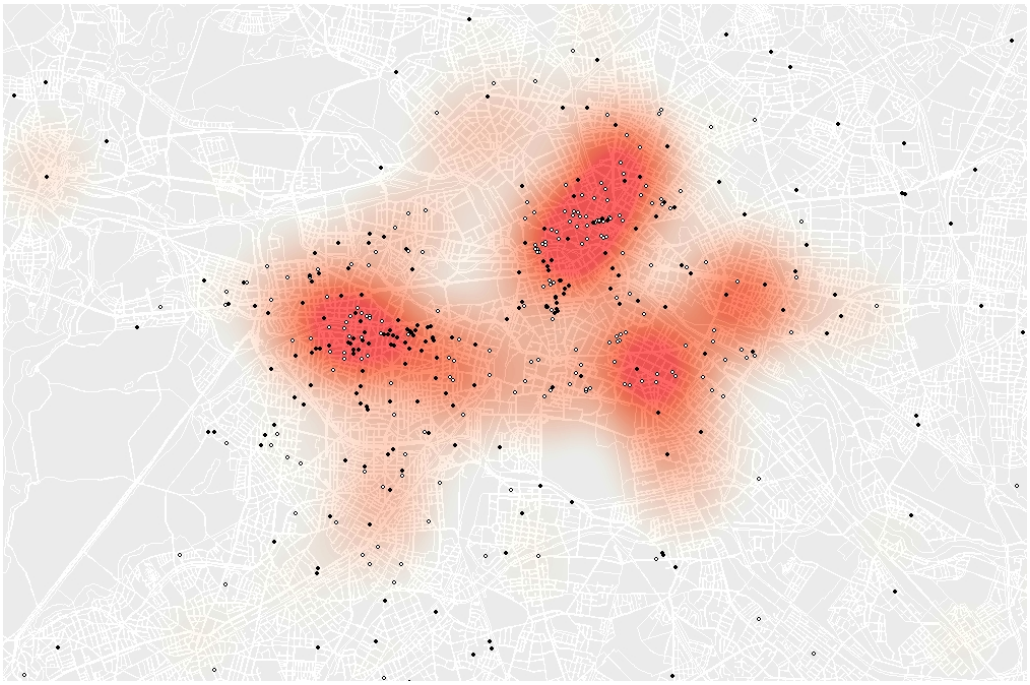
Notes: Black dots denote the location of squatted houses extracted from Hausbesetzungs Geschichte Berlin (2010). Red amenity clouds represent the amenity density measure with a radius of 2 km (Silverman, 1986), with dark red indicating a high amenity density.

Figure A.2 on page 41 shows the location of agencies (white dots) as well as financial advisories (black dots) jointly mapped with amenity density. Generally, the two service firms, which are used as placebos to test the robustness of the footloose start-up model, are distributed more equally over the city compared to internet start-ups (Figure 3 on page 17). Both exemplary sectors seem to be slightly clustered around Kurfürstendamm in the South West. Additionally, agencies are clustered in the northern red amenity cloud around Mitte/Prenzlauer Berg. Overall, visual inference suggests that agencies are more likely be affected by the cultural amenity distribution than financial advisories.

A.3 Empirical results

This section complements the estimation results from Section 4.5 by showing the full regression tables, i.e. including all control variables. Table A1 on page 43 reports the estimates of the main models, starting with an uninstrumented baseline specification in column (1). The benchmark specification is given in column (4). The respective first stage regressions for the benchmark as well as for the remaining IV robustness models are given by Table A2 on page 46. To address the concerns that proximity to Wall only reflects centrality or is correlated with unobservables driving the results, Table A3 on page 48 presents the results of a first set of robustness exercises. In a second set of robustness tests, I verify the validity of the measures and indicators used in the analysis

Figure A.2: Distribution of placebo firms and cultural amenities.



Notes: White dots denote the location of agencies and black dots of financial advisories respectively, both extracted from Gelbe Seiten Deutschland (2012). Red amenity clouds represent the amenity density measure with a radius of 2 km (Silverman, 1986), with dark red indicating a high amenity density.

and experiment with alternative instrumental variables. Results are shown in Table A4 on page 51.

The estimates using the placebo firms are eventually reported in Table A5 on page 53 with their respective first stage results in Table A6 on page 55. The interpretation of the remaining variables is limited as they are not at the centre of this research. The majority of the coefficient estimates are comparable to the benchmark model using internet start-ups as dependent variable. I therefore briefly report the most striking differences. Land value estimates yield a diverse but rather positive effect on firm location (insignificant for insurance companies, architects and agencies). Service firm location is generally independent of the proximity to research institutions, an intuitive result considering the research un-intensity of the firm selection. Law firms are the only type of service firms positively affected by proximity to universities. Interestingly, sport facilities positively affect all firms except engineering offices, whereas the picture of the transport role becomes rather mixed again. The importance of light rail stations stands out and affects almost all firms except agencies. There is a significant tendency to locate in former East Berlin, except for insurance companies and publishers. In contrast to web companies, the probability of locating inside an urban renewal area is higher for all firms but publishers.

Table A1: Estimation results: Footloose start-up model

	(1)	(2)	(3)	(4)	(5)	(6)
	start-ups	start-ups	start-ups	start-ups	start-ups	start-ups
log cult amen.	1.547***	0.885***	0.671***	1.195***	1.570*	1.351***
	(0.098)	(0.190)	(0.157)	(0.307)	(0.844)	(0.339)
employment		4E-4***	4E-4***	4E-4***	5E-4***	4E-4***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rent		-3E-5	-3E-5	-3E-5	-3E-5	4E-5
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
migrants		0.004***	0.004***	0.004***	0.004***	0.004***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
dist research inst		0.024	0.166*	0.269**	0.162	0.303**
		(0.115)	(0.101)	(0.115)	(0.166)	(0.120)
dist university		0.209**	0.176**	0.203**	0.269*	0.207**
		(0.097)	(0.084)	(0.095)	(0.143)	(0.099)
dist VC		-0.284***	-0.291***	-0.215***	-0.170	-0.193**
		(0.079)	(0.074)	(0.080)	(0.134)	(0.083)
dist to water		-0.512***	-0.392***	-0.384***	-0.522***	-0.388***
		(0.119)	(0.109)	(0.110)	(0.128)	(0.113)
dist to green space		0.593	0.655	0.654*	0.704	0.645*
		(0.458)	(0.425)	(0.359)	(0.487)	(0.357)
sport		0.209***	0.191***	0.208***	0.228***	0.204***
		(0.073)	(0.064)	(0.061)	(0.077)	(0.062)
bus dens		0.100**	-0.006	-0.035	0.063	-0.043
		(0.042)	(0.040)	(0.045)	(0.060)	(0.047)
light rail dens		0.316	0.721*	0.790*	0.642	0.822*
		(0.509)	(0.432)	(0.427)	(0.695)	(0.428)
undergr dens		-0.350	0.216	-0.086	-0.629	-0.144
		(0.223)	(0.264)	(0.283)	(0.408)	(0.287)
tram dens		0.010	-0.034	-0.128	-0.088	-0.143
		(0.073)	(0.068)	(0.087)	(0.142)	(0.089)
U tram noise		0.015***	0.010**	0.010**	0.015***	0.011**
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
train noise		-0.046***	-0.034***	-0.035***	-0.051***	-0.035***
		(0.012)	(0.010)	(0.011)	(0.015)	(0.011)
street noise		-0.021**	-0.021**	-0.019**	-0.017	-0.017*
		(0.009)	(0.009)	(0.009)	(0.011)	(0.009)

East Berlin		1.457***	0.896***	1.114***	1.748***	1.129***
		(0.402)	(0.302)	(0.386)	(0.568)	(0.391)
historic CBD		0.076	0.019	0.081	0.277	0.106
		(0.284)	(0.283)	(0.247)	(0.320)	(0.247)
urban renewal		0.314	0.370*	0.296	0.202	0.268
		(0.234)	(0.204)	(0.211)	(0.280)	(0.210)
x coord		-0.013	0.047	0.021	-0.050	0.015
		(0.033)	(0.036)	(0.036)	(0.055)	(0.037)
y coord		-0.017	-0.037	-0.036	-0.022	-0.039
		(0.031)	(0.028)	(0.031)	(0.042)	(0.033)
Constant	-8.026***	-3.143**	-3.856***	-5.024***	-4.812*	-5.401***
	(0.370)	(1.311)	(1.261)	(1.492)	(2.476)	(1.578)
Controls	No	Yes	Yes	Yes	Yes	Yes
FE	No	No	Yes	Yes	No	Yes
IV	No	No	No	Yes	Wall	Squat
N	15850	15850	15850	15850	15850	15850
OVERID				1.407		
OVERIDP				0.236		

Notes: Dependent variable is the number of start-ups inside a block, PPML Standard errors clustered on fixed effects in parentheses, * p<0.1, ** p<0.05, *** p<0.01, Instruments: distance to Wall ("Wall"), squat density ("Squat"), Benchmark model (4) uses both instruments, OVERID (OVERIDP) denotes Hansen's J statistic of the over-identification test (its p-value).

Table A2: Estimation results: Footloose start-up model - first stage

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	log cult dens	log cult dens	log cult dens	cult dens	cult pot	cult pot	cult pot	log cult dens
dist wall	-0.022***	-0.023***		-0.062***	-0.163***	0.239***		
	(0.002)	(0.002)		(0.021)	(0.032)	(0.039)		
squat density	0.115***		0.117***	8.025***	11.759***			
	(0.007)		(0.007)	(0.083)	(0.129)			
pot squat						1.317***	1.195***	
						(0.029)	(0.029)	
pot wall							0.460***	
							(0.059)	
cult 1936								-0.523***
								(0.031)
employment	-3E-5*	-3E-5**	-0.000	-0.001***	-0.001**	-0.001**	-0.001**	-2E-5
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rent	3E-5***	3E-5***	0.000***	0.003***	0.005***	0.005***	0.005***	9E-5***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
migrants	0.001***	0.001***	0.001***	0.016***	0.031***	0.035***	0.034***	0.001***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.002)	(0.002)	(0.000)
dist research inst	-0.054***	-0.057***	-0.055***	0.105**	-0.025	-0.331***	-0.267***	-0.052***
	(0.004)	(0.004)	(0.004)	(0.046)	(0.071)	(0.082)	(0.082)	(0.004)
dist university	0.011***	0.024***	0.012***	0.390***	0.562***	0.788***	0.802***	0.030***
	(0.003)	(0.003)	(0.003)	(0.042)	(0.066)	(0.078)	(0.078)	(0.003)

dist VC	-0.060***	-0.068***	-0.065***	-0.436***	-0.723***	-0.144**	-0.166***	-0.073***
	(0.003)	(0.003)	(0.003)	(0.032)	(0.050)	(0.064)	(0.064)	(0.003)
dist to water	-0.101***	-0.109***	-0.105***	-0.289***	-0.414***	-0.513***	-0.469***	-0.117***
	(0.005)	(0.005)	(0.005)	(0.056)	(0.087)	(0.101)	(0.101)	(0.005)
dist to green space	-0.157***	-0.170***	-0.134***	1.780***	3.011***	1.839***	1.593***	-0.146***
	(0.018)	(0.018)	(0.018)	(0.219)	(0.341)	(0.395)	(0.393)	(0.018)
sport	0.021**	0.018*	0.019**	-0.275**	-0.401**	-0.365*	-0.329	0.014
	(0.009)	(0.010)	(0.010)	(0.117)	(0.182)	(0.211)	(0.211)	(0.010)
bus dens	0.096***	0.099***	0.105***	0.097***	0.039	0.206***	0.040	0.109***
	(0.002)	(0.002)	(0.002)	(0.028)	(0.043)	(0.050)	(0.049)	(0.002)
light rail dens	1.268***	1.242***	1.256***	3.610***	5.578***	-0.125	0.436	1.157***
	(0.036)	(0.037)	(0.037)	(0.449)	(0.698)	(0.811)	(0.810)	(0.037)
undergr dens	1.070***	1.134***	1.090***	21.365***	30.483***	28.238***	28.907***	1.245***
	(0.020)	(0.020)	(0.020)	(0.249)	(0.387)	(0.481)	(0.486)	(0.021)
tram dens	0.276***	0.311***	0.292***	0.929***	0.526***	2.118***	2.112***	0.321***
	(0.006)	(0.005)	(0.006)	(0.069)	(0.107)	(0.123)	(0.123)	(0.005)
U tram noise	0.001**	0.000	0.000	-0.018***	0.004	-0.053***	-0.048***	0.000
	(0.000)	(0.000)	(0.000)	(0.005)	(0.007)	(0.008)	(0.008)	(0.000)
train noise	0.003***	0.003***	0.003***	0.049***	0.075***	0.091***	0.087***	0.004***
	(0.001)	(0.001)	(0.001)	(0.007)	(0.011)	(0.013)	(0.013)	(0.001)
street noise	-0.002**	-0.002***	-0.001	-0.112***	-0.145***	-0.256***	-0.251***	-0.002**
	(0.001)	(0.001)	(0.001)	(0.009)	(0.013)	(0.016)	(0.016)	(0.001)
East Berlin	-0.598***	-0.602***	-0.673***	2.710***	4.118***	4.668***	5.201***	-0.621***
	(0.025)	(0.026)	(0.025)	(0.310)	(0.482)	(0.560)	(0.548)	(0.025)

historic CBD	-0.326***	-0.212***	-0.302***	-6.896***	-9.114***	-7.478***	-8.853***	-0.072*
	(0.037)	(0.037)	(0.037)	(0.459)	(0.713)	(0.841)	(0.861)	(0.037)
urban renewal	0.047	0.159***	0.063*	3.031***	7.596***	14.857***	15.235***	0.157***
	(0.034)	(0.034)	(0.034)	(0.420)	(0.653)	(0.749)	(0.751)	(0.034)
x coord	0.011***	0.012***	0.019***	0.010	0.038	-0.209***	-0.267***	0.020***
	(0.001)	(0.001)	(0.001)	(0.018)	(0.028)	(0.034)	(0.032)	(0.001)
y coord	-0.011***	-0.012***	-0.006***	-0.051***	-0.057***	-0.163***	-0.221***	-0.007***
	(0.001)	(0.001)	(0.001)	(0.012)	(0.019)	(0.022)	(0.021)	(0.001)
cons	1.008***	0.994***	0.513***	2.125***	3.708***	3.803**	8.637***	0.397***
	(0.067)	(0.068)	(0.056)	(0.822)	(1.278)	(1.482)	(1.248)	(0.056)
F	1775.682	1772.545	1788.466	2617.249	2440.989	1735.954	1738.901	1786.564
r2	0.851	0.849	0.850	0.894	0.887	0.848	0.848	0.850
N	15850	15850	15850	15937	15937	15937	15937	15850

Notes: Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

Table A3: Estimation results: Robustness exercises (1)

	(1) # start-ups	(2) # start-ups	(3) # start-ups	(4) # start-ups	(5) # start-ups
log cult dens	0.673***	0.573	-0.644	1.121***	1.507***
	(0.160)	(1.035)	(1.446)	(0.405)	(0.459)
dist to CBD	0.007				
	(0.078)				
employment	4E-4***	4E-4***	4E-4***	5E-4***	4E-4***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rent	-4E-5	-4E-5	-3E-5	-1E-5	-3E-5
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
migrants	0.004***	0.004***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
dist research inst	0.164	0.144	-0.191	0.058	0.095
	(0.105)	(0.255)	(0.503)	(0.130)	(0.143)
dist university	0.177**	0.172*	0.112	0.265**	0.228
	(0.084)	(0.094)	(0.146)	(0.112)	(0.139)
dist VC	-0.297***	-0.308	-0.559	-0.110	-0.092
	(0.093)	(0.194)	(0.344)	(0.097)	(0.098)
dist to water	-0.393***	-0.391***	-0.328*	-0.495***	-0.628***
	(0.111)	(0.105)	(0.172)	(0.141)	(0.154)
dist to green space	0.648	0.655*	0.352	0.567	0.665
	(0.437)	(0.375)	(1.449)	(0.469)	(0.460)
sport	0.190***	0.189***	0.172***	0.217***	0.225***
	(0.063)	(0.065)	(0.060)	(0.076)	(0.077)
bus dens	-0.006	-0.001	0.082	0.114**	0.076
	(0.040)	(0.067)	(0.161)	(0.057)	(0.063)
light rail dens	0.727*	0.709	0.566	0.238	0.483
	(0.440)	(0.457)	(0.538)	(0.626)	(0.464)
undergr dens	0.221	0.268	0.873	-0.619*	-0.550*
	(0.278)	(0.610)	(0.622)	(0.338)	(0.316)
tram dens	-0.035	-0.018	0.182	-0.019	-0.105
	(0.068)	(0.184)	(0.279)	(0.092)	(0.093)
U/tram noise	0.010**	0.010**	0.012*	0.009**	0.016***
	(0.005)	(0.005)	(0.007)	(0.005)	(0.005)
train noise	-0.035***	-0.034***	-0.032***	-0.048***	-0.055***
	(0.011)	(0.011)	(0.011)	(0.013)	(0.014)
street noise	-0.020**	-0.021**	-0.027**	-0.018**	-0.021**
	(0.009)	(0.010)	(0.013)	(0.009)	(0.009)
East Berlin	0.890***	0.864*	0.495	1.791***	0.816*
	(0.308)	(0.513)	(0.544)	(0.580)	(0.428)
historic CBD	0.019	0.003	-0.263	0.001	0.188
	(0.283)	(0.294)	(0.466)	(0.319)	(0.387)
urban renewal	0.372*	0.387	0.620	0.415	0.199
	(0.203)	(0.264)	(0.381)	(0.269)	(0.221)
x coord	0.050	0.053	0.137	0.021	-0.012
	(0.045)	(0.068)	(0.130)	(0.050)	(0.042)

y coord	-0.035	-0.037	-0.055	0.044	-0.053
	(0.032)	(0.027)	(0.047)	(0.051)	(0.047)
Constant	-3.981**	-3.635	-1.196	-8.042***	-4.372**
	(1.755)	(2.578)	(2.829)	(2.232)	(1.707)
Controls	Yes	Yes	Yes	Yes	Yes
FE	voting	voting	voting	district	municipality
IV1		dist to CBD	placebo Wall	dist Wall	dist Wall
IV2				d. squat	p. squat
N	15850	15850	15850	15850	15850
OVERID		0.000	0.000	1.360	0.002
OVERIDP				0.244	0.968

Notes: PPML standard errors clustered on fixed effects in parentheses, * p<0.1, ** p<0.05, *** p<0.01. OVERID (OVERIDP) denotes Hansen's J statistic of the over-identification test (p-value).

Table A4: Estimation results: Robustness exercises (2)

	(1) start-ups	(2) start-ups	(3) start-ups	(4) start-ups	(5) start-ups	(6) start-ups	(7) start-ups	(8) start-ups	(9) start-ups
cult amenity	0.021***	0.014***	0.032**	0.031***			1.865	0.987**	1.590***
	(0.006)	(0.004)	(0.013)	(0.011)			(1.390)	(0.377)	(0.431)
ring 250m					0.013				
					(0.013)				
ring 500m					0.002	0.005			
					(0.009)	(0.006)			
ring 1000m					0.008*	0.008*			
					(0.004)	(0.005)			
ring 1500m					-0.006*	-0.007*			
					(0.004)	(0.004)			
ring 2000m					0.003	0.003			
					(0.002)	(0.002)			
employment	5E-4***	5E-4***	5E-4***	5E-4***	4E-4***	4E-4***	4E-4***	4E-4***	5E-4
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
land value	-3E-5	-2E-5	-1E-5	-3E-5	-1E-5	-1E-5	-5E-5	-3E-5	0.056
1992/rent	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.059)
migrants	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.006)	(0.001)
dist research	-0.162	-0.148	0.014	-0.019	0.043	-0.053	0.388	0.236*	0.155
institute	(0.106)	(0.107)	(0.163)	(0.145)	(0.098)	(0.100)	(0.246)	(0.123)	(0.123)
dist univer-	0.201**	0.195*	0.270**	0.275**	0.154*	0.153*	0.231	0.197**	0.284***
sity	(0.100)	(0.101)	(0.127)	(0.119)	(0.092)	(0.093)	(0.142)	(0.091)	(0.110)
dist VC	-0.426***	-0.435***	-0.373***	-0.370***	-0.414***	-0.410***	-0.136	-0.244**	-0.155*
	(0.071)	(0.073)	(0.084)	(0.080)	(0.097)	(0.095)	(0.184)	(0.150)	(0.093)
dist to water	-0.395***	-0.371***	-0.267**	-0.295**	-0.364***	-0.363***	-0.371***	-0.390***	-0.487***
	(0.119)	(0.121)	(0.119)	(0.116)	(0.124)	(0.107)	(0.107)	(0.134)	(0.128)

dist to green	0.603	0.534	0.233	0.165	0.599	0.623*	0.627*	0.649*	0.516
space	(0.459)	(0.476)	(0.474)	(0.476)	(0.375)	(0.374)	(0.360)	(0.364)	(0.449)
sport	0.197***	0.189**	0.194**	0.196**	0.155***	0.157**	0.213***	0.203***	0.232***
	(0.073)	(0.075)	(0.088)	(0.084)	(0.068)	(0.067)	(0.067)	(0.062)	(0.071)
bus dens	0.080*	0.067	0.020	0.021	-0.016	-0.015	-0.073	-0.020	0.043
	(0.044)	(0.044)	(0.042)	(0.040)	(0.043)	(0.045)	(0.095)	(0.049)	(0.045)
light rail dens	0.665	0.420	1.132	1.123	0.920*	0.963*	0.921*	0.755*	0.466
	(0.532)	(0.552)	(0.967)	(0.867)	(0.584)	(0.536)	(0.526)	(0.432)	(0.465)
undergr dens	-0.449*	-0.435	-1.116**	-0.986**	0.207	0.193	-0.410	0.039	-0.731***
	(0.265)	(0.265)	(0.524)	(0.441)	(0.280)	(0.296)	(0.679)	(0.335)	(0.263)
tram dens	-0.035	-0.000	-0.172	-0.181	-0.063	-0.068	-0.226	-0.089	-0.114
	(0.085)	(0.081)	(0.138)	(0.124)	(0.081)	(0.082)	(0.238)	(0.103)	(0.087)
U/tram noise	0.010**	0.008	0.000	0.004	0.011**	0.011*	0.011**	0.010**	0.015***
	(0.005)	(0.005)	(0.008)	(0.007)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)
train noise	-0.045***	-0.044***	-0.059***	-0.057***	-0.032***	-0.034***	-0.035***	-0.034***	-0.046***
	(0.013)	(0.012)	(0.018)	(0.016)	(0.013)	(0.013)	(0.012)	(0.011)	(0.013)
street noise	-0.013	-0.013	0.004	0.001	-0.020*	-0.019*	-0.015	-0.019**	-0.019**
	(0.010)	(0.010)	(0.013)	(0.012)	(0.011)	(0.010)	(0.011)	(0.009)	(0.009)
East Berlin	1.269***	1.194***	1.957***	1.983***	0.952***	0.952**	1.306**	1.043***	1.704***
	(0.429)	(0.452)	(0.751)	(0.664)	(0.439)	(0.411)	(0.605)	(0.390)	(0.437)
historic	-0.097	-0.047	0.084	0.023	-0.199	-0.224	0.153	0.056	0.292
CBD	(0.288)	(0.308)	(0.281)	(0.271)	(0.273)	(0.269)	(0.258)	(0.248)	(0.272)
urban	0.265	0.234	-0.156	-0.134	0.120	0.154	0.203	0.344	0.222
renewal	(0.254)	(0.256)	(0.395)	(0.359)	(0.260)	(0.266)	(0.285)	(0.220)	(0.232)
x coord	0.064**	0.061*	0.052	0.038	0.083**	0.082**	-0.004	0.301	-0.040
	(0.032)	(0.032)	(0.037)	(0.033)	(0.036)	(0.038)	(0.057)	(0.039)	(0.037)
y coord	-0.017	-0.016	-0.029	-0.022	-0.036	-0.035	-0.049	-0.344	-0.027
	(0.028)	(0.028)	(0.030)	(0.028)	(0.025)	(0.251)	(0.049)	(0.029)	(0.039)
Constant	-2.529**	-2.402**	-3.394**	-3.057**	-2.620***	-2.674**	-6.561*	-4.657***	-5.380***
	(1.232)	(1.215)	(1.641)	(1.480)	(1.182)	(1.226)	(3.775)	(1.558)	(1.707)

Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Rent 2010
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cult (X)	cult dens	cult pot	cult pot	cult pot	rings	rings	ln cult dens	ln cult dens	ln cult dens
IV1	dist Wall	dist Wall	dist Wall	p. Wall	hist rings	hist rings	cult 1936	cult 1998	dist Wall
IV2	d. squat	d. squat	p. squat	p. squat				dist Wall	d. squat
N	15937	15937	15937	15937	15937	15937	15850	15850	15850
OVERID	5.526	6.942	7.049	3.219	0.000	0.000	0.000	1.043	0.012
OVERIDP	0.019	0.008	0.008	0.073				0.307	0.911

Notes: Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01, OVERID (OVERIDP) denotes Hansen's J statistic of the overidentification test (and its p-value). IVs: dens denotes a density measure, dist a Euclidean distance measure, pot a potentiality measure, rings the amenity rings. Cult stands for the the cultural amenity to be instrumented. All specifications are estimated with the full set of controls, column (9) includes rents from 2010 (Immobilien Scout, 2012) instead of 1992 land values.

Table A5: Estimation results: Placebo firms

	(1) architects	(2) consultancies	(3) engineering	(4) insurance	(5) law	(6) publisher	(7) finance	(8) agencies
log cult dens	0.110	0.567***	-0.187	-0.221	-0.147	0.234	-0.551*	0.836**
	(0.196)	(0.216)	(0.336)	(0.465)	(0.176)	(0.376)	(0.320)	(0.333)
employment	3E-4***	3E-4***	3E-4***	3E-4***	3E-4***	3E-4***	3E-4***	4E-4***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rent	-5E-6	1E-4***	5E-5*	8E-5**	8E-5***	6E-5*	1E-4***	4E-5
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
migrants	0.003***	0.003***	0.003***	0.003***	0.003***	0.004***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)
dist research inst	0.039	0.071	-0.004	-0.022	0.033	0.162	0.011	0.012
	(0.048)	(0.047)	(0.063)	(0.082)	(0.040)	(0.132)	(0.062)	(0.108)
dist university	-0.042	-0.054	-0.002	0.039	-0.085***	0.041	-0.007	-0.010
	(0.030)	(0.038)	(0.046)	(0.062)	(0.025)	(0.083)	(0.059)	(0.080)
dist VC	-0.089**	0.021	-0.099**	-0.087	-0.051	-0.128	-0.147***	-0.025
	(0.035)	(0.043)	(0.049)	(0.084)	(0.036)	(0.106)	(0.055)	(0.086)
dist to water	0.005	0.081	-0.082	-0.055	-0.027	-0.017	0.005	0.052
	(0.041)	(0.049)	(0.070)	(0.097)	(0.037)	(0.098)	(0.074)	(0.095)
dist to green space	0.197	0.180	-0.001	-0.230	-0.138	-0.237	-0.260	-0.235
	(0.169)	(0.207)	(0.226)	(0.392)	(0.156)	(0.490)	(0.492)	(0.457)
sport	0.133***	0.125***	0.062	0.242***	0.124***	0.199**	0.194***	0.124*
	(0.045)	(0.047)	(0.068)	(0.057)	(0.037)	(0.091)	(0.061)	(0.067)
bus dens	-0.004	-0.032	0.021	0.019	0.052**	0.030	0.080	0.043
	(0.024)	(0.028)	(0.043)	(0.054)	(0.023)	(0.052)	(0.058)	(0.048)
light rail dens	1.429***	1.260***	1.123**	1.481**	1.576***	1.574***	1.837***	0.760
	(0.269)	(0.285)	(0.488)	(0.609)	(0.245)	(0.521)	(0.601)	(0.474)
undergr dens	0.362	-0.292	0.343	0.570	0.717***	0.619*	0.830**	-0.695**
	(0.220)	(0.240)	(0.402)	(0.538)	(0.180)	(0.321)	(0.370)	(0.307)

tram dens	-0.126**	-0.210***	-0.129	-0.028	0.007	-0.018	0.005	-0.219**
	(0.059)	(0.059)	(0.108)	(0.123)	(0.050)	(0.091)	(0.116)	(0.086)
U/tram noise	0.009***	0.008**	0.012***	0.010**	0.009***	0.007	0.002	0.010**
	(0.003)	(0.003)	(0.004)	(0.005)	(0.002)	(0.006)	(0.004)	(0.005)
train noise	-0.025***	-0.034***	-0.015**	-0.033***	-0.046***	-0.053***	-0.039***	-0.044***
	(0.005)	(0.006)	(0.007)	(0.011)	(0.005)	(0.016)	(0.009)	(0.013)
street noise	-0.055***	-0.028***	-0.016**	-0.013	-0.023***	-0.053***	0.002	-0.025**
	(0.005)	(0.006)	(0.007)	(0.011)	(0.004)	(0.013)	(0.008)	(0.011)
East Berlin	0.747***	1.012***	0.709*	0.395	0.468***	0.565	0.649*	1.257***
	(0.220)	(0.244)	(0.374)	(0.449)	(0.175)	(0.433)	(0.382)	(0.410)
historic CBD	-0.035	0.092	-0.895**	-1.128**	-0.779***	-0.294	-0.916**	0.687**
	(0.191)	(0.211)	(0.394)	(0.546)	(0.183)	(0.346)	(0.427)	(0.288)
urban renewal	0.701***	0.563***	0.782***	0.702**	1.027***	0.378	0.681**	1.001***
	(0.144)	(0.163)	(0.251)	(0.345)	(0.149)	(0.379)	(0.318)	(0.254)
x coord	-0.056***	-0.067***	-0.011	0.004	-0.026*	-0.015	-0.001	-0.072**
	(0.015)	(0.017)	(0.022)	(0.032)	(0.014)	(0.041)	(0.024)	(0.034)
y coord	-0.032***	-0.017	0.004	-0.008	-0.027***	-0.045	-0.008	-0.022
	(0.010)	(0.012)	(0.013)	(0.016)	(0.008)	(0.028)	(0.018)	(0.025)
Constant	2.350***	-0.437	-2.143***	-2.594***	1.352***	-0.433	-2.539***	-1.895
	(0.436)	(0.537)	(0.692)	(0.918)	(0.366)	(1.136)	(0.834)	(1.180)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	15850	15850	15850	15850	15850	15850	15850	15850
OVERID	5.102	0.677	0.001	2.167	2.510	3.117	0.014	0.241
OVERIDP	0.024	0.410	0.974	0.141	0.113	0.077	0.906	0.624

Notes: Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01. Instruments: distance to Wall, squat density, OVERID (OVERIDP) denotes Hansen's J statistic of the overidentification test (and its p-value). There are at least ten law firms per voting precincts (instead of five).

Table A6: Estimation results: Placebo firms - first stage

	(1) architects log cult dens	(2) consultancies log cult dens	(3) engineering log cult dens	(4) insurance log cult dens	(5) law log cult dens	(6) publisher log cult dens	(7) finance log cult dens	(8) agencies log cult dens
dist wall	-0.021***	-0.023***	-0.023***	-0.023***	-0.024***	-0.023***	-0.023***	-0.023***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
squat density	0.095***	0.104***	0.107***	0.104***	0.108***	0.105***	0.102***	0.112***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)
employment	-3E-5*	-3E-5**	-3E-5**	-3E-5*	-1E-5	-3E-5**	-3E-5**	3E-5**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rent	5E-5***	5E-5***	2E-6	5E-6	5E-5***	2E-5***	4E-5***	3E-5***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
migrants	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
dist research inst	-0.053***	-0.055***	-0.056***	-0.056***	-0.053***	-0.055***	-0.055***	-0.056***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
dist university	0.011***	0.013***	0.015***	0.015***	0.014***	0.013***	0.012***	0.012***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
dist VC	-0.060***	-0.064***	-0.071***	-0.071***	-0.064***	-0.066***	-0.066***	-0.064***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
dist to water	-0.099***	-0.099***	-0.100***	-0.101***	-0.100***	-0.102***	-0.101***	-0.101***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
dist to green space	-0.152***	-0.157***	-0.141***	-0.144***	-0.149***	-0.151***	-0.149***	-0.147***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
sport	0.020**	0.022**	0.023**	0.022**	0.021**	0.022**	0.023**	0.022**
	(0.009)	(0.010)	(0.010)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)
bus dens	0.095***	0.096***	0.095***	0.095***	0.096***	0.095***	0.095***	0.096***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
light rail dens	1.256***	1.172***	1.138***	1.125***	1.159***	1.170***	1.170***	1.215***
	(0.038)	(0.037)	(0.037)	(0.037)	(0.038)	(0.037)	(0.037)	(0.037)

undergr dens	1.053***	1.044***	1.097***	1.097***	1.051***	1.065***	1.049***	1.045***
	(0.022)	(0.021)	(0.020)	(0.020)	(0.022)	(0.020)	(0.020)	(0.020)
tram dens	0.282***	0.267***	0.252***	0.253***	0.268***	0.261***	0.261***	0.262***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
U/ram noise	0.001**	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
train noise	0.002***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
street noise	-0.002**	-0.002**	-0.001	-0.001	-0.002**	-0.001*	-0.001**	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
East Berlin	-0.633***	-0.607***	-0.655***	-0.652***	-0.612***	-0.649***	-0.636***	-0.643***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
historic CBD	-0.370***	-0.473***	-0.727***	-0.713***	-0.428***	-0.584***	-0.565***	-0.575***
	(0.039)	(0.036)	(0.033)	(0.033)	(0.037)	(0.034)	(0.035)	(0.034)
urban renewal	0.093***	0.014	0.056*	0.058*	0.048	0.034	0.036	0.065*
	(0.034)	(0.034)	(0.034)	(0.034)	(0.035)	(0.034)	(0.034)	(0.034)
x coord	0.012***	0.013***	0.016***	0.016***	0.014***	0.015***	0.015***	0.014***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
y coord	-0.011***	-0.011***	-0.010***	-0.010***	-0.011***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.968***	0.964***	0.977***	0.971***	0.939***	0.967***	0.974***	0.981***
	(0.067)	(0.068)	(0.069)	(0.069)	(0.068)	(0.068)	(0.068)	(0.068)
F	856.351	1856.923	3059.642	3419.338	1093.501	3356.475	3017.632	3036.796
R^2	0.855	0.849	0.844	0.844	0.852	0.847	0.847	0.848
N	15850	15850	15850	15850	15850	15850	15850	15850

Notes: Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

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