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Where to Go? High-skilled Individuals' Regional Preferences*

Abstract

We conduct a discrete choice experiment to investigate how the location of a firm in a rural or urban region affects job attractiveness and contributes to the spatial sorting of university students and graduates. We characterize the attractiveness of a location based on several dimensions (social life, public infrastructure, connectivity) and combine this information with an urban or rural attribution. We also vary job design as well as contractual characteristics of the job. We find that job offers from companies in rural areas are generally considered less attractive. This is true regardless of the attractiveness of the region. The negative perception is particularly pronounced among persons with urban origin and singles. These persons rate job offers from rural regions significantly worse. In contrast, high-skilled individuals who originate from rural areas as well as individuals with partners and kids have no specific preference for jobs in urban or rural areas.

Keywords: discrete choice experiment, job characteristics, locational preferences, rural-urban divide

JEL classification: J61, R12, R23, R58

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1. Introduction

In addition to global population growth, ageing and (international) migration, urbanisation is among the world's four demographic megatrends (United Nations 2019). While about 30 percent of the world's population lived in urban areas in 1950, this figure has almost doubled to 55 percent by 2018 and is expected to increase further to 68 percent by mid-century. The most important component of urban development is the availability of skilled labour (Rauch 1993, Glaeser 2000, Moretti 2004). Florida et al. (2017), for example, argue that innovation and entrepreneurship do not simply happen in cities, but actually require them, as creativity and innovation are social processes involving groups of diverse people and businesses brought together in urban areas. At the macro level, Kofler et al. (2020) demonstrate that there is indeed a positive correlation between high levels of urbanisation and the Global Talent Competitiveness Index (GTCI), which ranks 119 countries and 90 global cities on their ability to attract, retain and develop talent. The same spatial pattern also applies to high-skilled foreign workers. For example, Beckers and Boschmann (2019) show that already between the years 2000 and 2009, 84 percent of the high-skilled workers who came to the Netherlands settled in urban regions.

But what explains the increasing concentration of (highly skilled) labour in urban areas? The urban wage premium—which is not only due to more productive firms in cities and a cumulative advantage in the returns to job mobility for urban workers (Yankow 2006, Gould 2007), but also to greater competition in denser labour markets (Hirsch et al. 2020)— is a likely candidate to explain workers' preferences for a job in an urban area. Banfi and Villena-Roldán (2019), for example, find that high-paying jobs attract more applicants and encourage sorting of people by high-wage locations. Dauth et al. (2022) show that the match between high-quality workers and high-quality plants is significantly tighter in large cities relative to small cities and that wages in large cities are higher because of a stronger assortative matching.

Besides wages, however, a large literature on organisational attractiveness also suggests that pay is not the only determinant of job attractiveness. A meta-analysis of 71 studies by Chapman et al. (2005) puts emphasis on the relevance of workplace and organisational characteristics. This has led to several recent studies on these issues. Thereby, Non et al. (2022) highlight the fact that individuals care about workload, the prospect of a permanent contract and the commitment of the firm to innovation or social responsibility. Mas and Pellais (2017), Meastas et al. (2018) and He et al. (2021) conclude that workers value job flexibility and autonomy and are willing to pay for these opportunities. Chandler and Kapelner (2013) and Cassar and Meier (2018) emphasise that individuals are more willing to accept a job if it is described as more meaningful.

Evidence on the effects of firm location on job attractiveness is still scarce. Arntz et al. (2022) is one of the most recent studies to look more closely at urban characteristics associated with job attractiveness. They find that workers are willing to give up a significant portion of their wages for better urban amenities and that preference for amenities do not differ systematically by skill level. However, what is about rural locations? Basic rural-urban differences have so far received little attention in the analysis of workers' job preferences. This contrasts with recent theoretical approaches to the dynamics of local labour markets. Moretti (2011), for example, presents a theoretical model in which workers are mobile between regions. Worker mobility, however, is not necessarily infinite because workers have idiosyncratic preferences for particular locations, and increasing urbanisation might affect these location preferences.

Strong location preferences imply lower mobility and different local elasticities of labour supply. Hence, to determine the effect of spatial policies to attract high-skilled individuals, knowledge about the relevance of idiosyncratic preferences for particular types of locations is of utmost importance for

policy makers. Initial empirical studies on this topic have not found that geographic location affects either the perceived prestige of the firm, its attractiveness as a place to work, or the reported probability of accepting a job offer (Slaughter and Greguras 2009). However, Caprano (2019) is one of first to report a negative relationship between rural locations and business attractiveness, as rural locations are associated with lower quality of life, lower pay and fewer opportunities for advancement. Therefore, the question remains open whether a rural or urban location per se deters or attracts highly qualified applicants. This is exactly the interest of this paper.

In order to cleanly isolate highly skilled workers' preferences for urban areas from job and organisational characteristics as well as amenities, we collected survey data and applied the so-called vignette method. While this method has been used extensively in other fields, Eriksen and Kristensen (2014) were one of the first to highlight the benefits of this method for studying sorting in labour economics as well. Data from 306 undergraduates and 508 full-time graduate workers show that, all other things being equal, there is a significant positive effect of an urban location on individuals' willingness to take a job described earlier. However, these idiosyncratic preferences for urban jobs are driven by several individual characteristics, such as partnership status and whether being raised in an urban or rural area.

The remainder of the paper unfolds as follows. In the next section, we will present a brief overview on our sample of respondents and describe the vignettes into detail. Section 3 gives the empirical results and in section 4 we conclude our paper by discussing the implications of our findings.

2. Theoretical Background

From a theoretical perspective, this paper addresses the issue of individuals' idiosyncratic preferences for specific locations (Moretti 2011). Workers (and firms) are spatially mobile and can choose locations where utility and profits are maximized. Thereby, preferences for a particular location constrain the mobility of workers and, hence, the elasticity of local labour supply. Worker's utility U_i in a region c can be modelled as a function of the nominal wage w_c in region c , regional housing costs r_c , the extent of the availability of regional amenities A_c , and precisely those individual idiosyncratic preferences for particular locations ε_{ic} :

$$U_{ic} = w_c - r_c + A_c + \varepsilon_{ic} \quad (1)$$

A larger ε_{ic} thereby implies that a worker i is particularly attached to region c , holding constant real wage and amenities.

Hidalgo and Hernandez (2001, p. 274) define regional attachment as a positive objective bond between a worker i and region c . They differentiate between social (i.e. to the people who live in that place) and physical attachment, such as to the specific physical residential environment. In the context of rising urbanisation, place attachment may also have a more general dimension. It makes people become familiar with urban characteristics, thereby establishing individuals' need for exactly those characteristics. As a consequence, overall attachment to urban areas increases.

If we further follow Moretti (2011) and assume that there are two regions, i.e. region a and region b , and that worker i 's relative preference for region a over region b is

$$\varepsilon_{ia} - \varepsilon_{ib} \sim U[-s, s], \quad (2)$$

then the parameter s may capture the individual's importance of idiosyncratic preferences for a certain (type of) region and the degree of labour mobility. If the parameter s is large, regional preferences are important and worker willingness to move to other regions to arbitrage away real wage or amenity

differences is limited. This makes the elasticity of local labour supply a function of workers' idiosyncratic preferences for specific locations (Moretti 2011).

While recent approaches argue that location preferences may vary by skill group, we will focus on within skill group differences for rural and urban locations. If these idiosyncratic preferences exist, they may cause job offers from different types of regions to be more attractive to a certain group of workers, regardless of the city's real wages and amenities. Hence, the basic question is what types of workers appear to be sensitive to urban characteristics and are, therefore, less mobile.

3. Study Design

3.1. The Data

We collected data from two different German samples via online questionnaires in 2021 and 2022, respectively. The first sample consists of 306 students from two East German universities (University of Magdeburg and the Magdeburg-Stendal University of Applied Sciences), a sample of high-skilled individuals who are still rather flexible about their future place of work. The sample consists of students from all faculties of the institutions, ranging from engineering and natural sciences to social sciences and humanities. The survey was conducted in May and June 2021. The second sample consists of full-time employees in the age range from 30 to 45 who all possess an academic degree. The age restriction was made with regard to the job mobility probability of highly qualified persons (see also Zimmermann 1998). To ensure basic comparability to the first sample, we also restricted the sample to participants who currently live in one of the East German federal states. Participants were drawn from an online access panel in early 2022, organized by a German research company. The combination of both samples allows us to take a life-stage approach to evaluating job offers that takes into account different development and career stages and asks what is important to employees and when. Table 1 provides basic insights into the characteristics of the respondents separated by the two different samples, i.e. the university students and the university graduates.

Table 1: Descriptive statistics by sample

Variable	University students	University Graduates
Age	25.4	36.6
Gender (% woman)	51.6%	60.1%
Children	0.3%	56.5%
<i>Type of degree</i>		
Bachelor	31.0%	36.0%
Master	41.8%	22.6%
State Exam	6.5%	.
National diploma	.	35.2%
PhD	.	6.1%
<i>Origin</i>		
Urban region	57.8	77.2
Rural region	42.2	22.8
N	306	508

3.2. The Vignettes

As stated above, job attractiveness is affected not only by the firm's location but also by job characteristics and organizational features. The perpetual problem of observational data is that, first, we hardly ever have a comprehensive set of all or at least the most influencing (individual) factors. Second, we basically never observe the alternatives amongst a worker was able to choose from. By providing a series of ten hypothetical job offers, the so-called vignettes, we can empirically analyse under which circumstances participants are willing to accept a new job.

Before presenting the vignettes to our participants, we clarified that all job offers are about a permanent full-time contract within a German firm with 120 employees.^{1,2} The distance between the old and the new job is about 300km so that daily commuting is no option. The vignettes with the job offers then consisted of three parts. Gomes and Neves (2011) and the literature above show that job attractiveness is predicted by the job characteristics such as experience of responsibility, knowledge of results, and work meaningfulness, as well as organizational attributes such as suitable pay/benefits and training programs. We incorporated these insights into the first two parts of our vignettes and additionally included job security and an indicator of the working atmosphere.

The third part of the vignette is dedicated to the overall attractiveness of the location and the firm's interaction with its regional environment. We include the latter based on the following findings: Belinda et al. (2018), for example, show that philanthropic and environmental corporate social responsibility affects organizational attractiveness. Van Prooijen and Ellemers (2015) find that morality and achievements do not necessarily go together and that morality of the team or organization has a greater impact on attractiveness than perceived competence. Jones et al. (2014) analyse the organization's community involvement and show that corporate social performance works via three signals: job seekers' anticipated pride from being affiliated with the organization, perceived value fit, and expectations how the organization treats its employees. Hence, the firm's community involvement is likely to matter in participants' evaluations.

The vignettes read as follows (translated from German)³:

Your income will be **above the average [on average/ below average]** of income paid in your field of activity. You are given **extensive [little]** autonomy and personal responsibility. Your work tasks seem to have **high [limited]** meaning. You are in **regular [sporadic]** contact with your supervisors and receive feedback on your performance.

Employees consider opportunities for further training and promotion to be **very good [rather limited]**, while job security is considered to be **high [low]**. You have already met a few potential new colleagues whom you perceived as **sympathetic [rather difficult]**.

The firm is located in an **urban [rural]** area, which can be described by a **diverse [moderate]** social life and commitment of citizens. Access to health and education services is

¹ Botero (2014) already showed that firm size matters, i.e. organizations with 50 employees are seen as less attractive than organizations with 500 employees. Given that we were not interested in firm size, we fixed the number of employees to those of a typical medium sized firm in Germany.

² The whole introduction reads as follows: "In the following, we present you 10 hypothetical job offers. Applicable to all these offers: It is a permanent full-time job in an organization located in Germany. Imagine that the distance from your current home to your potentially new workplace is about 300km so that you only either have the option to move to this place or to establish a second home and commute once per week. Please try to put yourself into this situation and let us know how attractive the job offer would be for you. There are no right or wrong answers; we are simply interested in your personal opinion!"

³ In the first paragraph of the vignettes, there is one minor difference in the wording due to the fact that university students and graduates are in different life situations. The sentence for university students is as follows: "Your income will be above the average [on average/ below average] usual starting salary in your field of study."

above [on par] with the national average. The company is **regularly [rarely]** engaged in the region. For the search for suitable housing and a job for your partner you will receive the support of the company, **but this should only take a little time [could take some time]**. The nearest recreation area [metropolitan area] is **less [more] than an hour away**.

After each vignette, participants were asked to answer the following three questions:

1. Would you accept the offered job? [**definitely no, rather unlikely, maybe, rather likely, definitely yes**]

2. Independent of whether you would accept the job: Would you describe this firm as an attractive employer? [**definitely no, rather unlikely, maybe, rather likely, definitely yes**]

3. Imagine you would be willing to take the job: Would you (together with your family) change residence or would you set up a second residence and commute? [**definitely change residence, rather change residence, I am unsure, rather second home, definitely second home**]

After the ten vignettes, we asked some final socio-demographics.

The Cartesian product of all dimensions and levels yields a vignette universe with 12,288 possible combinations, where all treatments are perfectly balanced and uncorrelated. From the vignette universe, we draw a D-efficient sample of 20 choice sets of 10 vignettes each. This implies that we integrated a total of 394 vignettes using the modified Federov search algorithm to the analysis, which provides the optimal solution between a maximum zero-correlation of the dimensions (orthogonality) and maximum balanced levels (Kuhfeld et al. 1994, Atzmüller and Steiner 2010, Dülmer 2016). The choice sets were randomly assigned to the respondents, with the ten vignettes presented to them in a random order.

3.3. Data cleaning and estimation strategy

In order to include only plausible responses to our sample, we have performed the following cleaning of the data. First, we disregard all respondents for whom the total processing time of the survey was less than three minutes. Second, we exclude all respondents with no variation in response behaviour. This concerns a total of 23 cases. In addition, 60 vignettes with a viewing time of less than 5 seconds are omitted.⁴ After these quality improvement measures, we are left with a total number of 814 respondents. There are 508 respondents (5,021 vignettes assessed) in the sample of university graduates and 306 respondents (3,059 vignettes assessed) in the sample of university students.

We follow two different types of models in our estimation strategy. In the first step, we estimate a series of linear fixed effect models of the type:

$$y = X\beta + D\alpha + \varepsilon$$

While $D = [D1 D2]$ consists of two indicator matrices for individual and choice set fixed effects, X stands for the information included in the vignettes. We start with a model including only our main variable of interest, the urban-job offer dummy variable. We then stepwise include the job, firm and location specific vignette dimensions. Models 4 and 5 include the two further sets of dummy variables, i.e. individual fixed effects and choice set fixed effects. This stepwise approach helps to test whether

⁴ The results remain unchanged when we include these responses in the analysis. Increasing the minimum viewing time of the vignettes to over 10 seconds also does not change the results.

the supposed variables eliminate or reduce the initial effect of the urban job offer. Our main dependent variable (“Would you accept the offered job?”) deviates from the requirements of the general OLS model since it is rated on an ordinal five-point scale. In our robustness analysis, we therefore also use fixed effects ordered logit models to check if our results change in response to the model used. Since this is not the case, we follow Angrist and Pischke (2009) and provide our main results as ordinary least square regressions which are comparable across studies, samples and models. However, for the interpretation of results we also report the marginal effects derived from the ordered logit model in the main text. For the sake of simplicity, we only use three groups here. The answers ‘definitely no’ and ‘rather unlikely’ are grouped together, as well as “rather likely” and “definitely yes”. The category ‘maybe’ remains as it is.

4. Results

4.1. Baseline specification

Table 2 presents the results of the simple OLS model separately for the two samples under analysis. However, both the direction of the effects and their level of significance are quite robust across the samples. Starting with the job-related characteristics of the vignettes, our results show the expected signs for the coefficients. Respondents value higher wages, and punish wages below average. We also find that other job characteristics such as higher autonomy and personal responsibility, the meaningfulness of the work, a regular contact with and feedback of supervisors and the provision of career opportunities matter in a positive way. In addition to that, the indicators for job security and work climate contribute to people's perception of a job offer as more attractive. When comparing the size of the coefficients between our two samples, i.e. the university graduates and the university students, the job content, feedback and career prospects seem to be of higher relevance for university students. Even though we cannot rule out to simply observe any cohort effects, it seems reasonable that individuals have different needs dependent on the different phases of their careers, and that the need for a meaningful work, feedback and good career prospects is more pronounced for younger individuals. For regional characteristics, we find that a diverse social life and involvement of the citizens in the region, firm commitment to the region and the availability of nearby recreation areas (for urban job offers) and urban areas (for rural job offers) exert a positive effect on the willingness to take the job. No significant effects are found for the above average provision of public infrastructure with health care and educational facilities and the firm support on the local housing and labour market.

Our main variable of interest is the effect of the dummy variable for the location of the firm in an urban compared to a rural region. This variable shows a positive and significant effect across all specifications. Consequently, an urban firm location increases the probability the perceived attractiveness of a job offer in both samples. Using the fixed-effects ordered-logit specification, this means that receiving a job offer from a firm in an urban location decreases the probability of choosing one of the first two categories (definitely no, rather unlikely) by 6.4 percentage points and increases the probability of choosing one of the two highest ratings (rather likely, definitely yes) by 4.6 percentage points for the average person in the sample of university graduates, all else being equal. The results for the sample of university students are slightly more pronounced. Herein, the probability of falling into one of the first two categories decreases by 6.6 percentage points, while the probability of choosing one of the two higher categories increases by 5.4 percentage points. From a comparative perspective, an urban location therefore has roughly the same effect size as changes in job characteristics such as feedback culture and job security in the job advertisements.⁵

⁵ The full results of the (fixed effects) ordered logit specification can be found in the Appendix in table A.2.

Dependent variable = Take Job (Scale 1-5)	Sample of University Graduates					Sample of University Students				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Urban Job	0.0782** (0.0317)	0.0845*** (0.0276)	0.0836*** (0.0276)	0.0807*** (0.0291)	0.0807*** (0.0277)	0.148*** (0.0435)	0.117*** (0.0380)	0.116*** (0.0381)	0.115*** (0.0402)	0.115*** (0.0383)
Income - low		-0.458*** (0.0345)	-0.461*** (0.0347)	-0.460*** (0.0356)	-0.460*** (0.0339)		-0.619*** (0.0397)	-0.611*** (0.0397)	-0.611*** (0.0419)	-0.611*** (0.0400)
Income - high		0.380*** (0.0379)	0.379*** (0.0378)	0.381*** (0.0389)	0.381*** (0.0370)		0.392*** (0.0425)	0.393*** (0.0420)	0.396*** (0.0438)	0.396*** (0.0418)
Autonomy		0.297*** (0.0286)	0.301*** (0.0286)	0.303*** (0.0297)	0.303*** (0.0283)		0.394*** (0.0347)	0.400*** (0.0346)	0.403*** (0.0356)	0.403*** (0.0340)
Content		0.169*** (0.0292)	0.169*** (0.0292)	0.161*** (0.0300)	0.161*** (0.0285)		0.463*** (0.0346)	0.469*** (0.0345)	0.474*** (0.0366)	0.474*** (0.0349)
Feedback		0.0453* (0.0231)	0.0467*** (0.0229)	0.0523*** (0.0231)	0.0523*** (0.0220)		0.150*** (0.0283)	0.157*** (0.0288)	0.155*** (0.0306)	0.155*** (0.0292)
Career Prospects		0.202*** (0.0262)	0.210*** (0.0260)	0.200*** (0.0267)	0.200*** (0.0254)		0.415*** (0.0381)	0.428*** (0.0377)	0.426*** (0.0398)	0.426*** (0.0380)
Co-Worker		0.425*** (0.0310)	0.429*** (0.0310)	0.433*** (0.0320)	0.433*** (0.0305)		0.578*** (0.0372)	0.582*** (0.0372)	0.588*** (0.0392)	0.588*** (0.0374)
Job Security		0.0955*** (0.0255)	0.0961*** (0.0256)	0.0931*** (0.0263)	0.0931*** (0.0250)		0.0672*** (0.0320)	0.0721*** (0.0319)	0.0737*** (0.0335)	0.0737*** (0.0319)
Social Life			0.0511* (0.0264)	0.0465* (0.0270)	0.0465* (0.0257)			0.139*** (0.0321)	0.135*** (0.0341)	0.135*** (0.0325)
Public Infrastructure			-0.0254 (0.0250)	-0.0288 (0.0247)	-0.0288 (0.0235)			-0.0245 (0.0306)	-0.0271 (0.0317)	-0.0271 (0.0303)
Firm Commitment			0.0504*** (0.0248)	0.0526*** (0.0247)	0.0526*** (0.0235)			0.0838*** (0.0312)	0.0792*** (0.0325)	0.0792*** (0.0310)
Housing			0.00842 (0.0249)	0.00599 (0.0256)	0.00599 (0.0243)			-0.00493 (0.0311)	-0.00821 (0.0325)	-0.00821 (0.0310)
Connectivity			0.0780*** (0.0253)	0.0809*** (0.0254)	0.0809*** (0.0242)			0.151*** (0.0326)	0.145*** (0.0344)	0.145*** (0.0328)
Constant	2.499*** (0.0331)	1.983*** (0.0502)	1.900*** (0.0558)	1.908*** (0.0486)	1.908*** (0.0462)	2.599*** (0.0366)	1.776*** (0.0559)	1.592*** (0.0610)	1.596*** (0.0571)	1.596*** (0.0545)
Observations	5,021	5,021	5,021	5,021	5,021	3,059	3,059	3,059	3,059	3,059
R-squared	0.001	0.164	0.166	0.490	0.490	0.004	0.314	0.323	0.514	0.514
Individual FE	No	No	No	Yes	Yes	No	No	No	Yes	Yes
Choice Set FE	No	No	No	No	Yes	No	No	No	No	Yes

Source: OLS model of the willingness to take a job. Stars indicate significance: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the individual level and reported in parentheses.

Table 2: Jobs and the City – Main Results

In the next step, we analyse the effects of the regional characteristics described in the job offer in more detail. For this purpose, we define a new indicator of regional attractiveness. This is a dummy variable that takes the value one if all three predefined regional characteristics (social life and commitment of citizens, access to health and education services and connectivity) are positively described in the vignette. The reference group thus consists of job offers with regional characteristics that have certain deficits. This variable is then interacted with the dummy for the urban job offer. In this way, it is possible to determine whether the respondents' preference for a job in the urban area changes as a function of the attractiveness of the region. Table 3 shows the results for this approach. Both aspects, a high regional attractiveness and an urban location, exert a positive effect on the probability of accepting a job offer. However, the effect of the interaction of the two variables is not significant. This means that there is no additional effect of more attractive urban regions, rather urban attributes per se exert a positive influence on the willingness to take a job.

Table 3: Jobs and the City – Regional attractiveness

Dependent variable = Take Job (Scale 1-5)	Sample of University graduates		Sample of University students	
Urban Job	0.0811*** (0.0277)	0.0820*** (0.0288)	0.113*** (0.0384)	0.117*** (0.0408)
Regional Attractiveness	0.0906** (0.0401)	0.0942* (0.0564)	0.148*** (0.0464)	0.166** (0.0718)
Urban Job # Regional Attractiveness		-0.00732 (0.0841)		-0.0365 (0.0991)
Constant	1.948*** (0.0415)	1.948*** (0.0418)	1.715*** (0.0501)	1.714*** (0.0502)
Observations	5,021	5,021	3,059	3,059
R-squared	0.489	0.489	0.508	0.508
Individual FE	Yes	Yes	Yes	Yes
Choice Set FE	Yes	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes	Yes

Source: OLS model of the willingness to take a job. Stars indicate significance: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the individual level and reported in parentheses.

4.2. Heterogeneity of rural-urban preferences by individual characteristics

The initial findings now lead to the question of what drivers or heterogeneities exist in the results. To address this issue, we use the extensive information on personal characteristics such as age, gender and parental as well as partnership status of the respondents. Table 4 present the OLS estimates for the analogous estimation of coefficients as in the analysis before. With respect to our main variable of interest, we find that for almost all subgroups the effect of urban jobs persists. For different age groups (i.e. below and above median) as well as by gender, we do not observe major differences for the effects of an urban job offers, while other control variables vary in the effect size and significance level (see Appendix A.2).

However, differences by individual characteristics occur for the groups of parents and with respect to the partnership status of the respondents. Using micro data covering the entire Swedish population, Bjerke and Mellander (2017) have analysed locational choices of Swedish university graduates focusing on the urban-rural divide. They find that the clear majority chose to move or stay in an urban area but having a family is a strong predictor of returning home for individuals from both urban and rural areas. We add to this discussion by demonstrating that we find no effect of an urban job offer on the probability of acceptance for university graduates with children, which is in line with the expectation that parenthood negatively affects the attractiveness to work in an urban environment. For academics without children, urban job offers rise the probability of acceptance by 5.7% points, and lower the probability of rejection by 8.1% points. In addition to that, almost all regional variables loose significance for respondents with kids while the job- and firm-related variables remain of almost similar size and significance.

Rural-urban job references also vary by partnership status. Mobility costs as well as job preferences are likely to differ for singles and couples. In the case of a partnership, individuals must take into account that not all household members necessarily benefit individually from the move or may have different (regional) preferences. Moreover, if both partners are employed, couples face the "tied mover problem" (Mincer 1978, Abraham et al. 2019). Our results point out that there are significant differences in location preferences between university graduates with partners and those without. Singles from both groups show a strong preference for job offers from firms in urban regions. For university students, the probability of choosing one of the first two categories (definitely no, rather unlikely) decreases by -12.1% points, and is rising for one of the two highest ratings (rather likely, definitely yes) by 10.4% points, all else being equal. The same holds for university graduates. Here the effect is slightly smaller with changes of -11.5% points (answers definitely no, rather unlikely) and +7.9% points (answers rather likely, definitely yes).

Table 4: Jobs and the City – Sample splits by personal characteristics

Dependent variable = Take Job (Scale 1-5)	Parenthood		Partnership status			
	University graduates		University Students		University graduates	
	w/o kids	with kids	Singles	Partner	Singles	Partner
Urban Job	0.116*** (0.0439)	0.0547 (0.0356)	0.181*** (0.0592)	0.0699 (0.0508)	0.170*** (0.0605)	0.0546* (0.0313)
Observations	2,217	2,774	1,229	1,830	1,040	3,981
R-squared	0.470	0.515	0.518	0.513	0.516	0.486
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Choice Set FE	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes

Source: OLS model of the willingness to take a job. Stars indicate significance: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the individual level and reported in parentheses.

4.3. Preferences by rural-urban origin

As stated above, there is also a reason to believe that regional attachment might play an important role for explaining differences in individuals' preferences for rural or urban job offers. We focus on the role of origin and, hence, rootedness in cities as moderator variable. A number of studies on job preferences of health workers finds that growing up in a rural area is also associated with a higher likelihood of practicing in rural areas (Matsumoto et al. 2005, Dolea et al. 2010, Kolstad 2011). We address this question more generally, as the respondents in both samples do not necessarily have to have a background in the health sector, but have studied a wide range of different subjects. In order to carry out this step, we asked the respondents for the number of inhabitants of the place where they grew up and split the sample into two groups in accordance with the federal definition of rural and urban regions for Germany (BBSR 2022). Here, municipalities with less than 5,000 inhabitants are defined as rural municipalities. Table 5 presents the results, which point in a clear direction.

The effect of an urban job offer is only evident among individuals who grew up in cities. They have a strong preference for urban areas. In contrast, people who grew up in rural areas do not show any differences between job offers from urban and rural areas. The results are robust across both samples under analysis and more pronounced for university students originating from urban regions. For this group we find that the probability of rejecting the job offer (definitely no, rather unlikely) rises to 11.1% points while the probability of acceptance increases by 9.2% points. The effects for university graduates range from -7.0% points for the rejecting categories to +5.1% points for positive evaluations of the job offers. Another distinguishing feature between respondents with rural and urban origins is the importance of the firm commitment to the region. This firm characteristic seems to be of particular importance for people grown up in rural regions, whereas respondents with urban origins do not show significant interest in this point.

Therefore, individuals who grew up in urban regions also seem to have developed specific idiosyncratic preferences for urban regions and urban characteristics. They have to be compensated by other job characteristics in order to find job offers from rural areas attractive. This increases the costs for firms in rural areas if they want to attract this group of high skilled individuals. The acquisition of highly qualified personnel is therefore easier if they come from rural areas, or if they are characterised by features that fit the characteristics of rural areas.

Table 5: Jobs and the City - by rural/urban origin

Dependent variable = Take Job (Scale 1-5)	University students with rural origin	University students with urban origin	University graduates with rural origin	University graduates with urban origin
Urban Job	0.0332 (0.0599)	0.172*** (0.0493)	0.0338 (0.0599)	0.0948*** (0.0311)
Observations	1,290	1,769	1,157	3,864
R-squared	0.516	0.517	0.494	0.491
Individual FE	Yes	Yes	Yes	Yes
Choice Set FE	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes

Source: OLS model of the willingness to take a job. Stars indicate significance: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the individual level and reported in parentheses.

4.4. Preferences to move for the new job

In the last section, we extend our results by asking whether the migration decision when accepting a job offer is also subject to a rural-urban bias. In recent decades, more complex solutions such as second residences have emerged in the wake of labour market mobility. Petzold (2020), for example, examines decision-making regarding migration, commuting, and the establishment of a second residence likewise by means of a factorial survey experiment using a sample of academic staff at a Swiss university (ETH Zurich) to investigate the intended types of residential mobility and their drivers. The analyses show that a second home can be understood as a substitute for unilateral moves and daily commuting, but primarily under conditions of extremely high or irreversible migration costs and unsustainable transition costs. We now consider how our location differences in terms of urban and rural job-offers are valued in this context.

In the experiment, we requested respondents to imagine they would be willing to take the job. Under this premise, they were asked: “Would you change residence or would you set up a second residence and commute?” The results of the coefficient of the urban job offers are shown in Table 6. Here, we have categorized the answers “definitely change residence” and “rather change residence” as one, and “unsure” as well as “rather second home” and “definitely second home” as the second category. Results are obtained by using a linear probability model with individual and choice set fixed effects described above. Again, for urban job offers, respondents prefer to move to the region rather than choosing alternative options but this effect is more pronounced for university students compared to university graduates. Similar to the results above, an individual’s origin matters; graduates with a rural origin even seem to want to avoid moving into cities and rather prefer to set up a second home there. With respect to partnership status, the results are slightly different to before. Even though individuals with a partner were less attracted by urban jobs, they have a (slight) preference for moving there in case of accepting an urban job offer.

Table 6: Jobs and the City – Migration preferences overall, and by rural/urban origin

Commute and Don't know (0) or Move (1)	University students	University graduates	Students with rural origin	Graduates with rural origin	Students with urban origin	Graduates with urban origin	Students - single	Graduates - single	Students - with partner	Graduates with partner
Urban Job	0.073*** (0.0219)	0.029** (0.0125)	0.010 (0.0334)	-0.047* (0.0274)	0.118*** (0.0284)	0.052*** (0.0139)	0.086** (0.0378)	0.044 (0.0308)	0.0627** (0.0267)	0.024* (0.0133)
Observations	3,059	5,021	1,290	1,157	1,769	3,864	1,229	1,040	1,830	3,981
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Choice Set FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Linear probability model of the willingness to move for the job. Stars indicate significance: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the individual level and reported in parentheses.

5. Conclusions

Moretti (2011) theoretically argues that local labour supply elasticities are constrained by workers’ idiosyncratic preferences for certain locations. Increasing urbanisation now raises the question of whether workers’ preferences depend not only on physical and social ties to a particular region, as suggested by Hidalgo and Hernandez (2001), but whether workers in general develop stronger attachments to urban areas. While there is a rich literature confirming an urban wage premium that might attract workers to cities, it remains unclear whether a firm’s location by itself —all else being equal— affects workers’ perceived attractiveness of job offers. By collecting survey data from a total of 814 university students and graduates and applying the so-called vignette method, our study fills exactly this gap.

The study by Arntz et al. (2022) is closest to ours; they find that workers are willing to give up a significant portion of their wages for better urban amenities. Our results, however, show that rural job offers even when combined with a high regional attractiveness (i.e. social life and commitment of citizens, access to health and education services and connectivity) are perceived as less attractive than job offers from urban firms. Another finding, which is worth highlighting, is the observed heterogeneity with regard to individuals' origin. Whereas there is a very strong preference for urban jobs among those individuals who were also born and raised in an urban area, there is no such effect for individuals with a rural origin.

Besides filling a gap in the scientific literature, our results have important implications for practice. First, given that urban preferences are driven by individuals who have been raised in urban areas, the likelihood that highly qualified people move to rural areas will continue to decline. At the same time, it will become more difficult for companies in rural areas to recruit highly qualified staff —with severe consequence on firm innovativeness in the medium and long run. Hence, one policy implication is to increase the support of firms in rural areas in their efforts to attract skilled labour.

Second, our results are in line with those obtained from certain types of occupations (e.g. health workers), who are more likely to practice in rural areas when having a rural background (Dolea et al. 2010). Importantly, in their literature review Dolea et al. (2010) also find that clinical rotations including rural settings may influence students' subsequent decision to work in underserved areas. Hence, rural firms might increase their recruiting successes if they establish a link to the universities and regularly offer internships to students in order to foster place attachment to rural areas. While going to a rural area for an internship with a limited time frame might not present a major hurdle for students, such a stay could reduce prejudices towards these types of location —similar to reducing prejudices e.g. between different ethnicities via intergroup contact, as suggested by Allport's (1954) contact hypothesis (see also the review by Pettigrew and Tropp 2006).

Third, Prenzel and Iammarino (2021) find that in more rural regions, vocational training maintains and even expands its important role in shaping the human capital composition. If an appropriate payment is offered, a vocational training might become more attractive than graduating from the university after graduation from school, which requires several years without any pay. Then, firms could financially support their vocational training graduates in completing a university degree as a next step. Pilz (2009) shows that after a training is completed, loyalty towards the employer is high, and turnover low, so that it seems conceivable that those individuals are also likely to stay even if the firm is located in a rural area and after graduating from university.

Finally, our results show obvious differences in the preference for rural areas within the group of highly qualified individuals. Accordingly, these can serve as indications for target group-specific policy measures. Families and the group of potential returnees are particularly attractive. While other groups of highly qualified individuals expect direct compensation for the disadvantages of the location, these groups can be explicitly addressed with the strengths of rural areas and firms' commitment to the region.

Whether the previously raised suggestions can actually affect high-skilled workers' preferences to come to or stay with a rural firm is certainly a question for future research, but based on our results and combined with previous evidence, it might be worth to give it a try. With regard to future research, it would also be interesting to relax the binary assumption of being either located in an urban or rural area. Based on qualitative interviews, for example, Mayer et al. (2016) argue that rural entrepreneurs with rural–urban linkages develop sensibility for core market demands and trends, they value rural assets, and they combine rural and urban sources of knowledge for innovation and, hence, might constitute an opposite force to polarizing concentration of economic activities in cities. Similar to more complex living models (e.g. establishing a second home), more complex models of work, such as spending a few days in urban coworking spaces with workers from urban partner firms, might satisfy individuals' needs for

urban characteristics and therewith positively affect their willingness to accept job offers from rural firms. Investigating this question was beyond the scope of this paper since, in a first step, it was important to explore whether individuals have idiosyncratic preferences for a specific *type of region*, which we show quite clearly with our results.

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Appendix

Table A.1: Jobs and the City – Main Results with Ordered Logit Estimation

Dependent variable = Take Job (Scale 1-5)	Sample of University Graduates				Sample of University Students			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Urban Job	0.116 (0.049)**	0.122 (0.048)**	0.122 (0.048)**	0.209 (0.063)**	0.234 (0.068)**	0.249 (0.076)**	0.247 (0.076)**	0.290 (0.093)**
Income - low		-0.836 (0.065)**	-0.842 (0.066)**	-1.106 (0.085)**		-1.212 (0.081)**	-1.213 (0.082)**	-1.432 (0.109)**
Income - high		0.635 (0.064)**	0.634 (0.064)**	0.840 (0.083)**		0.734 (0.082)**	0.738 (0.081)**	0.912 (0.097)**
Autonomy		0.532 (0.051)**	0.539 (0.051)**	0.713 (0.068)**		0.787 (0.071)**	0.808 (0.072)**	0.926 (0.087)**
Content		0.303 (0.051)**	0.304 (0.051)**	0.386 (0.069)**		0.901 (0.070)**	0.925 (0.071)**	1.129 (0.090)**
Feedback		0.081 (0.040)**	0.085 (0.040)**	0.137 (0.051)**		0.298 (0.057)**	0.312 (0.059)**	0.372 (0.072)**
Career Prospects		0.368 (0.046)**	0.378 (0.045)**	0.465 (0.060)**		0.826 (0.076)**	0.852 (0.076)**	1.020 (0.095)**
Co-Worker		0.748 (0.057)**	0.758 (0.057)**	1.028 (0.076)**		1.107 (0.076)**	1.127 (0.077)**	1.418 (0.100)**
Job Security		0.161 (0.043)**	0.163 (0.043)**	0.231 (0.059)**		0.152 (0.064)**	0.168 (0.064)**	0.196 (0.078)**
Social Life			0.068 (0.045)	0.120 (0.060)**			0.282 (0.063)**	0.297 (0.078)**
Public Infrastructure			-0.044 (0.043)	-0.073 (0.056)			-0.028 (0.060)	-0.048 (0.074)
Firm Commitment			0.084 (0.043)*	0.147 (0.055)**			0.176 (0.062)**	0.173 (0.073)**
Housing			0.021 (0.043)	0.022 (0.058)			0.008 (0.061)	-0.007 (0.073)
Connectivity			0.138 (0.044)**	0.192 (0.058)**			0.295 (0.065)**	0.328 (0.078)**
Observations	5021	5021	5021	5019	3059	3059	3059	3059
Pseudo R-squared	0.0004	0.0622	0.0630	0.2125	0.0014	0.1259	0.1306	0.3364
Choice Set FE	No	No	No	Yes	No	No	No	Yes

Source: Ordered Logit models (1-3) or fixed effects ordered Logit models (4) of the willingness to take a job. Stars indicate significance: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the individual level and reported in parentheses.

Table A.2: Jobs and the City – Sample splits by personal characteristics

Dependent variable = Take Job (Scale 1-5)	Median age				Gender			
	University graduates		Students		University graduates		Students	
	Age<37	Age>=37	Age<25	Age>=25	Male	Female	Male	Female
Urban Job	0.0909** (0.0388)	0.0686* (0.0397)	0.100* (0.0558)	0.127** (0.0536)	0.0865** (0.0432)	0.0800** (0.0364)	0.121** (0.0512)	0.107* (0.0572)
Income - medium	-0.463*** (0.0453)	-0.460*** (0.0511)	-0.565*** (0.0613)	-0.656*** (0.0520)	-0.411*** (0.0570)	-0.494*** (0.0423)	-0.672*** (0.0566)	-0.542*** (0.0565)
Income - high	0.363*** (0.0520)	0.397*** (0.0534)	0.370*** (0.0599)	0.422*** (0.0576)	0.304*** (0.0582)	0.433*** (0.0478)	0.462*** (0.0626)	0.353*** (0.0545)
Autonomy	0.304*** (0.0394)	0.307*** (0.0411)	0.376*** (0.0519)	0.431*** (0.0452)	0.216*** (0.0473)	0.361*** (0.0349)	0.357*** (0.0467)	0.444*** (0.0491)
Content	0.192*** (0.0395)	0.130*** (0.0416)	0.477*** (0.0516)	0.472*** (0.0485)	0.0943** (0.0454)	0.203*** (0.0364)	0.439*** (0.0464)	0.491*** (0.0516)
Feedback	0.0685** (0.0299)	0.0352 (0.0327)	0.158*** (0.0438)	0.157*** (0.0402)	0.0793** (0.0364)	0.0315 (0.0276)	0.0819** (0.0377)	0.214*** (0.0435)
Career Prospects	0.208*** (0.0357)	0.189*** (0.0365)	0.387*** (0.0567)	0.462*** (0.0517)	0.200*** (0.0414)	0.202*** (0.0322)	0.440*** (0.0566)	0.413*** (0.0520)
Co-Worker	0.498*** (0.0436)	0.364*** (0.0426)	0.620*** (0.0554)	0.556*** (0.0520)	0.346*** (0.0466)	0.490*** (0.0401)	0.485*** (0.0513)	0.682*** (0.0540)
Job Security	0.0695** (0.0328)	0.119*** (0.0384)	0.104** (0.0470)	0.0399 (0.0441)	0.0653* (0.0394)	0.104*** (0.0318)	0.0380 (0.0468)	0.113** (0.0442)
Social Life	0.0880** (0.0372)	0.00257 (0.0357)	0.121** (0.0471)	0.153*** (0.0456)	0.0216 (0.0437)	0.0588* (0.0312)	0.154*** (0.0453)	0.122*** (0.0467)
Public Infrastructure	-0.0194 (0.0334)	-0.0413 (0.0336)	-0.0127 (0.0416)	-0.0450 (0.0453)	-0.0155 (0.0390)	-0.0422 (0.0298)	0.0133 (0.0441)	-0.0568 (0.0429)
Firm Commitment	0.0557* (0.0335)	0.0522 (0.0334)	0.104** (0.0471)	0.0570 (0.0418)	0.0696* (0.0393)	0.0375 (0.0291)	0.0794* (0.0434)	0.0701 (0.0446)
Housing	-0.0114 (0.0349)	0.0230 (0.0342)	-0.0600 (0.0467)	0.0414 (0.0417)	0.00924 (0.0430)	0.00485 (0.0291)	-0.0107 (0.0426)	-0.0270 (0.0446)
Connectivity	0.111*** (0.0336)	0.0516 (0.0346)	0.124** (0.0484)	0.168*** (0.0459)	0.0686* (0.0408)	0.0885*** (0.0304)	0.165*** (0.0486)	0.116** (0.0454)
Constant	1.866*** (0.0608)	1.950*** (0.0704)	1.638*** (0.0808)	1.554*** (0.0743)	2.118*** (0.0779)	1.776*** (0.0574)	1.734*** (0.0759)	1.478*** (0.0785)
Observations	2,579	2,442	1,529	1,530	1,991	3,022	1,460	1,579
R-squared	0.499	0.484	0.493	0.538	0.485	0.498	0.545	0.494
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Choice Set FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: OLS model of the willingness to take a job. Stars indicate significance: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the individual level and reported in parentheses.

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