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Local Employer Competition and Training of Workers

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ABSTRACT

Local Employer Competition and Training of Workers*

The new training literature suggests that in a monopsonistic market employers will not only pay for firm-specific training but also for general training if the risk of poaching is limited. This implies that training participation should decrease when competition for employees is higher among firms. Using worker level data for Germany we find that the hypothesis is supported empirically. Specifically, we find that employees are significantly less likely to participate in training if the density of firms in a sector is higher within the local labor market.

JEL Classification: I24, J24, J42

Keywords: training, local labor markets, monopsony

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1. Introduction

Germany is a country where natural resources have become increasingly scarce and where the service sector contributes nearly 70% to the gross domestic product (Statistisches Bundesamt, 2013). In such a setting flexible human capital that can adjust to new trends and technology is crucial. Hence, to ensure the country's competitiveness encouraging lifelong learning is vital and on-the-job training plays an important role in keeping the workforce qualified for the labor market. Though, unlike formal school, vocational, and university education the government only has limited means to influence on-the-job training since the market is managed primarily by private agents. Recent literature therefore explores different factors that determine training incidence.

Constituting the traditional view of human capital theory on training, Becker (1993) argues that employees reap the benefits of general training and consequently should fund it themselves. In recent years, the "New Training Literature" has challenged this traditional view (see among others Acemoglu and Pischke, 1998; Acemoglu and Pischke, 1999; and Bassanini et al., 2005). For example, Acemoglu and Pischke (1999) suggest that in monopsonistic labor markets employers will not only pay for firm-specific training but also for general training. They argue that in imperfect labor markets, firms benefit at least to some extent from general training and hence they are inclined to finance at least part of it. There are different causes that bring about monopsony power of employers: For one thing, employees are mobility constrained. For another, firms can differentiate themselves from others in the sector. These factors provide firms with wage setting power, and hence they set the wage structure such that they recover the costs of investments. This means they pay wages that are lower than the marginal product.

Generally it is difficult to empirically determine the degree of monopsonistic or oligopolistic power directly or indirectly through measures for wage compression, constraint mobility, or the risk of poaching; therefore, the literature discusses several proxies (e.g. Boal and Ransom, 1997). For example, the number of (same sector) firms in a region is a classical measure that approximates the degree of monopsony power a firm can exert. This measure is related to monopsony models of classic differentiation and of moving costs, since this concentration measure approximates the physical distance between firms (cf. Boal and Ransom, 1997 and Manning, 2003). The rationale behind this is that employers in denser economic areas, i.e. with more firms in their sector, have less monopsony power over their employees since there are many job alternatives. In such a setting firms need to pay wages at or very close to the marginal product to prevent employees from moving to the firm next door. Building upon the literature, we hypothesize that in regions with a higher number of same sector firms the monopsonistic influence of each firm decreases and therefore, the incidence of firm-financed training will be lower. This is our primary hypothesis.

Recent empirical studies on European countries investigate this hypothesis from various angles. Given a regional industrial structure, Muehlemann and Wolter (2007) examine how a firm's decision to train is affected by the likelihood of trained workers quitting after the completion of vocational training. They detect a negative impact of the number of same sector firms within a region on the provision of training. Muehlemann and Wolter (2011) explore the effect of regional firm density on the extensive and intensive margin of apprentice demand. They find that only firms that bear net costs of training are negatively affected by the number of same sector firms in their region; the others face a near to zero demand elasticity for apprentices with respect to regional firm density.

Brunello and Gambarotto (2007) and Brunello and de Paola (2008) study how and through what channels regional economic density, measured as the number of employees per square kilometer, affects the training incidence of the individual. They highlight that economic density has two opposite effects on a firm's motivation to finance training. For one thing, economically dense labor markets provide incentives to train since this makes it easier to use positive knowledge spillovers present in the region; however, high economic density also discourages training due to the proximity of competitors that can easily poach highly qualified staff. Their empirical results suggest that the latter effect dominates, since for both the UK and Italy they find an overall negative sign for this correlation (Brunello and Gambarotto, 2007; Brunello and de Paola, 2008).

In this paper we investigate how the number of same sector firms in a region affects training incidence of employees to test our hypothesis. With this we fill a research gap by examining individual training incidence using variation of firm density across regions and sectors, since, to our knowledge, most literature either takes a firm-level perspective or does not differentiate between sector-specific measures of local firm density. Moreover, we study heterogeneous effects by employee characteristics, such as gender, levels of education, migration background, age, and tenure, as well as by regional and sectoral aspects.

2. Data and Research Methods

a) Data

We rely on two sources of data. First, we use the 2009/10 wave of the adult cohort of the National Education Panel Survey (NEPS, Start Cohort 6). NEPS is a panel study on educational, occupational, and family formation processes (Blossfeld et al., 2011). The adult cohort covers detailed life course information from birth to adult life for more than 11,000 individuals born between 1944 and 1986. For the analysis we focus on individuals that are working as employees at the time of interview, i.e. we exclude self-employed, unemployed, and retirees among others. Furthermore, we exclude from the sample those employees that participate in public programs such as job creation schemes (e.g.

"Arbeitsbeschaffungsmaßnahmen" or "1-Euro-Jobs"), or are in apprenticeship, since we are interested in on-the-job training in regular jobs. Employees from the public sector and civil servants are excluded as well since the public sector does not necessarily follow a profit maximizing strategy when deciding about investments. This leaves us with a final, cross-sectional sample of almost 5,000 individuals employed in the private sector.[1]

Our main dependent variable is a training dummy, which indicates whether an individual has participated in training with a professional interest at least once during the previous 12 months. This variable captures any formal and non-formal training like seminars or training courses that occurred while the individual was employed and provides a measure of training incidence. Around 33% of individuals in our sample participated in at least one such training during the last 12 months (see Table 1). For a subsample of courses we know who financed the training and find that 91% of individuals with training participated in employer-financed courses, which is in line with stylized facts presented in Bassanini et al. (2005). This implies that our outcome variable is a good approximation of incidence of firm-financed training.

Table 1 also provides summary statistics on background characteristics of the individuals in our sample. Individuals are on average 44 years old and have almost 10 years of tenure. 44% are women, and 13% have children below age 6 living in the household. One out of nine individuals has a migration background, i.e. was not born in Germany. The majority of individuals is well educated: two thirds completed vocational education and another 16% has a university or college degree. Almost three out of 10 individuals are working part-time and more than one out of six has a fixed-term contract.

[1] Out of the entire sample (11,649 individuals) we exclude 2,518 individuals because they are doing an apprenticeship or are not working at the time of interview, 1,139 individuals who are self-employed, 33 individuals who are in a job creation scheme, 2,398 individuals who are civil servants or employed in the public sector, 488 individuals for whom information on region or sector are missing, and 144 individuals for whom information on training participation is missing.

Table 1 – Descriptive statistics

	mean	sd	min	max
At least one course with prof interest	0.3276	0.4694	0	1
# firms in same sector and local labor market per sq km	1.0978	1.1474	0	9
Female	0.4383	0.4962	0	1
Born abroad	0.1170	0.3214	0	1
Age	44.1367	10.3568	23	67
No vocational education	0.1326	0.3392	0	1
Vocational education	0.6932	0.4612	0	1
University degree	0.1635	0.3698	0	1
Missing information on education	0.0107	0.1028	0	1
Household has child(ren) below 6 years	0.1271	0.3331	0	1
Job Tenure in Years	9.8584	9.4850	0	45
Part-time worker	0.2818	0.4499	0	1
Missings in part-time dummy	0.0005	0.0231	0	1
Fixed-term contract	0.1736	0.3788	0	1
Missings in fixed-term dummy	0.0201	0.1404	0	1
Firm with between 1 and 10 employees	0.1975	0.3981	0	1
Firm with between 10 and 50 employees	0.3206	0.4667	0	1
Firm with between 50 and 250 employees	0.3709	0.4831	0	1
Firm with more than 250 employees	0.0941	0.2920	0	1
Firm size missing	0.0169	0.1290	0	1
Change in llm between first and current region	0.6912	0.4620	0	1
Occupations				
Managers	0.0424	0.2015	0	1
Professionals	0.1560	0.3629	0	1
Technicians and associate professionals	0.1829	0.3866	0	1
Clerical support workers	0.1504	0.3575	0	1
Service and sales workers	0.1276	0.3336	0	1
Agricultural, foresty, and fishery workers	0.0114	0.1063	0	1
Craft and related trades workers	0.1834	0.3870	0	1
Plant and machine operators, and assemblers	0.0610	0.2393	0	1
Elementary occupations	0.0811	0.2731	0	1
Sectors				
Agriculture (A)	0.0136	0.1158	0	1
Electricity, water, waste, mining (B, D, E)	0.0169	0.1290	0	1
Manufacturing (C)	0.3589	0.4797	0	1
Construction (F)	0.0719	0.2583	0	1
Sale and retail trade (G)	0.1316	0.3381	0	1
Transporting and storage (H)	0.0423	0.2014	0	1
Accommodation and food service activities (I)	0.0234	0.1513	0	1
Information and communication (J)	0.0479	0.2136	0	1
Financial and insurance activities (K)	0.0444	0.2060	0	1
Profess., technical, admin. and support service activities, real estate (L, M, N)	0.0912	0.2879	0	1
Education (P)	0.0175	0.1312	0	1
Human health and social work (Q)	0.0854	0.2796	0	1
Arts, entertainment, recreation, act. of households, other services (R, S, T)	0.0550	0.2279	0	1
Observations	4929			

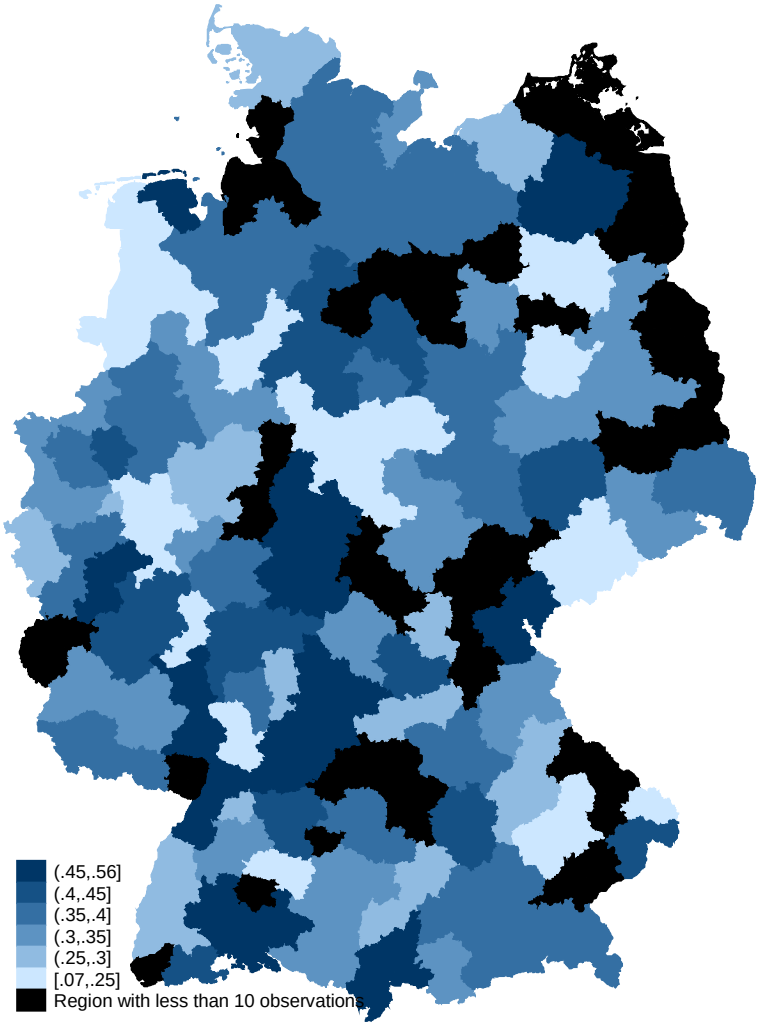
Notes: NEPS Starting Cohort 6. Sample restricted to private sector employees.

The second source of data comes from administrative social security records collected at the federal employment agency. For each region and sector we have information on the number of firms that have at least one employee covered by the social security system (Statistik der Bundesagentur für Arbeit 2013). These data we use to construct our main explanatory variable. Sectors are categorized by NACE and partly aggregated. Overall we distinguish between 14 sectors. Regions are defined by local labor markets as suggested by Kosfeld and Werner (2012). The advantage of using these local labor markets is that they do not exclusively rely on administrative borders; rather these areas are characterized by close commuter links which ensures high seclusion towards other local labor markets. Overall Kosfeld and Werner (2012) distinguish between 141 local labor markets. For the individuals in our sample these local labor markets are the region in which most job changes take place,[2] hence it is the relevant region for employment competition. We merge this information to the NEPS data based on region of work place and sector of current employment of individuals. Following Muehlemann and Wolter (2011), Brunello and de Poala (2008), and Brunello and Gambarotto (2007) we standardize the number of firms per sector and region by dividing by the size of the local labor market in square kilometer. This provides an intuitive density measure. As shown in table 1 the average number of same sector firms in the region is 1.1 per square kilometer in our NEPS sample.

Combing the two sources of data, we find that rates of participation in professional training vary considerably between regions. As documented in figure 1, participation rates vary from 7% to 56% across local labor markets. These differences are only partly due to differences in sector affiliation; for example, when restricting the sample to only individuals in the manufacturing sector, we still find that training participation rates between local labor markets (with more than 10 interviewees) range from 0% to 59%. This leaves sufficient variation we can exploit to test our hypothesis.

[2] Examining the employment trajectories covered in NEPS, we find that approximately 72% of all job-to-job changes of workers take place between employers located in the same local labor market and only a small share of job-to-job changes take place across the borders of local labor markets. This suggests that workers are not very mobile between regions and that most competition for workers takes place within these regions.

Figure 1 – Training incidence by local labor market



Notes: This graph displays the average individual training incidence for each of the 141 local labor markets. Only for this graph we have restricted the sample of local labor markets to those that have more than 10 interviewees. Source: NEPS Starting Cohort 6.

b) Empirical Strategy

Our estimation equation reads:

$$training_{ijk} = \beta_0 + \beta_1 firm\ density_{jk} + \boldsymbol{X_i'}\beta_2 + \boldsymbol{S_i'}\beta_3 + \boldsymbol{R_i'}\beta_4 + \varepsilon_{ijk}$$

where *training* is a dummy variable indicating training participation of individual *i* in region *j* and sector *k* in the last 12 months; *firm density* indicates the number of firms in region j and sector k divided by the size of the region in square kilometers, and vector **X** includes a number of other control variables at the individual level such as gender, age, educational attainment, migration background, occupation, children under the age of six, job tenure, type of labor contract, and size of firm. Vectors **S** and **R** control for differences between sectors and regions, respectively, and ε_{ijk}

captures the remaining estimation error. We estimate the equation using a linear probability model[3] and account for clustering at the sector-region level.

3. Results

3.1. Main specification

Table 2 (in the appendix) summarizes the results of our main specification. All control variables have an intuitive sign corresponding to stylized facts presented in Bassanini et al. (2005) and most are significant. For instance, individuals with university degree, or working for a larger firm have a much higher and individuals with a part-time contract a much lower chance of attending training. For age we observe an inverse U-shaped relationship. Both the size and significance level of all control variables hardly change across our different specifications.

Our main explanatory variable, i.e. the number of same sector firms in a local labor market, is highly significant (see table 2 in the appendix). This is our main result and confirms the hypothesis that employees of firms located in economic areas where the number of firms from the same sector is higher receive less training. The effect is sizable but monopsony power of a firm does not seem to influence individual training incidence as much as other characteristics such as occupation or the size of the firm. An increase by one more same sector firm per square kilometer, approximately equivalent to a change by one standard deviation (see table 1), decreases the training probability by 2.3 percentage points.

3.2. Heterogeneity analysis

As we outlined in the introduction, theory suggests that firms consider the chances that their human capital investment pays off when deciding on training investments. The likelihood of an investment being profitable depends on how wages are set and on the poaching risk; both factors are inter-related and likely to vary across socio-economic groups. For one thing, the wage setting power which firms can exert differs by socio-economic groups. For example, Hirsch and Jahn (2012) point out that migrants have lower labor supply elasticities and therefore firms have more wage setting power over migrants and any training investment in migrant workers would take less time to yield a profit. In our framework we would expect that firm density has a more pronounced effect on migrant compared to native workers. For another, poaching risks vary across different individuals mainly because of differences in job-to-job mobility. Among others the literature on job mobility highlights differences according to age, tenure, gender, and education (Booth et al., 1999; Theodossiou and Zangelidis, 2009): For instance, job mobility increases with education and decreases with age. Hence for our analysis, we expect that firm density has a stronger effect on highly educated and/ or younger

[3] Estimating the main specifications using probit models largely confirms our findings.

employees. In order to assess whether these findings carry over to training incidence we test for heterogeneity by age, tenure, educational level, gender, and migration background as well as local labor market characteristics. For each of the background factors we present a separate specification where each level of the respective socio-economic or labor market characteristic is interacted with our measure of firm density. Results are shown in table 3 in the appendix; the table also presents the p-values of test of equality of the interaction effects.

While the job mobility literature finds quite heterogeneous effects by age and tenure, our specification including interactions with age dummies (in column 1 of table 3 in the appendix) does not reveal that the effects on training incidence work differently for employees of different ages. Although only one of the coefficients is significant the point estimates are similar in size and do not differ significantly from one another. Likewise, the interactions of number of same sector firms per local labor market with tenure dummies are all similar suggesting that there is no tenure-related heterogeneity (see column 2).

Conversely, the interaction terms of column 3 of table 3 display a clear trend with respect to the education levels. In areas with more same sector firms training is reduced comparatively more for individuals with higher educational levels. While we observe a negative but insignificant effect for employees without vocational training, we estimate considerably larger negative and significant effects (at the 5% and 10% level) for those with vocational education and university degree respectively. This may be because highly skilled individuals pursue human capital intensive jobs. Poaching of this type of workforce can be especially harmful to firms and therefore, firms refrain from investing more. However, a formal test of equality of the interaction terms reveals that the point estimates are not significantly different from one another, even though the interaction term for employees with university degree is twice the size of the interaction term for employees without vocational training (see p-values of the Wald's tests at the end of table 3).

Column 4 provides evidence that the effect of firm density is more important for men than for women by almost 50%. While for women one additional same sector firm per square kilometer reduces training participation by 1.9 percentage points (not significant), it reduces training participation for men by 2.9 percentage points (significant at 5%-level). This might be explained by the fact that women tend to be less mobile considering job-to-job transitions (Theodossiou and Zangelidis, 2009); hence, poaching risks would generally be lower for them. However, as for the differences by education the gender-specific results also only suggest a tendency since the difference between the two interactions is not statistically significant.

Furthermore, we analyze whether firm density has a different effect on migrants' training incidence (column 5). This analysis is motivated by the fact that migrants have a special standing in the labor market (Borjas, 1999). Our results confirm a distinct effect for migrants since the interaction terms displayed in column 6 are statistically different from one another. For migrants an increase in firm density is associated with a stronger decline (3.1 percentage points) than for natives (2.1 percentage points). The above-mentioned higher wage setting power of firms over migrants provides a possible explanation for this finding. With an increase in same sector firm density this wage setting power decreases and discourages training investments since they become comparably less profitable.

We now analyze whether the impact of the number of same sector firms differs by size of the labor market (column 6). To do so we divide labor markets into three size categories, each covering about a third of the distribution of all local labor markets. Results are shown in column 5 and clearly indicate that the impact of the number of same sector firms per square kilometer is decreasing in labor market size. The coefficients on the interaction with small and medium-sized local labor markets are negative and significant, while that of large local labor markets is close to zero, insignificant and has a positive sign. A test on equality of the three interaction terms also confirms that they are significantly different from one another. This suggests that poaching risks are higher and training incidence is lower in small labor markets than in medium-sized or large labor markets when there are many firms of the same sector. This is an intuitive finding, since in small and economically dense local labor markets costs of switching to another job are lower. One explaining factor is that average commuting costs are lower in smaller areas. Another explanation is that awareness of alternative job opportunities should be higher in small labor markets since information about other firms in the same sector is more readily available. Both factors increase the probability of changing an employer and decrease the profitability and likelihood of training investments.

Finally, we examine whether similar mechanisms apply to the public and the private sector. For this we extend the sample to include public sector employees and civil servants. Our estimates suggest that firms in the private and the public sector act differently (column 7). While the interaction between our main variable of interest and private sector is negative and significant, as would be expected from the results above, the interaction with public sector is about a third lower and remains insignificant. This implies that firm density does not influence training incidence in the public sector, which could be explained by the fact that the public service usually does not act to maximize profit as firms in the private sector do (for related findings see Booth and Katic, 2011).

Summing up, the most pertinent heterogeneous effects we find for the size of the local labor market. We reveal tendencies for differences in the effect of firm density by educational attainment, gender, and migration background, and between private and public sector firms.

3.3. Robustness checks

Table 4 (in the appendix) presents results of several robustness checks. In column 1 we explore whether the impact of our main explanatory variable is non-linear by estimating a specification that additionally includes a squared term. Results suggest no improvement over the linear specification since the coefficient of the squared term is insignificant. While all results presented so far control for clustering at the region-sector level, results in columns 2 and 3 use alternative clusters that account for clustering at the regional and at the sector level, respectively. In all specifications our main explanatory variable remains significant.

Furthermore, we check whether selection into labor markets influences our results by including a variable that indicates whether individuals are currently working in a local labor market different from the one they were born in. This indicator variable could pick up any additional variation that is related to both the selection into a local labor market and the training incidence of an individual. However, the coefficient in column 4 in table 4 suggests that this selection has no significant influence on the training incidence and that selection into local labor markets does not challenge our estimation.

4. Conclusion

In this paper we investigated how the number of same sector firms within a local labor market influences individual training incidence. In accordance with what economic theory postulates, our empirical findings suggest that training incidence decreases when the number of firms in one sector increases within a local labor market. Furthermore, we reveal that the effect of number of firms on training incidence varies across local labor market size, and that there are tendencies towards heterogeneity by educational level, gender, and migration background.

A possible policy conclusion that follows from our results is that levels of training investments are higher in regions where the industrial structure is less concentrated. Hence, policies that aim at building up more concentrated and specialized economies, while potentially having a positive impact on innovation and economic growth (e.g. Romer 1986, Porter 2003), may negatively influence firms' investment in training.

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6. Appendix

Table 2 – Main specification

	Baseline specification
# firms in same sector and local labor market per sq km	-0.0228**
	(0.0115)
Female	-0.0004
	(0.0177)
Born abroad	-0.0299
	(0.0261)
Age	0.0177***
	(0.0061)
Age squared	-0.0002***
	(0.0001)
Vocational education	0.0362
	(0.0226)
University degree	0.0724**
	(0.0290)
Missing information on education	-0.0229
	(0.0566)
Managers	0.1065**
	(0.0433)
Professionals	0.0495
	(0.0316)
Clerical support workers	-0.0827***
	(0.0297)
Service and sales workers	-0.1131***
	(0.0279)
Agricultural, foresty, and fishery workers	-0.1324*
	(0.0705)
Craft and related trades workers	-0.1915***
	(0.0316)
Plant and machine operators, and assemblers	-0.1997***
	(0.0372)
Elementary occupations	-0.2952***
	(0.0276)
Occupation missing	0.0438
	(0.1307)
Household has child(ren) below 6 years	-0.0413*
	(0.0233)
Job Tenure in Years	0.0035*
	(0.0021)
Tenure in years squared	-0.0001*
	(0.0001)

Table 2 continued

Part-time worker	-0.0650***
	(0.0190)
Missings in part-time dummy	-0.6131***
	(0.0736)
Fixed-term contract	-0.0126
	(0.0206)
Missings in fixed-term dummy	-0.1201***
	(0.0383)
Firm with between 10 and 50 employees	0.0383*
	(0.0211)
Firm with between 50 and 250 employees	0.0771***
	(0.0238)
Firm with more than 250 employees	0.1291***
	(0.0305)
Firm size missing	-0.0666
	(0.0458)
R^2	0.1540
Number of clusters	1047
Observations	4929

Notes: This table shows the regression results for our basic specification including all control variables. This specification additionally controls for regional and sector fixed effects. No vocational education is the reference group for the education dummy variables, technicians and associate professionals for occupations and firms up to 10 employees for firm size.
Standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

Table 3 – Heterogeneity analysis

	(1) Age x # firms	(2) Tenure x # firms	(3) Education x # firms	(4) Gender x # firms	(5) Born abroad x # firms	(6) Labor Market Size x # firms	(7) Public service x # firms
Below 40 years x # firms	-0.0241**						
	(0.0120)						
Between 40 and 55 years x # firms	-0.0214*						
	(0.0119)						
Older than 55 x # firms	-0.0216						
	(0.0140)						
Tenure up to 2 years x # firms		-0.0252*					
		(0.0152)					
Tenure 3 to 10 years x # firms		-0.0218					
		(0.0134)					
Tenure more than 10 years x # firms		-0.0213					
		(0.0131)					
No vocational training x # firms			-0.0169				
			(0.0219)				
Vocational training x # firms			-0.0208*				
			(0.0117)				
University degree x # firms			-0.0320**				
			(0.0134)				
Missings in education x # firms			-0.0283				
			(0.0327)				
Female x # firms				-0.0187			
				(0.0124)			
Male x # firms				-0.0291**			
				(0.0125)			
Born abroad x # firms					-0.0307**		
					(0.0145)		
Born in Germany x # firms					-0.0208*		
					(0.0120)		
Small labor market x # firms						-0.0506***	
						(0.0144)	
Medium labor market x # firms						-0.0270*	
						(0.0149)	
Large labor market x # firms						0.0094	
						(0.0175)	
Public service x # firms							-0.0145
							(0.0189)
Private sector x # firms							-0.0202*
							(0.0107)

Table 3 continued

	(1) Age x # firms	(2) Tenure x # firms	(3) Education x # firms	(4) Gender x # firms	(5) Born abroad x # firms	(6) Labor Market Size x # firms	(7) Public service x # firms
P-value of Wald's tests for equality of interactions							
All age interactions	0.9738						
Below 40 yrs= 40-50yrs interaction	0.8341						
40- 50 yrs = older than 55 yrs interaction	0.9903						
Below 40 yrs = older than 55 yrs interaction	0.8719						
All tenure interactions		0.9595					
Up to 2 yrs = 3- 10 yrs tenure interaction		0.8221					
3-10 yrs = 10 + yrs tenure interaction		0.9623					
Up to 2 years = 10 + yrs tenure interaction		0.7758					
All education interactions			0.6026				
No vocational training = vocational training interaction			0.8439				
Vocational training = university degree interaction			0.4244				
No vocational training = university degree interaction			0.4179				
Male = female interaction				0.3289			
Foreign born = Germany born interaction					0.0873		
All local labor market size interactions						0.0062	
Small = medium local labor market interaction						0.1733	
Small = large local labor market interaction						0.0016	
Medium = large local labor market interaction						0.0356	
Public = private sector interaction							0.7363
R^2	0.1532	0.1536	0.1542	0.1542	0.1541	0.1554	0.1540
Number of clusters	1047	1047	1047	1047	1047	1047	1288
Observations	4929	4929	4929	4929	4929	4929	7149

Notes: Column 1 shows interactions of the number of firms with age, column 2 with tenure, column 3 with the education level, column 4 with gender, column 5 with migration background, column 6 with labor market size, and column 7 with the public and private sector. For this latter interaction we rely on a larger sample that also includes public servants. All covariates from the baseline model and fixed effects are included as well but not displayed. Standard errors in parentheses; * p<0.10, ** p<.05, *** p<0.01.

Table 4 – Robustness Checks

	(1)	(2)	(3)	(4)
	Non-linearity	Sector-level cluster	Cluster at local labor market level	Controlling for mobility across local labor markets
# firms in same sector and local labor market per sq km	-0.0009	-0.0228***	-0.0228**	-0.0228**
	(0.0321)	(0.0073)	(0.0109)	(0.0115)
Square of # of firms per sector in local labor market per sq km	-0.0031			
	(0.0045)			
Change in local labor market between first and current region				0.0039
				(0.0160)
R^2	0.1541	0.1540	0.1540	0.1540
Number of clusters	1047	13	135	1047
Observations	4929	4929	4929	4929

Notes: Column 1 displays the regression results including a squared term of the main explanatory variable. Standard errors in column 2 are clustered only by sector and in column 3 only by local labor market. Column 4 additionally includes a variable indicating a change in the local labor market between birth and the interview year. All specifications control for all our covariates and regional and sector fixed effects. Standard errors in parentheses;
* p<0.10, ** p<.05, *** p<0.01