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FDI and Corporate Geography in the Home Country*

Rita Cappariello, Stefano Federico and Roberta Zizza†

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This paper contributes to the empirical literature on the home-country effects of FDI. Instead of comparing FDI firms to non-FDI firms, we look at what happens within multi-plant FDI firms and we compare headquarters to non-headquarter plants belonging to the same firm. Using survey data on Italian industrial firms, we find that in FDI firms non-headquarter plants show a significantly worse performance in terms of employment and investment than headquarter plants. This suggests that the home-country effects of FDI tend to be biased in favour of headquarters.

JEL : F20, F23, R30.
Keywords: foreign direct investment, multi-plant firms, employment, Italy.

The authors

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Abstract

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1 Introduction and related literature

The issue of foreign direct investment (FDI) has attracted extensive attention in recent years. In particular, concerns about firms which reduce their workforce in the home country, while relocating production abroad, have been raised in the media, as well as in policy circles. In order to investigate the home-country effects of FDI, the academic literature has followed two main approaches. A first line of research estimates labour demand functions for FDI firms in the home country and their foreign affiliates (Brainard and Riker 1997a, 1997b, Braconier and Ekholm 2000). Cross-wage elasticities then indicate the effect of wage changes in a foreign location on labour demand in the home country. A second line of research compares the performance of FDI firms to the performance of a "control" group of similar but non-FDI firms, using matching and difference-in-differences techniques (Egger and Pfaffermayr 2003, Barba Navaretti and Castellani 2004, Barba Navaretti et al. 2006, Debaere et al. 2006).

The two approaches share a significant limitation. They consider each FDI firm in the home country as a *single unit*. However, FDI firms usually tend to be large firms, often controlling several plants in the home country. This paper argues that focusing on what happens *inside* FDI firms, i.e. among their various plants at home, can yield interesting insights. Specifically, we focus on a sample of Italian industrial multi-plant firms and make a distinction between plants located in or close to the headquarters area ("HQ plants") and plants located in Italy farther from the headquarters area ("non-HQ plants"). We then compare employment or investments between HQ plants and non-HQ plants, for both FDI firms and non-FDI firms. Our research question is the following: do HQ plants show different performances compared to non-HQ plants, and does FDI affect these relative performances?

This novel research question is - in our opinion - very interesting in several respects. First, multi-plant firms are not an exception but rather a very widespread feature of industrial economies. For instance, in our sample, which includes only firms with at least 50 employees, multi-plant firms account for more than 60 per cent of employment, while they

account for 78 per cent of employment and 88 per cent of output in the U.S. manufacturing sector (Bernard and Jensen 2007).

Second, there are several reasons to expect differential effects of FDI on HQ plants versus non-HQ domestic plants. "Horizontal" FDI may increase the need for management and coordination of foreign activities, which are typically carried out in the headquarters. "Vertical" FDI may require a specialisation in skill-intensive activities, such as R&D, product innovation and marketing, which are also often undertaken in the headquarters.

Third, the distribution of plants owned by firms having their headquarters in a different area is far from uniform in geographical terms. For example, as we shall see in the next section, the South of Italy hosts a disproportionately higher number of plants owned by firms headquartered in the Central and Northern areas. This feature, coupled with increasing FDI by firms in the Central and Northern areas during the last decade, has indeed already led to concerns about Mezzogiorno's "dependence on external decision centres", which may "translate into a vulnerability if there are shifts in the localisation advantages" (Svimez 2006, p. 51; our translation), i.e. if lower transport costs and better institutions make it more convenient to move the production to foreign countries. By affecting corporate geography, FDI may therefore affect also the overall geography of economic activity in the home country.

Figure 1 provides a first illustration of how the data on employment trends differed HQ plants and non-HQ plants. The figure reports the number of employees, in thousands of units, of a balanced sample of Italian industrial multi-plant firms over the years 2001-08. The left panel includes only FDI firms, which are defined as firms producing abroad through own foreign affiliates, while the right panel includes only non-FDI firms. Among FDI firms, employment in HQ plants remained generally stable over the whole period, while employment in non-HQ plants recorded a sharp decrease. By contrast, the group of non-FDI firms shows a rather different pattern, with non-HQ plants actually increasing over time, and HQ employment which, again, remains unchanged. While the trend depicted in the figure could be driven by many factors other than FDI, our formal econometric exercise will show that it is robust to the inclusion of several firm and industry characteristics.

Figure 2 broadly confirms these patterns for investments, although the latter are obviously much more volatile than employment. The only difference with respect to employment is that non-HQ investments tend to fall compared to HQ investments not only for FDI firms but also for non-FDI firms towards the end of the sample period.

Our paper is related to several branches of the literature. We have already mentioned the literature based on the identification of a control group of similar but non-FDI firms which aims to estimate the effect of FDI on investing firms. A potential drawback of this approach is that, even if similar ex ante, these two groups of firms (FDI firms and the control group of non-FDI firms) might show different trends over time, and thus invalidate the inference that can be drawn from their comparison. Since it looks at what happens within firms, in our work this self-selection issue is instead largely attenuated. Plants owned by the same firm are indeed, by definition, "exposed" to exactly the same FDI "treatment", and they are also affected by the same firm-specific shocks.

Our paper is also related to recent work carried out by Bernard and Jensen (2007). They compare the likelihood of plant closure in single-plant, multi-plant and FDI firms. They find that plants owned by FDI firms are unconditionally less likely to close. However, if one controls for plant and industry characteristics, the opposite result is observed: FDI firms are actually more, and not less, likely to shut down a domestic plant. FDI firms seem therefore to have greater flexibility in labour adjustments than non-FDI firms. Our paper adds a further perspective to this issue by showing that FDI firms have different employment trends in HQ compared to non-HQ plants.

Finally, our paper can be put in connection with recent empirical evidence for the U.S. which shows that layoffs and divestitures are more likely to happen, or happen earlier, in divisions farther from headquarters (Landier et al. 2009); the cited paper digs deeper into the mechanisms behind these trends, and finds that they could be due either to information or social factors, but does not make any distinction between FDI and non-FDI firms.

The rest of our paper is organised as follows. Section 2 presents data and the econometric methodology, while the empirical results are reported in Section 3. Section 4 concludes.

2 Data and methodology

Our investigation is based on data drawn from the Bank of Italy's Survey of industrial firms (INVIND; Banca d'Italia 2007), which is run annually from the early '80s on a representative sample of Italian firms. The Survey represents one of the richest sources of information at firm level for Italy, and its use is today quite widespread in the literature (Banca d'Italia 2008).

The sample is composed of firms with at least 50 employees in the industrial sector net of construction (corresponding to sections C, D and E in the NACE rev. 1 classification). In 2006 the survey included an additional set of questions on their international activity. The following question, in particular, allows us to identify FDI firms: "In 2000-2006 did you produce goods and services abroad? (through ownership/control of foreign firms, ownership of local production units without separate legal status)".

We also exploit data on the distribution of workforce and of total fixed investments by geographical area within the home country (North-West, North-East, Centre, South), as well as information on the location of headquarters. To give an example, for a hypothetical firm "CFZ & Co." we observe that its headquarter is located in the North-West of Italy, that 30 per cent of its total employment is in that area and that the firm is also active in the three other geographical areas (North-East, Centre, South) with respectively 22, 43 and 5 per cent of employment. We are thus able to make a distinction between single-area firms (single-plant firms or multi-plant firms whose plants are all located in the same area as their headquarters) and multi-area firms (multi-plant firms with plants in at least two different areas). We will mainly concentrate on multi-area firms, for which we are able to compare plants located in the HQ area (HQ plants) to plants located in non-HQ areas (non-HQ plants).

Data referred to 2006 have been linked to previous and subsequent surveys covering the 2001-08 period. We end up with an unbalanced panel of 1,438 firms, accounting for more than 600,000 employees (table 1); among these firms, 250 have direct investments abroad and 304 have plants in more than one geographical area. This translates into a number of

1,891 firms-areas. The share of multi-area firms is not very high - slightly more than a fifth - in terms of the number of firms, but this figure doubles when one looks at the number of firm-areas, and triples when the number of employees is taken into account.

Our sample represents 12.1 per cent of the total workforce in the industrial sector net of construction. Compared to the reference population of firms with at least 50 employees, our sample is even more representative (28.2 per cent in terms of employment, table 2). The sample breakdown by geographical area shows that the share of employment in the South of Italy is much higher if it is considered by location of plants rather than by location of headquarters, because of the presence in the South of a high number of plants owned by firms headquartered in the Central and Northern areas (table 3).

As anticipated in our introduction, many contributions to the literature deal with the assessment of FDI effects on either domestic employment or investments (or both). Results from these contributions usually suffer from a selection bias, since firms investing abroad are likely to be "special" in many regards - as a whole we can say that they are usually the best performing ones - and hence cannot be fairly compared with those non investing abroad. Here, instead, we want to assess whether in multi-plant firms the event of investing abroad translates into different behaviours in terms of investing or hiring/firing personnel in non-HQ branches if compared to HQ plants. In this regard, the comparison is within firm but across plants.

Our preferred specification is the following panel regression for multi-area firms over the 2001-08 period:

$$y_{i,j,t} = \beta_0 + \beta_1 nohq_{i,j} + \beta_2 fdi_i + \beta_3 nohq_{i,j} * fdi_i + \beta_4 cu_{i,t} + \beta_z Z + \epsilon_{i,j,t} \qquad (1)$$

where the dependent variable y is the log level of employment (or investments) in plants located in area j and owned by multi-area firm i in the year t. *nohq* is a dummy, equal to one if the area j is not the area where firm is headquartered (non-HQ plants) and equal to zero if firm is headquartered in area j (HQ plants); *fdi* is a dummy equal to one for an FDI firm, zero for a non-FDI firm; *nohq*fdi* is the interaction between *nohq* and

fdi. Therefore, since we are mainly interested in evaluating employment and investment performance of non-headquarter plants compared to headquarter plants in the case of FDI firms, we compare the two groups $nohq = 1$ and $fdi = 1$ versus $nohq = 0$ and $fdi = 1$. Our coefficient of interest is hence the sum of β_1 and β_3.[1]

Moreover, in the regressions we include the capacity utilisation rate (cu), which is aimed to capture firm-specific time-varying shocks. Finally, the vector Z contains additional controls. In particular, we control for: the lagged value of the dependent variable (to take into account serial correlation in employment or investments); ownership structure (if firms are owned by a national or foreign group) and corporate events (mergers and acquisitions, spin-offs, transfer of assets); region, industry and time dummies (to take into account unobserved area, sector and time specific heterogeneity). All standard errors are clustered by firms so as to control for standard error bias with aggregate observations (Moulton 1990). A list of our dependent and main explanatory variables with corresponding summary statistics is reported in table 4.

3 Results

This section presents the results of a set of regressions run to evaluate the effect of FDI on employment in non-HQ plants, compared to HQ plants. As the dependent variable is the log of employment, and its lagged value appears among the regressors, changes of employment at the extensive margin, i.e. the shift to zero (or from zero to a positive value) of employment, due to closures or openings of all plants in a given geographical area, are not considered. However, this should not be regarded as a matter of concern as the share of employment affected by firm entry and exit in a given area is rather negligible: entry and exit involve on average respectively 7 and 5 per cent of the observations, but only 0.3 per cent of employment in both cases (table 5). The small incidence of the extensive

[1] Substituting for each of the two groups their respective dummy values, 0 or 1, we have that for the group $fdi = 1$ and $nohq = 1$, it holds $\beta_0 + \beta_1 + \beta_2 + \beta_3$; for the group $fdi = 1$ and $nohq = 0$, it holds $\beta_0 + 0 + \beta_2 + 0$. Thus, if we want to measure, among the FDI firms, the differential effect on non-HQ plants versus HQ plants we should look at the algebraic difference between the two expressions, and thus at $\beta_1 + \beta_3$.

margin mainly reflects the structure of our data, which are not at plant level, but at a more aggregate firm-area level: this implies that, for instance, the closure of one plant is included in the log level of employment as long as there are other plants owned by the same firm and located in the same area; in a similar way, the opening of a new plant is taken account of if the parent firm already owned other plants in the same area.

According to our baseline specification, estimated on multi-area firms only (table 6, column (1)), *ceteris paribus* employment is significantly lower in non-HQ plants; the coefficient on the variable *fdi* is positive and significant. The interpretation of the interactions between dummies is not straightforward. We are mainly interested in the employment performance of non-HQ plants, compared to HQ plants, among FDI firms. Therefore, we should consider the sum of the coefficients on variables *nohq* and *nohq*fdi*, which turns out to be negative and jointly significant, as shown by the corresponding F-test. This suggests that in non-HQ plants employment is significantly lower than in HQ plants, and this effect is twice as large in FDI firms. The results on the other main explanatory variables are consistent with our priors: employment is strongly correlated with its lagged value (its coefficient is .972) and tends to grow more in firms with higher rates of capacity utilisation.

The estimated effect on our variables of interest seems rather significant in quantitative terms. The sum of *nohq*fdi* (-0.032) and *nohq* (-0.030) yields -0.062. This means that in FDI firms employment in non-HQ plants is on average 6.2 per cent lower than in the HQ plants of the same firm every year. The aggregate effect is also sizeable since multi-area FDI firms account for more than one third of total employment in our sample.

One could argue that in the case of non-HQ plants the presence of foreign investments reduces employment as low-skill labour activities shift towards low-cost labour countries. In the case of headquarters, this presence has a positive effect on employment, because of the increased need for coordination and management activities due to delocalisation abroad, and/or because of the increased specialisation in headquarter activities such as R&D and marketing.

In order to assess whether the effect varied across time we repeated the estimation

on two sub-periods, before and after 2005, thus broadly halving the sample. The effect is concentrated in the first period, and can be put in connection with the stagnation of economic activity in the years 2002-03 which is likely to have induced an adjustment in the employment levels.

These results appear to be robust to changes in specifications along different dimensions. First, we introduce a broader definition of "investing abroad", creating a new dummy variable *broad fdi*, which includes also firms declaring to have major technical collaboration agreements with foreign firms. A firm can indeed produce abroad not only through its own foreign affiliates (FDI), but also through independent suppliers (international outsourcing). While *fdi* captures only the former, *broad fdi* includes also the latter. The interaction term *nohq*broad fdi* is calculated accordingly (column (2)). Second, we include an indicator of the level of skill involved in the production, proxied by the share of white collars (*skill*), and the expenditure in R&D as a share of turnover (*R&D*); this is meant to assess whether a "genuine" non-HQ effect is at work, not entirely overlapping with the workforce recomposition of the exporting firms towards positions with a higher skill content (column (3)). Third, we run the regression on the subsample of FDI firms only, which halves the number of observations (column (4)), as well as on the whole sample, i.e. including in the sample both the plants of multi-area firms and the plants of single-area firms (column (5)). In this latter case, on the one hand, the coefficients on the industry and area dummies are likely be estimated with more precision; on the other hand, we might introduce a bias as the units of observation are now less homogeneous.

The coefficients of the variable *nohq* are always negative and significant; those referring to the variable *fdi* are positive and significant except in the regression performed adding the indicators of the skill levels; the coefficients for the interaction variable *nohq*fdi* are always negative, although not always statistically different from zero. Summing the coefficient for the interaction term *nohq*fdi* and the coefficient for the base effect *nohq* (or simply looking at the coefficient for *nohq* when the sample is composed only of firms with FDI (column (4)) leads to estimates of the effect which range between -5.4 and -8.3 per cent. The inclusion of the variable accounting for skill composition - whose coefficient emerges as negative and

significant - reinforces our results, as the negative impact of FDI for non-HQ plants is even higher in absolute terms.

Furthermore, for multi-area firms only, we estimate the same model for the log-level of employment using two techniques which are alternative to OLS (using both the "narrow" and the "broad" measures of FDI, table 7). We have, in turn, either introduced random effects at firm-area level (columns (1) and (2)) or implemented a system-GMM estimation (columns (3) and (4)), where the instrument for the equation in first-differences is the lagged level of the dependent variable dated $t-2$, and the instrument for the equation in levels is the lagged first-differences of the dependent variable. Our results are broadly confirmed. The sum of the coefficients on variables *nohq* and *nohq*fdi* turns out to be always negative and significantly different from zero. In FDI firms, employment in non-HQ plants is on average between 11 and 26 per cent lower in the four specifications. Caveats are needed for the GMM estimation as it barely passes the Hansen test of overidentifying restrictions.

Tables 8 and 9 present results for the same set of regressions estimated so far, except that we now consider (log) investments as the dependent variable. As for employment, foreign investments are associated to lower investments in non-HQ plants. Now the coefficient for the interaction term *nohq*fdi*, measuring the differential among non-HQ plants between FDI and non-FDI firms, is positive, though not statistically significant in columns (1) and (3). However, as also suggested by Figure 2, this result reflects the behaviour of non-FDI firms, whose accumulation activity reduces over time irrespective of corporate structure status, whilst for FDI firms we find a clear differential effect between HQ and non-HQ plants: as shown in column (4) of Table 8, non-HQ plants, among FDI firms, invest 21 per cent less than their headquarters. The results on the other main explanatory variables are largely expected: investments are less persistent than employment, as shown by the smaller coefficient of the lagged value (.785 in column (1) of the OLS estimates). Capacity utilisation rates show again a positive sign, which is nonetheless significant only when the whole sample is considered. Differently from what we observed for employment, the effect of non-HQ plants on investments is negative and significant both before and after

2005, although stronger in the first subperiod.

Finally, one might also wonder about the extent of total effect of FDI on domestic employment and accumulation activity. With the caveat that the FDI status is far from being an exogenous variable, our estimates lead to the conclusion that the effect is nil for employment and positive for investments.

4 Concluding remarks

This paper provides an empirical contribution to the literature on home-country effects of FDI. We start by noticing that the existing literature usually treats each FDI firm as a single unit. However, this assumption is too restrictive if, as it is often the case, FDI firms are not single-plant firms, but control instead several plants in their home country. We argue that ignoring how firms allocate their workforce among their own plants in the home country, and how this choice relates to FDI strategies, hides interesting patterns that fully deserve to be analysed.

Using survey data on Italian industrial multi-plant firms, we therefore introduce a distinction between headquarters or plants which are located close the headquarters (HQ plants) and plants located farther from the headquarters (non-HQ plants). Our most conservative estimate indicates that, among FDI firms, employment in non-HQ plants decreases annually by at least 5.4 per cent more than in the headquarter plants of the same firm.

These findings could be properly explained in the context of "horizontal" FDI as well as "vertical" FDI. Both models predict that HQ activities would increase after FDI, relatively to non-HQ activities, reflecting the need for management and coordination of foreign activities in the "horizontal" model, and the specialisation in skill-intensive activities such as R&D, product innovation and marketing in the "vertical" one. More generally, these findings are also consistent with results available in the literature, which show that layoffs and divestitures are more frequent or happen earlier in divisions farther from headquarters. Further research is needed in order to discriminate between these competing hypotheses.

Overall, our results imply that, by affecting corporate geography, FDI may have an impact on the geography of economic activity in the home country, with important consequences for local policy makers. Another implication, which also needs to be analysed in future research, is that, if headquarters tend to be located in urban areas (Davis and Henderson 2008), further increases in FDI activity will determine changes in the agglomeration patterns in favour of larger cities.

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Appendix: tables and figures

Table 1: Sample

	Multi-area firms			**Total sample**		
	firms	firms-areas	employees	firms	firms-areas	employees
2002	195	481	301,770	877	1,164	468,999
2003	197	486	315,302	968	1,257	492,548
2004	224	554	320,538	1,076	1,406	512,760
2005	258	632	328,031	1,210	1,528	533,557
2006	304	757	363,577	1,438	1,891	603,653
2007	302	751	350,543	1,365	1,814	581,012
2008	279	703	343,905	1,171	1,595	543,918
			of which: FDI firms			
2002	58	147	194,464	167	256	246,096
2003	65	169	205,660	184	288	260,117
2004	72	185	195,862	203	316	255,133
2005	80	200	193,781	221	341	255,691
2006	91	239	219,200	250	398	286,930
2007	86	232	211,751	243	389	279,476
2008	85	224	206,984	214	353	266,131

Table 2: Sample firms' representativeness in 2006 (1)

Area	Number of firms	% share	
		firms	**employment**
North West	377	7.7	25.0
North East	308	7.0	18.8
Center	328	27.0	58.2
South and Islands	425	30.7	34.5
Italy	**1,438**	**12.1**	**28.2**

(1) By location of headquarter. Shares are computed on the reference population of firms in the industrial sector (net of construction) with at least 50 employees.

Table 3: Sample geographical distribution

Area	firms	employment	
		by HQ area	**by plant area**
North West	26.2	39.8	33.3
North East	21.4	21.9	24.4
Center	22.8	26.7	19.2
South and Islands	29.6	11.7	23.0
Italy	**100.0**	**100.0**	**100.0**

Table 4: Summary statistics: multi-area firms

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
Employment	532.46	1,565.8	0.41	23,664	4,364
Investments	13.2	76.76	0	1737.06	4,336
Δ_{t-1}(employment)	-6.91	194.79	-5,247.84	2,118.81	4,364
Δ_{t-1}(investments)	0.23	31.77	-613.93	1,132.26	4,336
nohq	0.6	0.49	0	1	4,364
fdi	0.32	0.47	0	1	4,364
broad fdi	0.38	0.49	0	1	4,364
nohq*fdi	0.2	0.4	0	1	4,364
nohq*broad fdi	0.23	0.42	0	1	4,364
capacity utilization	0.81	0.13	0	1	4,364

Notes: employment is measured in units and investments in millions of euro. All statistics are computed at the firm-area level.

Table 5: Entry and exit

	Entry		**Exit**	
	% obs.	**% empl.**	**% obs.**	**% empl.**
2002	6.78	0.15	6.36	0.29
2003	7.92	0.59	7.47	0.30
2004	8.29	0.28	4.82	0.33
2005	8.02	0.56	4.91	0.48
2006	5.76	0.37	3.79	0.21
2007	7.43	0.23	3.79	0.29
2008	6.29	0.33	4.87	0.54
Average 2002-08	7.14	0.34	4.95	0.34

Notes: The table reports the percentage share of entry and exit on the sample of multi-area firms, in terms of number of observations and employees. Entry is defined as the observations (firm i in area j) with zero employees in year $t-1$ and at least one employee in year t. Exit is defined as the observations with at least one employee in year $t-1$ and zero employees in year t. For exit, the share on employment is computed using one-year lagged employment.

Table 6: The impact of FDI on employment: OLS estimates

	Multi-area firms			FDI firms	Whole sample
	(1)	(2)	(3)	(4)	(5)
$\log(\text{empl})_{t-1}$	0.972***	0.972***	0.968***	0.972***	0.975***
	(0.005)	(0.005)	(0.007)	(0.008)	(0.004)
nohq	-0.030**	-0.033**	-0.040**	-0.081***	-0.034***
	(0.015)	(0.015)	(0.019)	(0.022)	(0.010)
fdi	0.024*		0.013		0.015**
	(0.014)		(0.018)		(0.006)
nohq*fdi	-0.032*		-0.043*		-0.020
	(0.019)		(0.025)		(0.018)
broad fdi		0.024*			
		(0.013)			
nohq*broad fdi		-0.021			
		(0.019)			
cu	0.182***	0.183***	0.208***	0.136	0.135***
	(0.059)	(0.059)	(0.059)	(0.103)	(0.023)
skill			-0.078**		
			(0.039)		
R&D			-0.059		
Tests of joint significance: nohq+nohq*fdi=0 or nohq+nohq*broad fdi=0					
	$F(1,441) = 10.84$ p-value=0.00	$F(1,441) = 9.47$ p-value=0.00	$F(1,403) = 9.14$ p-value=0.00		$F(1,1713) = 11.12$ p-value=0.00
Observations	4,364	4,364	3,229	2,341	10,711
R^2	0.976	0.976	0.974	0.976	0.975

Notes: The dependent variable is the (log) number of employees of firm i in area j at time t. All columns include year, three-digit industry, area, headquarter region fixed effects and a set of variables accounting for the ownership structure and for mergers and acquisitions. All columns are estimated by OLS. Standard errors are adjusted for clustering at the firm level. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: The impact of FDI on employment: alternative methods

	random effects (firm-area)		gmm-sys	
	(1)	(2)	(3)	(4)
$\log(\text{empl})_{t-1}$	0.945***	0.944***	0.865***	0.864***
	(0.008)	(0.008)	(0.040)	(0.041)
nohq	-0.088***	-0.094***	-0.249***	-0.259***
	(0.019)	(0.020)	(0.087)	(0.090)
fdi	0.051***		0.107***	
	(0.017)		(0.035)	
nohq*fdi	-0.039*		-0.005	
	(0.023)		(0.034)	
broad fdi		0.045***		0.091***
		(0.016)		(0.031)
nohq*broad fdi		-0.018		0.022
		(0.022)		(0.034)
cu	0.210***	0.210***	0.209***	0.207***
	(0.075)	(0.075)	(0.077)	(0.077)
Tests of joint significance: nohq+nohq*fdi=0 or nohq+nohq*broad fdi=0				
	$X^2(1)$=23.71 p-value=0.00	$X^2(1)$=21.68 p-value=0.00	$X^2(1)$=9.80 p-value=0.00	$X^2(1)$=9.63 p-value=0.00
Test overid. restrictions			Hansen test	
			$X^2(48)$=59.12 p-value=0.013	$X^2(48)$=58.89 p-value=0.013
Observations	4,364	4,364	4,364	4,364

Notes: The dependent variable is the (log) number of employees of firm i in area j at time t. All columns include year, industry, area, headquarter region fixed effects and a set of variables accounting for the ownership structure and for mergers and acquisitions; industry fixed effects are at the three-digit level in columns (1)-(2), at the two-digit level in columns (3)-(4). Columns (1)-(2) are estimated with random effect with standard errors adjusted for clustering at the firm level. Columns (3)-(4) are estimated with system GMM. *** p<0.01, ** p<0.05, * p<0.1.

Table 8: The impact of FDI on investments: OLS estimates

	Multi-area firms			FDI firms	Whole sample
	(1)	(2)	(3)	(4)	(5)
$\log(\text{inv})_{t-1}$	0.785***	0.785***	0.757***	0.770***	0.767***
	(0.020)	(0.020)	(0.028)	(0.020)	(0.011)
nohq	-0.316***	-0.335***	-0.416***	-0.212***	-0.244***
	(0.049)	(0.055)	(0.066)	(0.045)	(0.044)
fdi	0.116**		0.093		0.146***
	(0.054)		(0.072)		(0.030)
nohq*fdi	0.101		0.136		0.112*
	(0.065)		(0.086)		(0.064)
broad fdi		0.113**			
		(0.051)			
nohq*broad fdi		0.127**			
		(0.063)			
cu	0.149	0.150	0.266	0.208	0.551***
	(0.156)	(0.155)	(0.221)	(0.226)	(0.098)
skill			-0.282		
			(0.175)		
R&D			2.573***		
			(0.893)		
Tests of joint significance: nohq+nohq*fdi=0 or nohq+nohq*broad fdi=0					
	$F(1,434)=16.96$ p-value=0.00	$F(1,434)=20.75$ p-value=0.00	$F(1,395)=13.64$ p-value=0.00		$F(1,1689)=6.63$ p-value=0.01
Observations	3,065	3,065	2,195	1,970	9,210
R^2	0.859	0.859	0.842	0.835	0.747

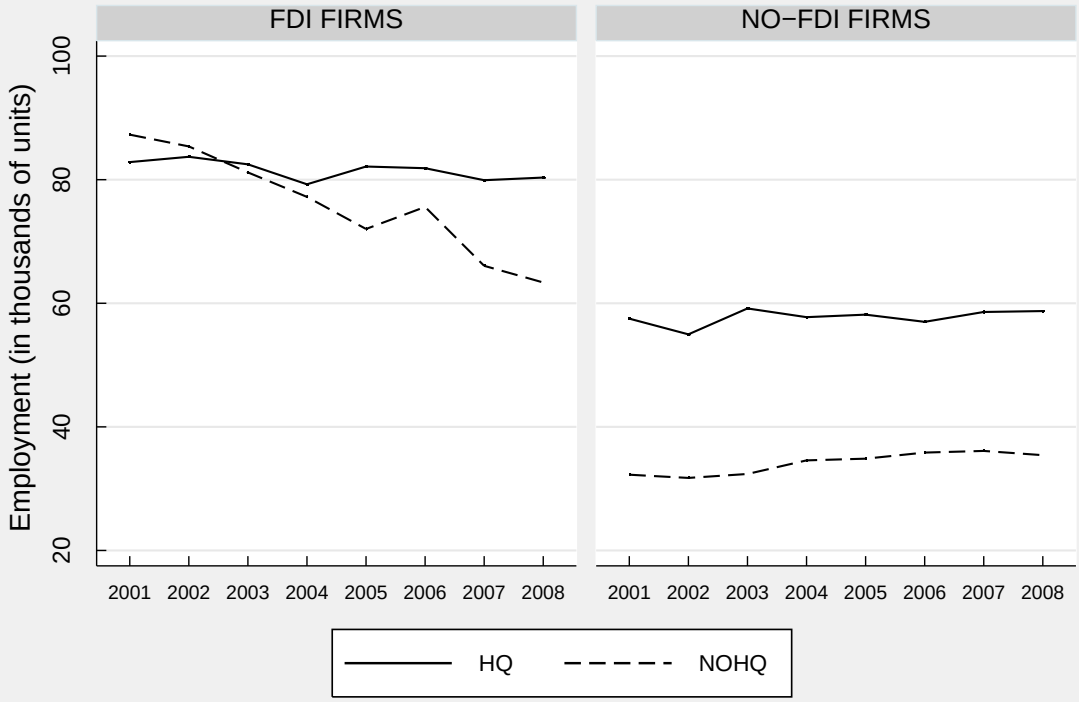
Notes: The dependent variable is the (log) level of investments of firm i in area j at time t. All columns include year, three-digit industry, area, headquarter region fixed effects and a set of variables accounting for the ownership structure and for mergers and acquisitions. All columns are estimated by OLS. Standard errors are adjusted for clustering at the firm level. *** p<0.01, ** p<0.05, * p<0.1.

Table 9: The impact of FDI on investments: alternative methods

	random effects (firm-area)		gmm-sys	
	(1)	(2)	(3)	(4)
$\log(\text{inv})_{t-1}$	0.681***	0.683***	0.398***	0.402***
	(0.026)	(0.025)	(0.067)	(0.067)
nohq	-0.492***	-0.511***	-0.935***	-0.983***
	(0.065)	(0.070)	(0.143)	(0.154)
fdi	0.176**		0.427***	
	(0.069)		(0.121)	
nohq*fdi	0.176**		0.386**	
	(0.083)		(0.171)	
broad fdi		0.150**		0.343***
		(0.065)		(0.109)
nohq*broad fdi		0.199**		0.450***
		(0.080)		(0.165)
cu	0.232	0.231	0.304	0.285
	(0.179)	(0.179)	(0.202)	(0.204)
Tests of joint significance: nohq+nohq*fdi=0 or nohq+nohq*broad fdi=0				
	$X^2(1)$=21.21 p-value=0.00	$X^2(1)$=26.46 p-value=0.00	$X^2(1)$=12.56 p-value=0.00	$X^2(1)$=14.98 p-value=0.00
Test overid. restrictions			Hansen test	
			$X^2(41)$=60.93 p-value=0.023	$X^2(41)$=61.26 p-value=0.022
Observations	3,065	3,065	3,065	3,065

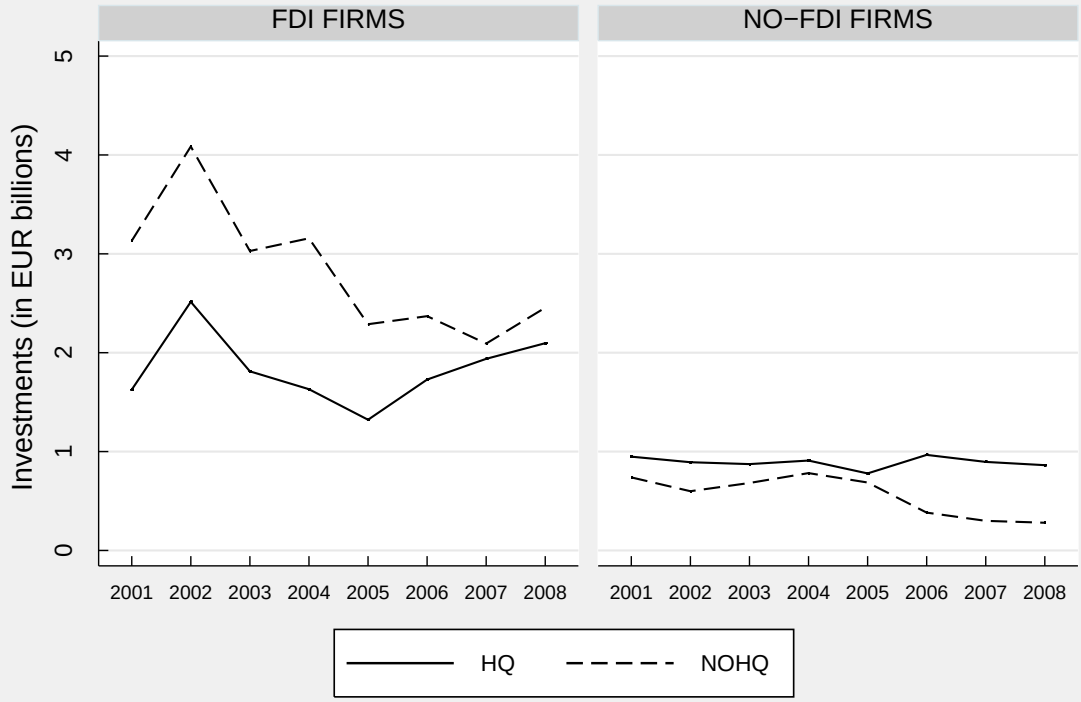
Notes: The dependent variable is the (log) level of investments of firm i in area j at time t. All columns include year, industry, area, headquarter region fixed effects and a set of variables accounting for the ownership structure and for mergers and acquisitions; industry fixed effects are at the three-digit level in columns (1)-(2), at the two-digit level in columns (3)-(4). Columns (1)-(2) are estimated with random effects with standard errors adjusted for clustering at the firm level. Columns (3)-(4) are estimated with system GMM. *** p<0.01, ** p<0.05, * p<0.1.

Figure 1: Employment in multi-area firms



Source: Authors' calculations on a balanced sample of multi−area firms. The figure shows the overall number of employees in the headquarter area (HQ) and in no−headquarter areas (NOHQ).

Figure 2: Investments in multi-area firms



Source: Authors' calculations on a balanced sample of multi−area firms. The figure shows the overall level of investments in the headquarter area (HQ) and in no−headquarter areas (NOHQ).