

**The role of geographical and temporary proximity in
MNEs' location and intra-firm co-location choices**

Appendix

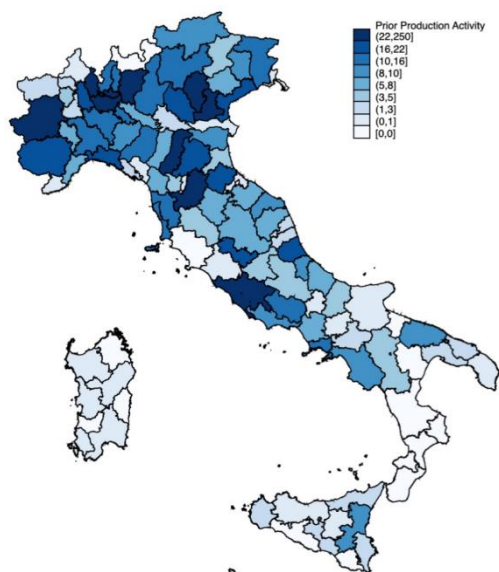
Table A.1. Geographical distribution of greenfield investments, by province

Province (NUTS-3)	Manufacturing	
	No.	%
Milan	35	13.31
Turin	22	8.37
Monza-Brianza	10	3.8
Varese	12	4.56
Rome	10	3.8
Bergamo	10	3.8
Padua	9	3.42
Lecco	6	2.28
Modena	6	2.28
Pisa	4	1.52
Vicenza	5	1.9
Ancona	5	1.9
Bologna	5	1.9
Florence	4	1.52
Forlì-Cesena	5	1.9
Livorno	5	1.9
Pavia	5	1.9
Verona	5	1.9
Other*	100	38
Total	263	100

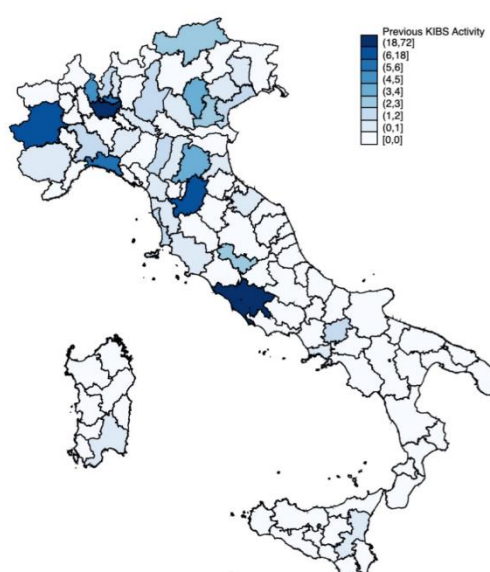
* A total of 61 provinces receive the remaining number of investments.

Source: Authors' elaboration from REPRINT-Politecnico di Milano

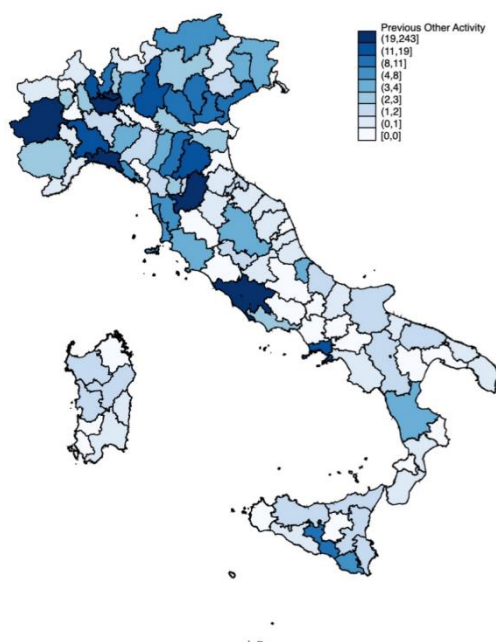
Figure 2-4. Geographical distribution of greenfield investments, by province



(2) Previous investments in manufacturing activities



(3) Previous investments in KIBS activities



(4) Previous investments in Other service activities

Source: Authors' elaboration from REPRINT-Politecnico di Milano

Table A.2 First stage – Modelling intra-firm presence in a province

	(1) Model Probit	(2) Model OLS
Border effect	-0.1297* (0.0747)	0.0311* (0.0186)
Industrial District	-0.0363 (0.0380)	-0.0661*** (0.0093)
Patents per inhabitant	0.0117*** (0.0021)	0.0098*** (0.0006)
No. of graduated students	0.0517*** (0.0147)	-0.005 (0.0040)
Expenses in R&D (log)	0.1383*** (0.0471)	-0.0895*** (0.0102)
Area in square kilometres (log)	-0.0026 (0.0642)	-0.0418*** (0.0142)
No. of municipalities	0.0030*** (0.0004)	0.0017*** (0.0001)
Metropolitan	0.0043 (0.0692)	0.0798*** (0.0171)
No. of firm prior investments in other provinces	0.0303*** (0.0013)	0.0060*** (0.0003)
Diversification	0.0902*** (0.0271)	0.0270*** (0.0050)
Specialisation	0.0985*** (0.0126)	0.0338*** (0.0045)
Primary GlobalCity	0.4371*** (0.1056)	1.3646*** (0.0377)
Secondary GlobalCity	-0.2465** (0.1183)	-0.0893** (0.0401)
North (dummy)	0.1245** (0.0542)	-0.0004 (0.0129)
Population density (log)	0.1806*** (0.0603)	0.0462*** (0.0136)
Constant	-5.5845*** (0.5737)	0.9153*** (0.1319)
Industry Fixed Effects	Yes	Yes
Observations	26832	27352
R-squared		0.136
Pseudo R-squared	0.293	

Note: The dependent variable is (1) having or not a prior investment in the province; (2) the number of prior investments in the province. Standard errors reported in parentheses. Asterisks denote confidence levels: *p<0.10, **p<0.05 and ***p<0.01. We also estimate a linear probability model for (1).

Table A.3. Second stage – Conditional Logit Model, correcting for endogeneity

	Mod 1	Mod 2	Mod 3	Mod 4	Mod 5	Mod 6
	Binary colocation variable		Count colocation variable			
Intra-firm colocation						
Colocation_Same_manuf_activity	13.5350*** (4.8676)	13.8278*** (5.1421)	1.8468*** (0.3390)	2.1925** (0.7201)	1.9317*** (0.3463)	2.2996*** (0.6621)
Colocation_Other_manuf_activity	0.8972 (0.3337)	0.8889 (0.3832)	0.9438 (0.1103)	1.0744 (0.2703)	0.9304 (0.1209)	1.0279 (0.2311)
Colocation_KIBS	1.0412 (0.4801)	1.0881 (0.5944)	1.0115 (0.4058)	1.6028 (0.9340)	1.0097 (0.4765)	1.575 (0.8173)
Colocation_Other_services_activity	2.1562* (0.9589)	2.2556** (0.9095)	2.6752*** (0.9594)	3.3853*** (1.4309)	2.6476*** (0.9927)	3.2762*** (1.2645)
Control variables						
Specialisation	1.3225*** (0.0560)	1.3162*** (0.0629)	1.3058*** (0.0554)	1.3030*** (0.0652)	1.3037*** (0.0594)	1.3004*** (0.0553)
Diversification	1.5567*** (0.1716)	1.5429*** (0.1891)	1.5213*** (0.1669)	1.5688*** (0.1583)	1.5216*** (0.1591)	1.5622*** (0.1675)
Primary GlobalCity	2.0274 (1.1125)	2.0094 (0.9595)	1.9409** (0.6374)	1.9151 (0.9265)	1.9675** (0.6325)	2.035 (0.9141)
Secondary GlobalCity	2.4877*** (0.7525)	2.5122*** (0.7807)	2.8751*** (0.6440)	2.8545*** (0.6933)	2.9226*** (0.7162)	2.9574*** (0.7013)
Population density (log)	1.2142 (0.1462)	1.206 (0.1600)	1.4012*** (0.1280)	1.2624** (0.1201)	1.4000*** (0.1249)	1.2625** (0.1218)
North (dummy)	1.5951** (0.3200)	1.5505** (0.2875)	1.7668*** (0.3055)	1.6791*** (0.2781)	1.7425*** (0.2611)	1.6537** (0.3281)
First Order Lagged Colocation						
Colocation_Same_manuf_activity_spatial_lag		0.156 (0.2605)			0.1794 (0.4005)	0.0421 (0.0946)
Colocation_Other_manuf_activity_spatial_lag		4.1588 (3.6120)			5.3500** (4.3272)	6.3900** (5.5674)
Colocation_KIBS_spatial_lag		4.6908 (7.8013)			3.389 (6.1140)	7.5258 (15.2635)
Colocation_Other_services activity_spatial_lag		0.3888 (0.4790)			0.368 (0.6056)	0.4631 (0.6330)
Residual for Colocation (from first stage)	0.8996 (0.3026)	0.8734 (0.2957)		0.8584 (0.1820)		0.8766 (0.1695)
Pseudo R-squared	0.2083049	0.2108227	0.1801182	0.1851499	0.1827065	0.1896667
Observations	25064	25064	28930	25584	28930	25584
Log-likelihood	-886.1429	-883.3247	-1013.56	-930.9826	-1010.36	-925.8221

Note: Dependent variable is the location decision of a new manufacturing investment i in the Province r . Choice set: 110 provinces. The coefficients of Conditional Logit model are reported as the *odds ratio*. Bootstrapped standard err. reported in parentheses. Asterisks denote confidence levels: * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$. We also compute generalised residuals from the first stage, and the main results do not change. Results are available under request to the authors.

Table A.4. Second stage – Mixed Logit Model, correcting for endogeneity

	Mod 1	Mod 2	Mod 3	Mod 4	Mod 5	Mod 6
	Binary colocation variable		Count colocation variable			
Mean						
Intra-firm colocation						
Colocation_Same_manuf_activity	3.8828*** (0.5708)	3.7994*** (0.5341)	1.5727*** (0.2401)	1.4470*** (0.3229)	1.5764*** (0.2583)	1.9180*** (0.4123)
Colocation_Other_manuf_activity	0.9275* (0.4940)	1.2375** (0.5422)	-0.0943 (0.1497)	0.1491 (0.3123)	0.0538 (0.1498)	0.0662 (0.3598)
Colocation_KIBS	0.2706 (0.6964)	0.0806 (0.6929)	0.0405 (0.5375)	-1.1158 (0.9533)	-0.5252 (0.7062)	0.8544 (0.8196)
Colocation_Other_services_activity	0.9938* (0.5128)	1.4548*** (0.5578)	0.5003 (0.5020)	0.3431 (0.6670)	0.5955 (0.5441)	-0.2935 (0.7342)
Control variables						
Specialisation	0.2368*** (0.0568)	0.2339*** (0.0615)	0.3135*** (0.0488)	0.3293*** (0.0485)	0.3200*** (0.0454)	0.3311*** (0.0519)
Diversification	0.4413*** (0.1546)	0.4524*** (0.1608)	0.5563*** (0.1308)	0.6043*** (0.1394)	0.5925*** (0.1355)	0.6497*** (0.1489)
Primary GlobalCity	-1.0132* (0.6008)	-1.3761** (0.6877)	-0.2462 (0.6192)	0.5242 (0.5909)	-0.4349 (0.6259)	-0.5864 (0.7788)
Secondary GlobalCity	-0.3675 (0.5483)	-0.3118 (0.5527)	-0.0532 (0.6798)	-0.4363 (0.8242)	0.1113 (0.6635)	0.5098 (0.5098)
Population density (log)	-0.1067 (0.1459)	-0.191 (0.1521)	0.3375*** (0.1018)	0.2198* (0.1195)	0.3233*** (0.1042)	0.2100* (0.1242)
North (dummy)	0.0615 (0.2030)	-0.0172 (0.2106)	0.5080*** (0.1736)	0.4644** (0.1811)	0.5287*** (0.1810)	0.4368** (0.1859)
First Order Lagged Colocation						
Colocation_Same_manuf_activity_spatial_lag		-3.1526 (2.8291)			-2.9284 (2.4890)	-2.0047 (1.9719)
Colocation_Other_manuf_activity_spatial_lag		1.2479 (1.1609)			1.6378 (1.1412)	-0.8094 (1.8256)
Colocation KIBS_spatial_lag		1.1979 (2.1562)			0.0109 (2.1244)	0.9137 (2.0963)
Colocation_Other_services activity_spatial_lag		0.0162 (1.3840)			-1.0075 (1.8624)	-1.8943 (2.2369)
Residual for Colocation (from first stage)	-1.1892*** (0.3037)	-1.3924*** (0.3145)		0.0922 (0.2734)		-0.1656 (0.3044)
Standard Deviation						
Residual for Colocation (from first stage)	0.6954*** (0.2024)	0.5647** (0.2397)		1.1459*** (0.1789)		0.9522*** (0.1963)
Colocation_Same_manuf_activity	3.0038*** (0.8360)	3.0928*** (0.8938)	1.7201*** (0.3452)	1.6484*** (0.3324)	2.1864*** (0.3760)	1.9414*** (0.4956)
Colocation_Other_manuf_activity	-0.7222 (0.4627)	-0.9852* (0.5901)	-0.5268*** (0.1613)	-0.3092 (0.2728)	0.4964** (0.2123)	-0.1308 (0.1634)
Colocation_KIBS	4.1226*** (0.9720)	4.9841*** (1.1122)	2.0476*** (0.4939)	5.1355*** (1.2459)	-3.2922*** (0.9242)	-4.0311*** (1.2773)
Colocation_Other_services_activity	3.2382*** (0.6092)	3.3547*** (0.6300)	3.2284*** (0.7179)	-2.2809*** (0.5905)	3.0522*** (0.7845)	-3.1695*** (0.7876)
Primary GlobalCity	1.5688** (0.6705)	2.1805** (0.9545)	-2.3028*** (0.7468)	0.1936 (0.8587)	-2.5378*** (0.5616)	-2.4153*** (0.8874)
Secondary GlobalCity	-1.4399** (0.5816)	-1.2789** (0.6504)	1.7953*** (0.6398)	2.1521*** (0.7752)	1.7614** (0.7808)	1.0895* (0.5606)
Specialisation	-0.0565 (0.0592)	-0.0558 (0.0622)	0.0831 (0.0550)	0.1047 (0.0705)	0.0669 (0.0442)	0.0957 (0.0649)
Diversification	-0.3534** (0.1562)	-0.4059*** (0.1297)	-0.2408 (0.1816)	0.2596 (0.1935)	-0.2977* (0.1786)	0.3192 (0.1995)
Population density (log)	-0.0941 (0.2032)	-0.2485 (0.2123)	-0.1957 (0.2218)	-0.1171 (0.1815)	0.0659 (0.1783)	0.2138 (0.1868)
Colocation_Same_manuf_activity_spatial_lag		5.9325* (3.4911)			6.5909*** (2.0903)	2.5246 (2.9280)
Colocation_Other_manuf_activity_spatial_lag		-3.6403*** (1.3536)			4.3159*** (1.1839)	6.3737*** (2.2511)
Colocation KIBS_spatial_lag		3.9251 (3.3480)			1.053 (2.9216)	1.7867 (2.9952)
Colocation_Other_services activity_spatial_lag		0.8573 (2.9258)			3.5155 (3.8729)	5.6097 (3.7368)
Observations	25064	25064	28930	25584	28930	25584
Log-likelihood	-857.3939	-848.804	-970.5873	-890.1103	-959.1807	-881.5889

Note: Dependent variable is the location decision of a new manufacturing investment i in the Province r . Choice set: 110 provinces. Std. err. reported in parentheses. Asterisks denote confidence levels: * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$. We also compute generalised residuals from the first stage, and the main results do not change. Results are available under request to the authors.