

Inward FDI and Skilled Labour Force in Veneto Industrial Districts



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Abstract Technological changes, globalisation and the increasing heterogeneity of firms populating Italian industrial districts (IDs) have deeply affected the fabric of these IDs. This chapter sheds light on the contribution of inward foreign direct investments (FDIs) to the host country's skilled workforce, which is one of the most critical factors in IDs' socio-economic resources. The chapter investigates whether, within the IDs, the labour workforce skills composition of affiliates of foreign multinational enterprises (MNEs) differs from that of uni-national firms. The analysis uses microdata from the Veneto NUTS-II region (Northeast Italy), as this is an economic area world-renowned for its manufacturing production and has historically been considered as a referential context for the Italian ID model. The results show that foreign affiliates of MNEs located in the Veneto IDs hire more skilled workers and more experienced workers (above 30 years old), as well as fewer foreign workers. This provides evidence of a positive impact of the presence of foreign affiliates of MNEs on the sustainability of IDs' socio-economic fabric.

Keywords Industrial district · Skills composition · Propensity score matching · Industrial commons · Inward FDIs

1 Introduction

The talents present in particular regions define their economic value as never before. A specialised, skilled workforce is a key economic development asset that enhances local and regional innovation capabilities (Jacobs and Hawley 2009; Capello and Lenzi 2015). According to Pisano and Shih (2012: 23), there is a close connection

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between the competitiveness of companies and the competitiveness of workers located in the same area. If workers are not endowed with appropriate skills (education and training), then the enterprise's competitive power will be threatened. Conversely, dense concentrations of highly skilled workers in geographically localised clusters trigger virtuous processes of economic growth (Moretti 2012). The external economies of localisation, or "industrial commons" (Pisano and Shih 2009, 2012), comprise: skilled workforce, supply networks, manufacturing culture and social capital, which are necessary to support manufacturing.

In this context, it is crucial to investigate how companies located in developed countries employ their local labour forces, and how this use fosters skilled workers' upgrading (Barzotto et al. 2016b). Specifically, issues that have been neglected by the literature include the role played by foreign MNEs (henceforth FMNEs) in sustaining local human resources present in industrial districts (IDs). MNEs are often considered to be key actors that influence local, regional and national performance in terms of learning, innovation, competitiveness, growth and development (see, among others, Cantwell and Mudambi 2005). The embeddedness of MNEs, in terms of both their location and their networking strategies, has therefore become a crucial goal of local and regional development policy (Zanfei 2000; McCann and Mudambi 2005). In particular, IDs, which are characterised by an industrial atmosphere of collective information and knowledge specific to the business (Becattini 1990), may allow MNEs to benefit from agglomeration economies relating to collective learning, labour market pooling and local buzz (Mariotti et al. 2014).

This chapter focuses on IDs in the Veneto NUTS-II region (Northeast Italy) and analyses whether and how the affiliates of FMNEs in 2014 contributed to improving the IDs' socio-economic fabric and specifically to fostering local, experienced, highly skilled workers within the IDs. The Veneto region was chosen because it has traditionally been a world-renowned economic area for manufacturing production based on IDs in the "Made-in-Italy" sectors. In 2011, it hosted 19.9% (28) of Italian IDs and employed 26.7% of total workers. The region attracts significant inward foreign direct investments (IFDIs)—four times higher than the Italian average and five times higher than the Lombardy region which is considered to be Italy's economic and financial hub.

To address the issue empirically, a novel database was adopted, merging economic data on manufacturing FMNEs and on uni-national firms (UNINATs) in Veneto in 2014.¹ Specifically, the firm-level dataset combined three sources of data:

1. The Reprint database, which records inward and outward manufacturing FDIs in Italy since 1986 (Mariotti and Mutinelli 2016)
2. The AIDA database by Bureau van Dijk, which provides balance sheet data on active Italian firms
3. The Informative System Veneto Labour (SILV) dataset by Veneto Lavoro, which registers the employment composition of firms active in Veneto

¹Uni-national firms are those firms that have never undertaken FDI abroad nor been acquired by foreign MNEs.

Matching the three datasets based on firms' fiscal codes allowed the employment structures of two typologies of firms to be compared. ID classifications, provided by the Italian Statistical Institute (ISTAT), allowed us to distinguish between district firms and non-district firms. Descriptive statistics and econometric analysis were developed, devoting particular attention to firms' labour composition (in terms of skills level, age and nationality), performance and location inside or outside an ID.

The chapter is structured in five sections. Section 2 reviews the literature on (a) firm heterogeneity by ownership (Sect. 2.1), (b) host-country effects of IFDIs (Sect. 2.2), (c) MNEs' location determinants and agglomeration advantages (Sect. 2.3) and (d) the contribution of IFDIs to local industrial commons (Sect. 2.4). Section 3 focuses on the data and methodology. Descriptive statistics and econometric analysis are given in Sect. 4, and Sect. 5 draws some conclusions.

2 Literature Review

This chapter focuses on the effects of IFDIs on the host country's labour composition and investigates differences in the proportion of local, experienced, highly skilled labour in UNINATs and FMNEs located in Veneto's IDs in 2014. This analysis allows us to shed some light on the contribution of IFDIs to the IDs' industrial commons. Four strands of literature are involved in this reasoning: (a) firm heterogeneity by ownership; (b) the host-country effects of IFDIs, specifically on the host country's labour market; (c) MNEs' location determinants and agglomeration advantages and (d) the contribution of IFDIs to IDs' industrial commons. According to Pisano and Shih (2009: 13), the latter consist of "technological know-how, operational capabilities and specialised skills that are embedded in the workforce, competitors, suppliers, customers, cooperative R&D ventures and universities and often support multiple industrial sectors".

2.1 Firm Heterogeneity by Ownership

Firms are heterogeneous in terms of efficiency and competitive capabilities. Firm heterogeneity has been widely debated in the empirical literature (Barbosa and Louri 2005; Castellani and Zanfei 2006; Greenaway and Kneller 2007; Mayer and Ottaviano 2007; Brouwer and Mariotti 2014), and one stream of studies focuses on heterogeneity linked to ownership. Firms in international markets are more likely than firms in smaller domestic markets to adopt new technologies and achieve higher productivity (Schmitz 2005). They may generate knowledge spillovers through various intra- and inter-industry interaction mechanisms (Mariotti et al. 2008; Beugelsdijk et al. 2010; Ietto-Gillies 2012; Iammarino and McCann 2013), and they may affect domestic productivity through competition, imitation and training (Dunning 1993).

However, empirical studies have focused mainly on comparing FMNEs and domestic firms in terms of labour productivity, capital intensity, firm size and wage levels, while little attention has been devoted to labour composition, which is crucial to enhancing a territory's competitiveness. One recent study does focus on this issue (Barzotto et al. 2016b), finding that UNINATs and FMNEs located in the Veneto region between 2007 and 2013 differed in terms of workforce skills composition, in that affiliates of foreign MNEs tended to employ a larger proportion of highly skilled labour.

2.2 Effects of IFDIs on a Host Country's Labour Market

The main effects of IFDIs on the host country are on wages, employment and skills, productivity and knowledge spillovers to domestic firms, exports and the introduction of new industries and host-country growth (see Lipsey 2002; Ietto-Gillies 2012; Barba Navaretti and Venables 2004).

The literature clearly shows that foreign-owned firms pay higher wages than domestically owned firms because they tend to be in higher-wage sectors of the economy and are larger; more capital-intensive; more innovative with respect to products, production processes and production organisation; and more intensive in their use of intermediate products (Doms and Jensen 1998; Barbosa and Louri 2005; Ietto-Gillies 2012; Castellani and Zanfei 2006; Greenaway and Kneller 2007; Mayer and Ottaviano 2007). FMNEs tend to hire more educated and better qualified workers (Girma and Gorg 2007) and to invest in staff training courses and better working conditions (OECD 2008; Driffield and Taylor 2002). Another reason why FMNEs pay employees more than their counterparts relates to the need to overcome information asymmetry (Barba Navaretti and Venables 2004), since they own less information than local firms in the institutional and productive context in which they offshore.

As far as productivity is concerned, foreign-owned firms have higher productivity levels (Griffith and Simpson 2001; De Backer and Sleuwaegen 2002; Castellani and Zanfei 2006), mainly because of larger-scale production in foreign-owned plants (Lipsey 2002). Moreover, some studies find positive productivity spillovers towards domestically owned firms, while others see the evidence as inconclusive. IFDIs are responsible for the introduction of new industries or products to the host-country economy and tighter linking of the host country to the world trading system (Lipsey 2002). Therefore, both the productivity effects of IFDIs and the development of new (to the host country) products impact on the host country's economic growth, albeit sometimes negatively (e.g. fast growth may involve disruption and destruction of the value of old production techniques and old skills).

2.3 MNE Location

The literature on FDI determinants indicates that MNEs spread their investments between countries to maximise their risk-adjusted profits (Caves 1974). These profits may depend on three groups of factors in the eclectic OLI paradigm developed by Dunning (1979, 1993, 2003, 2009). “Ownership advantages” are firm-specific factors enabling the firm to grow more successfully than competitors in the home or host country (e.g. proprietary technology and management expertise). “Location advantages” are location-specific factors in the host country that make it the best place for the firm to do business (e.g. cheap labour, growing market size and good infrastructure). Finally, “Internalisation advantages” are factors associated with the firm’s trade-off between FDIs and exporting or licensing (e.g. trade barriers and difficulties in finding a trustworthy licensee). The main location determinants identified by both location theory and research on location advantages are (1) “traditional” location factors (labour costs and availability, labour skills and labour unionisation, market size and market potential, competitiveness level and density, land costs and availability, agglomeration economies, transportation costs and other costs, taxes and financing); (2) infrastructure, services and intangible assets; (3) environmental and social context; (4) policy framework; and (5) information costs (see Appendix, Table 8).

Scholars suggest that localisation externalities are linked to increasing returns and better innovation (see the Arrow-Marshall-Romer model in Glaeser et al. 1992). Localisation externalities allow geographically concentrated firms in the same industry to learn from each other, exchange ideas and access external knowledge and resources without monetary transactions (e.g. Brusco 1982; Piore and Sabel 1984; Saxenian 1994). This fosters knowledge spillovers between firms and facilitates innovation within that particular industry in that location.

The literature emphasises that international firms may benefit from being located in certain agglomerations. MNEs have a great deal to gain from locating in IDs because it is generally advantageous to locate their facilities where other similar establishments are concentrated (Andersson et al. 2002; Bronzini 2007).² Specifically, location in an ID provides access to a trio of key agglomeration economies—a local pool of skilled labour, local input-output linkages and local spillovers (Marshall 1890)—and therefore to industry-specific knowledge and skills (Mariotti et al. 2014). Evidence from Italian IDs confirms that MNEs’ strategy of acquiring district firms enables them to become deeply immersed in the industrial atmosphere of the district, to catch novelties and market changes and to grasp contextual knowledge produced locally (e.g. Belussi and Asheim 2010). According to Iammarino and McCann (2013: 203), “following a combination of Marshall, Vernon, Porter and Alchian’s arguments, ‘knowledge-intensive’ MNE operations should be located in ‘knowledge-

²According to Becattini (1990: 40), “Industrial districts are geographically defined productive systems, and in various ways, [involved] in the production of a homogeneous product, with different specialisations but interconnected with each other”.

intensive' regions characterised by other similar knowledge-intensive activities and establishments".

2.4 *Contribution of IFDIs to Local Industrial Commons*

In the last two decades, offshoring and technological changes have impacted on IDs. District firms—mainly medium-sized and large ones—belonging to global networks have generated external economies that go beyond cluster boundaries. The strong industry specialisation originally peculiar to district areas is fading, but the necessary manufacturing supply infrastructure and know-how embedded in firms, as well as the education system and public institutions, can still be found in these areas. Within this novel ID phenomenon, “industrial commons” seems a more appropriate description of the resources currently present in district areas (Barzotto et al. 2017). As previously mentioned, Pisano and Shih (2009, 2012) define industrial commons as “the set of manufacturing and technical capabilities that support innovation across a broad range of industries” (2009: xii). Industrial commons can be classified as goods whose use is difficult to exclude from potential beneficiaries. These goods are also characterised by a certain level of rivalry, especially when allocations of these resources fall below a critical threshold.³ Knowledge flowing through companies constantly nourishes the commons, through movements of employees, supplier-customer collaborations and formal and informal technology sharing.

As described in the literature on the effects of FDIs on host countries, foreign MNEs may trigger new dynamics in IDs (De Marchi et al. 2014; De Marchi and Grandinetti 2014). Indeed, MNEs play a crucial role in diffusing knowledge both within and outside ID boundaries (Hervas-Oliver and Boix-Domenech 2013; Sedita et al. 2013). For example, Morrison (2008: 818) finds that MNEs, as leading firms, make significant efforts to search for and translate knowledge from external sources, including universities and sectoral research centres. Barzotto et al.'s (2017) recent investigation of how MNEs can boost the regeneration of industrial commons in a district area identifies five local assets that are crucial for sustaining the development of an ID and hence the innovation capabilities of companies populating that area: (1) labour pools and distinctive skills; (2) supplier and user networks; (3) education and research systems (including universities, lifelong education and public and private research centres); (4) public, private and associative institutions; and (5) the financial system and its ability to provide companies with capital and information. The authors find that MNEs can sustain the regeneration of IDs' production fabric by

³As industrial commons are a positive externality, two important aspects can be identified: (i) the existence of a social benefit arising from the fact that the company can draw on the assets of the local commons without payment and (ii) the absence of property rights, which may easily give rise to a market equilibrium lower than the social optimum. Depending on the types of local resource, the imbalance arising from their under-/over-exploitation may lead to the rapid disappearance of goods (Barzotto et al., 2016a).

recombining the specificities of geographically close IDs, which in turn leads to the creation of new products and/or the development of new sectors. The capability of MNEs to exploit and recombine industrial commons enables them first, to penetrate international markets; second, to nourish a critical mass of talented labour, educational and research centres and specialist firms; and third, to ensure the regeneration of ID capabilities, as well as the flourishing of specific industries.

3 Data and Methodology

The latest classification of Italian IDs is provided by ISTAT's ninth census of industry and services (ISTAT 2015), which identifies 141 IDs specialising in 11 macro-sectors. IDs represent about a quarter of the Italian productive system in terms of local labour systems, jobs and local units; and IDs' manufacturing employment represents more than a third of total Italian employment.

Table 1 shows the distribution of the 141 IDs by geographical area. As already stated, the Northeast macro-area, which represents the traditional reference area of the Italian ID model, hosts the majority (45; 31.9%), with Veneto accounting for 28 IDs (19.9% of Italian IDs) and 26.2% of total employees (Table 1). Veneto and the Lombardy region host about 40% of Italian IDs (19.9% and 20.6%, respectively) and 60% of the district's manufacturing employment (26.2% in Veneto and 33.7% in Lombardy).

Among the 141 IDs, 130 (92.2% of the total) specialise in Made-in-Italy sectors, with a prevalence in machinery and equipment (27%), textiles and clothing (22.7%), wood and furniture (17%) and leather and footwear (12.1%). In terms of geographical distribution, area specialisations do emerge: the Northwest reveals an above-average number of districts specialising in metal products, machinery and equipment and textiles and clothing and the Northeast in wood and furniture, machinery and equipment and jewellery. Districts specialising in leather and footwear prevail in the Centre and the South, while those specialising in food and beverages dominate in the South (Table 2). Veneto registers the highest percentage of IDs in machinery and equipment (31.6%) and wood and furniture (29.2%). It also hosts a quarter of Italian IDs in jewellery, 11.8% of leather and footwear districts and 15.6% of textiles and clothing districts (Table 2).

Data on the affiliates of FMNEs (IFDIs) located in Veneto's IDs were drawn from the Reprint database, compiled by the Politecnico di Milano and sponsored by the Italian Institute for International Trade (ICE). This dataset provides an annually updated census of both foreign affiliates of Italian firms and Italian affiliates of foreign firms (in terms of numbers of employees and sales) since 1986 (for details, see Mariotti and Mutinelli 2016). According to Reprint, 257 FMNEs invested in Veneto in 2013, with 299 manufacturing affiliates representing 11 per cent of total foreign affiliates in Italy (Table 3).

In addition to the Reprint dataset, two other datasets were used: the AIDA database by Bureau van Dijk, which provided data on the balance sheets of

Table 1 Geographical distribution of Italian industrial districts in 2011

| | Industrial districts | | Employees | |
|-------------------|----------------------|-------|-----------|-------|
| | <i>n</i> | % | <i>n</i> | % |
| Northwest | 37 | 26.2 | 1,812,392 | 37.1 |
| Northeast | 45 | 31.9 | 1,788,770 | 36.6 |
| Veneto | 28 | 19.9 | 1,278,439 | 26.2 |
| Centre | 38 | 27.0 | 959,537 | 19.6 |
| South and islands | 21 | 14.9 | 326,828 | 6.7 |
| Italy | 141 | 100.0 | 4,887,527 | 100.0 |

Source: Authors' elaboration of ISTAT data

Table 2 Sectoral and geographical distribution (%) of Italian industrial districts specialising in Made-in-Italy sectors in 2011

| | Northwest | Northeast | Centre | South and islands | Italy | <i>Veneto</i> |
|-------------------------|-----------|-----------|--------|-------------------|-------|---------------|
| Wood and furniture | 8.3 | 54.1 | 33.4 | 4.2 | 100.0 | 29.2 |
| Jewellery | 25.0 | 25.0 | 50.0 | 0.0 | 100.0 | 25.0 |
| Machinery and equipment | 44.7 | 50 | 5.2 | 0 | 100.0 | 31.6 |
| Metallurgy | 75.0 | 25.0 | 0.0 | 0.0 | 100.0 | 0.0 |
| Food and beverages | 13.3 | 20.0 | 13.3 | 53.2 | 100.0 | 6.7 |
| Leather and footwear | 5.9 | 11.8 | 70.6 | 11.8 | 100.0 | 11.8 |
| Textiles and clothing | 21.9 | 18.7 | 31.3 | 28.2 | 100.0 | 15.6 |
| Other industries | 57.1 | 0.0 | 14.3 | 28.6 | 100.0 | 0.0 |
| Total | 26.2 | 31.9 | 27.0 | 14.9 | 100.0 | 19.9 |

Source: Authors' elaboration of ISTAT data

Table 3 Inward FDIs in Italy and Veneto in 2013—manufacturing industry

| | Inward FDIs in Italy (total) | Inward FDIs in Italy (control) | Inward FDIs in Veneto (total) ^a | Inward FDIs in Veneto (control) ^b |
|--|------------------------------|--------------------------------|--|--|
| Investing MNEs | 1673 | 1552 | 257 (15.4%) | 226 (14.6%) |
| Affiliates of MNEs | 2723 | 2425 | 299 (11%) | 258 (10.6%) |
| Employees—affiliates | 484,784 | 430,676 | 35,053 (7.2%) | 30,134 (7%) |
| Foreign affiliates' turnover (million Euros) | 211,484 | 180,003 | 10,815 (5.1%) | 8956 (5%) |

Notes: ^aTotal inward FDIs; ^bOnly control inward FDIs. Source: Reprint data

manufacturing firms located in Veneto during the period 2007 to 2013, and the SILV database by Veneto Lavoro, which registered the employment composition (age, gender, citizenship, professional activity, educational qualifications, type of contract, new hirings/dismissals) of firms active in Veneto in 2014. Matching these datasets allowed us to compare the employment structures of FMNEs and UNINATs located in 1 of the 28 Veneto IDs.

After cleaning up the dataset, the sample of FMNEs and UNINATs consisted of 6953 district firms, of which 131 were FMNEs and 6822 UNINATs (firms that had neither been acquired by foreign companies nor invested abroad throughout the period 2007–2014). FMNEs and UNINATs located in Veneto's IDs were compared through descriptive statistics and counterfactual analysis. The descriptive statistics explored whether and how FMNEs and UNINATs differed according to sector specialisation, size (turnover), labour costs and employment composition in terms of skills, age and nationality (Table 4). The results of the descriptive statistics were corroborated by counterfactual analysis with reference to the last year of the period of analysis (2013 for firm characteristics, and 2014 for labour composition data).

The counterfactual analysis was run in order to construct an appropriate counterfactual group of UNINAT firms to compare with the FMNEs. The crucial assumption behind matching the two groups of firms (treated: FMNEs; untreated: UNINATs) was that, conditional on a set of observable characteristics (X), the potential outcomes (Σy_i) were independent of the outcome. When selecting cases on this assumption, the counterfactual outcome of cases in group A (FMNEs) should be the average outcome of group B (NATs), with the same selected observable characteristics (Caliendo 2008). In order to construct an appropriate counterfactual, propensity score (p -score) matching was adopted, consisting of a discrete choice model and an ATT (average treatment on the treated). First, a logit model was estimated, where the dichotomy—assuming a value of 1 if the company had a foreign participation—was regressed on the size proxy and on sector dummy variables (Pavitt's sector classifi-

Table 4 Variables and data sources

| Label | Variable | Unit | Year | Source |
|----------------------|---------------------------------|----------------------|------------|---------|
| Firm characteristics | Ownership | Dummy variable | 2007–2013 | Reprint |
| | Macro-sector | Dummy variable | 2007–2013 | AIDA |
| | Firm size (turnover) | Thousands of Euros | 2007–2013 | AIDA |
| Performance | Labour cost per employee | Thousands of Euros | 2007–2013 | AIDA |
| Labour composition | Share of highly skilled workers | No. of workers/share | 2008, 2014 | SILV |
| | Share of under 30 workers | No. of workers/share | 2008, 2014 | SILV |
| | Share of foreign workers | No. of workers/share | 2008, 2014 | SILV |

cation of manufacturing industries).⁴ Turnover referred to 2010 in order to control for the FMNE cherry-picking argument that “the best performing local firms are taken over by foreign investors” (e.g. Criscuolo and Martin 2004; Crinò and Onida 2007; Crinò 2010). An ATT was developed in STATA14, using the five nearest neighbours matching method (random draw version) with replacement and caliper (= 0.01) and conditioning on common support (see Caliendo and Kopeinig 2008). The new sample resulting from the p-score matching (counterfactual analysis) was composed of 86 FMNEs and 4856 NATs. Sample validity was checked through econometric tests to evaluate the absence of statistically significant differences between the two groups of companies along the dimensions used to create the counterfactual sample.

4 Empirical analysis

4.1 Descriptive Statistics

As previously stated, the database on UNINATs and FMNEs located in Veneto’s IDs recorded 6953 observations, of which 6822 were UNINATs and 131 FMNEs. Analysis of the specialisation sector was based on classifications in three macro-sectors, according to Pavitt’s classification:

- Direct Made-in-Italy (e.g. textiles, footwear and leather), characterised by innovation provided mainly by suppliers, and the majority of their technology provided by other sectors
- Indirect Made-in-Italy (e.g. machinery and equipment), dependent on specialist-suppliers with engineering knowledge and competencies
- Other sectors (e.g. pharmaceuticals and electronics), mainly scale-intensive and science-based, with insourced R&D

With regard to sector specialisation, the two groups of firms operated mainly in the Direct Made-in-Italy sector (47% of UNINATs and 53% of FMNEs), followed by the Indirect Made-in-Italy sector (44% and 28%, respectively) and other sectors (9% and 19%, respectively).

The groups of firms differed in size (turnover), with FMNEs being three times larger than UNINATs, FMNEs’ labour costs about 1.5 times higher than UNINATs’ and the proportion of highly skilled workers about 1.6 times higher in FMNEs than UNINATs. With regard to foreign and young (under 30 years old) employees, UNINATs had a higher proportion (Table 5).

⁴Pavitt’s (1984) classification is based on firms’ technological trajectories. Specifically, firms were considered to be in one of four categories: supplier-dominated, production-intensive (scale-intensive), production-intensive (specialist-suppliers) and science-based.

Table 5 Descriptive statistics for UNINATs and FMNEs

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|--------------------------------------|--------------|-----------|--------------------|---------|----------|
| UNINATs | | | | | |
| Turnover 2013 | 6822 | 5696.71 | 19,211.71 | 0 | 739,840 |
| Labour costs 2013 | 6732 | 33.072 | 12.15 | 0 | 95 |
| Share of highly skilled workers 2014 | 6822 | 0.177 | 0.23 | 0 | 9 |
| Share of foreign workers 2014 | 6822 | 0.150 | 0.21 | 0 | 1.5 |
| Share of under 30 workers 2014 | 6822 | 0.307 | 0.24 | 0 | 3 |
| FMNEs | | | | | |
| Turnover 2013 | 131 | 37,713.45 | 64,226.02 | 283 | 373,833 |
| Labour costs 2013 | 131 | 49.626 | 13.252 | 4 | 89 |
| Share of highly skilled workers 2014 | 131 | 0.293 | 0.175 | 0 | 0.81579 |
| Share of foreign workers 2014 | 131 | 0.089 | 0.109 | 0 | 0.536232 |
| Share of under 30 workers 2014 | 131 | 0.211 | 0.139 | 0 | 0.6 |

4.2 *Econometric Analysis*

The counterfactual analysis consisted of a logit model and an ATT.⁵ The explanatory variables used for the logit model were turnover in 2010 and Pavitt's (1984) macro-sectors.

The results of the logit regression confirmed the findings of the descriptive statistics: FMNEs were larger in terms of turnover than UNINATs and tended to operate in the Indirect Made-in-Italy and other (scale-intensive and science-based) sectors (Table 6). This is consistent with evidence that, on average, UNINATs specialise more in traditional sectors (Direct Made-in-Italy), while affiliates of foreign MNEs are more specialised, technology-oriented and innovative.

There were 86 treated (FMNEs) and 4856 untreated firms (UNINATs). The ATT estimation shows that FMNEs paid higher wages than UNINATs, confirming the results of previous studies, and hired more highly skilled workers than UNINATs. UNINATs tended to hire younger workers and foreign workers (Table 7). This may be explained by the fact that MNEs need to reduce the liability of foreignness (Nachum 2003; Goerzen et al. 2013) by employing experienced national and local workers.

⁵The model was run in STATA14, using the nearest neighbour matching method (random draw version) with replacement and caliper (=0.01) and conditioning on common support.

Table 6 Logistic regression

| Variable | Coefficient |
|------------------------|-------------|
| Turnover 2010 (ln) | 0.9943*** |
| Indirect Made-in-Italy | 0.8768*** |
| Other sectors | 0.9837*** |
| Constant | -12.9818*** |
| Number of observations | 5729 |
| Prob > χ^2 | 0.0000 |
| Pseudo R^2 | 0.2084 |
| Log likelihood | -445.9296 |

Note:*** is significant at 10%, 5% and 1% levels, respectively

Table 7 ATT estimation

| Variable | Year | UNINATs | FMNEs | ATT | Standard Deviation | Significance |
|---------------------------------|------|---------|-------|--------|--------------------|--------------|
| Share of highly skilled workers | 2014 | 4856 | 86 | 0.057 | 0.021 | Significant |
| Share of under 30 workers | 2014 | 4856 | 86 | -0.042 | 0.020 | Significant |
| Share of foreign workers | 2014 | 4856 | 86 | -0.040 | 0.016 | Significant |
| Labour cost per employee | 2013 | 4856 | 86 | 6.702 | 1.555 | Significant |

Specifically, MNEs located in IDs tended to use, and foster, local experienced and highly skilled workers, boosting the possibility of generating knowledge spillovers.

5 Conclusions

Attracting IFDIs has become one of the main goals of local and regional development policies because foreign investment brings larger-scale, more capital-intensive or more technically advanced methods of production. Foreign MNEs are driven to locate where they can benefit from localisation externalities: the more a region is specialised or dense in one sector, the more it attracts foreign investment within the same sector. In the case of Italian IDs, the endowment of scientific and technological

infrastructure, qualified localised capabilities and specifically local industrial commons are pivotal location factors for foreign MNEs.

The results of the counterfactual analysis underline that FMNEs are larger in terms of turnover, pay higher wages and employ greater proportions of highly skilled workers than UNINATs. FMNEs hire more workers who are older than 30 and non-foreign. This relates to the need for foreign MNEs to reduce the liability of foreignness by hiring more experienced workers who are embedded in the local environment. This propensity by FMNEs to hire local workers who, in the Italian context, are presumably more skilled, may trigger a concentration of specialist workers, fostering the circulation of know-how and knowledge spillovers (e.g. Capello and Lenzi 2015) and enabling human capital regeneration and development. Thus, FDI contributes positively to regional socio-economic development by sustaining the industrial commons of the area in which it is located through hiring experienced, local and highly skilled workers. The analysis highlights that, compared with UNINATs, a higher proportion of FMNEs operates in nontraditional sectors (e.g. scale-intensive and science-based sectors).

The presence of FMNEs in other sectors may generate a recombination of knowledge domains that complement the Made-in-Italy know-how held in UNINATs. The areas in which FMNEs are located may benefit from the creation and diffusion of new knowledge and innovation. Foreign MNEs are more influential and therefore able to capture novelties and market changes and absorb contextual knowledge produced locally (e.g. Belussi and Asheim 2010). Different effects may spring from foreign MNEs' presence, depending on their sector of specialisation. Indeed, FMNEs specialising in the ID sector may be more likely to experience positive intraindustry spillovers which, in the medium to long run, may lead to "lateral" spillovers, such as effects relating to the creation of an international atmosphere within the ID (see Mariotti et al. 2008). This atmosphere triggers district firms' international growth, thus affecting the district's labour composition. These issues might be further investigated in order to better understand the role played by foreign MNEs in the evolution and skills composition of IDs, and tailored policies might be developed and recommended.

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Appendix

Table 8 Firm location factors

| Category | Factors |
|--|--|
| Traditional location factors | Labour (labour costs and availability, labour skills and labour unionisation) Market (market size and market potential, competitiveness level and density) Land (land costs and availability) Agglomeration economies (localisation economies, urbanisation economies) Transportation costs Other costs (taxes and financing) |
| Infrastructure, services and intangible assets | Presence of and accessibility to infrastructure Quality of utilities Business services (banking and financial services) Scientific and technological assets |
| Environmental and social context | Social cohesion and sense of legality Economic, political and social stability Legal system Intellectual property rights protection Bureaucratic efficiency |
| Policy framework | Competition policy Trade policy Tax policy Environmental policy |
| Information costs | Geographical distance from the core (of city, region, nation) Geographical proximity to the home country Cultural proximity between home and host countries FDI penetration |

Source: Mariotti (2015)

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