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The impact of Inward FDI on host country labour markets. A counterfactual analysis on Italian manufacturing companies

Mariachiara Barzotto, Giancarlo Corò, Ilaria Mariotti, Marco Mutinelli

ABSTRACT

Countries are increasingly competing to attract inward foreign direct investments (FDIs) to benefit from the superior performance of the international firms. Yet there is still scant evidence about the effects of inward FDIs on the high-income countries' industrial base. In advanced economies a specialised, skilled workforce has emerged as a pivotal economic development asset to enhance innovation capabilities. The paper aims at investigating how the use of a local, skilled workforce differs according to the firms' ownership; being either affiliates of foreign multinationals (MNEs), or uni-national firms (firms that have neither been acquired in the period of analysis, nor have invested abroad; henceforth NATs). We empirically investigate this issue by adopting a novel database linking regional labour force characteristics with economic data on inward FDIs and NATs, operating in the manufacturing industry in the Veneto NUTS2 region (northeast of Italy) between 2007 and 2013. Descriptive statistics and counterfactual estimation have been developed, focusing on firms' skill composition (e.g. skill level, age, gender and nationality). The results show that the two groups of firms differ in terms of workforce skill composition, and the affiliates of foreign MNEs positively impact on the regeneration of the host country's human capital by attracting and employing a wider share of more highly skilled labour force.

Keywords: Host Country, Labour Market, Advanced Economies, Skill Composition, Propensity Score, Manufacturing Industry, FDI

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c.MET Working paper 03/2016
December 2016

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1. INTRODUCTION

The fast pace of globalisation has reshaped not only the global scaling of trade, but also the organisation of economic activity and, accordingly, the division of labour (e.g. Gereffi *et al.*, 2001; Nielsen and Sturgeon, 2014). In the last decades, the international engagement of manufacturing firms in advanced economies has been both active and passive. On the one hand, they have heavily offshored low value-added operations to low labour cost economies and focused on high value-added upstream and downstream activities at home. On the other hand, they have received inward FDIs, from both other developed countries and from emerging ones. The extensive pursuit of these strategies has significantly affected the resource endowment of high-income countries, among which their skill composition.

The presence of inward FDIs in the host countries may bring potential benefits such as stronger innovative performance (Aitken, Harrison, 1999; Crescenzi *et al.*, 2015), this is one of the reasons why countries are increasingly competing to attract inward FDIs. Nevertheless, the progressive moving away from the domestic productive ecosystem (e.g. Berger, 2013), and the control over key assets that foreign companies can gain by acquiring companies based in high-income countries (Giuliani *et al.*, 2014: 681) may lead multinational manufacturing firms in advanced economies to dissipate their own ‘industrial commons’: the set of external economies of localisation – such as skilled workforce, supply networks, manufacturing culture, social capital – necessary to support manufacturing (Pisano and Shih, 2009; 2012). The threat to or, in some cases, the entire erosion of the industrial commons is severely jeopardising the long-period competitiveness of advanced economies, for instance, by hollowing out the local suppliers’ networks and the loss of critical skills, competences and tacit knowledge.

The literature on the host countries has widely documented the superior performance of international firms, whereby multinationals (MNEs) are more productive than exporters, who in turn outperform purely domestic firms (Castellani and Zanfei, 2006; Greenaway and Kneller, 2007; Mayer and Ottaviano, 2008), thanks to their ability to reap ownership advantages and easily transfer them within firm boundaries (Dunning, 1993). The sources of these productivity *premia* have, however, largely remained unclear. Standard theoretical models consider differences in productivity as the results of chance (Castellani and Giovannetti, 2010). Only recently have models acknowledged that firms in more competitive environments - such as international markets (as opposed to smaller domestic markets) - are more likely to adopt new technologies and achieve higher productivity than firms which simply have a monopoly power (Schmitz, 2005). Further studies have shown that MNEs might generate spillovers through several interaction mechanisms, both intra-industry, and inter-industry (i.e. in the other sectors in which they interact) (Kugler, 2006; Mariotti *et al.*, 2008; Beugelsdijk *et al.*, 2010; Ietto-Gillies, 2012, Mariotti *et al.*, 2008; Iammarino & McCann, 2013). These inter-organizational networks link together different agents and economic systems are increasingly to be seen as dominant modes for the creation and diffusion of knowledge (Beugelsdijk *et al.*, 2010).

However, there is still scant evidence of the effects of inward foreign investments on high-income countries’ industrial base (Giuliani *et al.*, 2014; Barzotto *et al.*, 2016), in particular on the labour market composition, which is crucial for enhancing the competitiveness of a territory. Indeed, as Moretti (2012) clearly states, the economic value of a place depends as never before on talent. More specifically, in advanced economies, a specialised, skilled workforce has emerged to be one of the most critical factors of their local industrial commons. Indeed, it represents a pivotal economic development asset to enhance local and regional innovation capabilities (see also Blakely and Green Leigh, 2009; Jacobs and Hawley, 2009).

The labour force endowment of a territory is strongly linked to the success of the companies located in the area. As Pisano and Shih (2012: 23) claim, there is a close connection between the competitiveness of companies and the competitiveness of workers located where firms are based. If a worker is 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). Hence, it is crucial to investigate how companies located in developed countries (both domestic ones and MNEs) employ their local labour workforce, and how this use fosters the skilled workers' upgrading. Nevertheless, availability of sufficiently skilled labour is likely to be a local pull factor attributing to the concentration of FDI even within host developing countries such as India (Mukin and Nunnenkamp, 2012).

The present paper aims at investigating how the use of a local, skilled workforce differs according to the firms' ownership; being either affiliates of foreign multinationals (MNEs), or uni-national firms (firms that have neither been acquired in the period of analysis, nor have invested abroad; henceforth NATs). This issue is empirically investigated by adopting a novel database linking regional labour force characteristics with economic data on inward FDIs and NATs, operating in the manufacturing industry in the Veneto NUTS2 region (northeast of Italy) between 2007 and 2013. Descriptive statistics and counterfactual estimation have been developed, focusing on firms' skill composition (e.g. skill level, age, gender and nationality). The paper, therefore, contributes to the international business literature by focusing on the host-country labour market composition, as existent research has mainly analysed the effects of inward FDIs in terms of productivity, technology, knowledge spillovers¹ (among others, Buckley et al., 2007; Castellani and Zanfei, 2007; Mariotti *et al.*, 2008), patent outputs and innovation (Crescenzi *et al.*, 2015). The present work sheds lights on the extent to which foreign investments sustain the regeneration of the host country's skilled human capital.

The rationale behind the selection of the Veneto NUTS-2 region in this study is twofold: its internationalisation performance and its industrial system. In 2013, Veneto showed a good internationalisation performance, if compared to the national average (about 3% both for inward and outward FDIs), attracting 11% of inward FDIs in Italy, and being responsible for 14% of the total outward FDIs originating from Italy². It experienced the highest inward FDI growth (42%) in 2000-2013, whose level is confirmed when only the manufacturing FDIs are taken into account: 13% (during the economic downturn of 2007-2013). Veneto traditionally represents the context of the Italian district model, on which the Italian industrial system and its competitiveness are grounded. In 2013, this region hosted about 20% of the Italian industrial districts in the Made in Italy sectors.

The rest of the paper is organised as follows. The introduction is followed by the literature review on the effects of inward FDIs on the host country, devoting particular attention to the composition of the local labour market. In this section the hypotheses to be tested in the empirical analysis are presented. Section three presents a brief description of the internationalisation degree – in terms of inward and outward FDIs – of Italy and Veneto region. Section four focuses on the data. Descriptive statistics and counterfactual analysis are given in sections five, and six, respectively, where the hypotheses are tested. The conclusions and policy implications follow.

¹ Knowledge spillover may result from the introduction of new know-how to local firms among others, demonstrating new technologies and training employees who later work for local firms (Ben Hamida, 2013).

² Veneto was responsible for 14% of outward FDIs in the country being only surpassed by the Lombardy region, which is the Italian financial-economic hub.

2. THEORETICAL BACKGROUND

The theoretical and empirical literature on the effects of MNEs on the host country, which aims to investigate “who” the impact displaces, can be mainly divided into three categories: (i) micro level – studies of firms (market shares, sales or profits) that have been acquired by or merged with a FMNE; (ii) meso level – studies on the industry to which the foreign affiliates belong to; and (iii) macro-level – studies of the effects at system level, specifically on large firms exploiting effects on the economies in which they are based (Ietto-Gillies, 2012). Moreover, scholars have highlighted both the direct and indirect effects of MNEs on (a) performance; (b) employment and skills; (c) trade; and (d) balance of payments (for a review see: Lipsey, 2002; Ietto-Gillies, 2012) in the host country. Micro-level studies mainly focus on direct effects and investigate output as well as employment, while indirect effects concern the company’s supply chain and the broader business environment in which it operates (Mariotti and Piscitello, 2007; Ietto-Gillies, 2012).

However, the literature on the labour composition of MNEs vs. NATs is scant, an issue investigated in this paper³. Table 1 illustrates possible direct and indirect effects on the host country employment, concerning its quantity and quality.

Tab.1: Effects on employment in the host country

	Direct effects		Indirect effects	
	<i>Positive</i>	<i>Negative</i>	<i>Positive</i>	<i>Negative</i>
<i>Quantity</i>	Greenfield FDI increases the net capital; creates new jobs in expanding industries	M&A FDI can lead to job rationalisation and loss. Labour hoarding effect	Creates new jobs through upstream and downstream links and through the multiplier effects	Import of components and/or stealing of local firms that lead to lose jobs
<i>Quality</i>	MNE pay higher salaries and have higher productivity	MNE introduce not desirable labour practices	Best practices spillovers in the domestic firms’ employment organisation systems	Erode the salary levels gradually when the domestic firms try to compete

Source: Authors’ elaboration on Ietto-Gillies (2012), UNCTAD (1994)

1.1 The direct effects

Empirical studies mainly investigate the impact of foreign presence on the host country’s productivity, focusing on firm heterogeneity according to ownership. Looking at the US market, Doms and Jensen (1998) show that there are substantial differences between NATs and FMNEs. More specifically, they find that FMNEs have higher labour productivity, pay higher wages and are more capital intensive than US NATs, while the US domestic multinationals are the productivity leaders. Griffith and Simpson (2001) find that UK FMNEs exhibit higher labour productivity than NATs, while the De Backer and Sleuwaegen (2002) analysis of Belgian firms shows that foreign firms are more productive than NATs. Nevertheless, the Belgian MNEs are very similar to FMNEs in terms of efficiency and returns

³ The studies analysing the impact of foreign activities on the labour intensity and labour composition focus on the home country (e.g., Brainard and Riker, 1997; Mariotti et al., 2003; Castellani *et al.*, 2008; Elia *et al.*, 2009; for a review see Gattai, 2015). They provide evidence on the concerns related to the drop in home employment and low skilled workers’ real wages in high-income economies. These are due to the offshoring and outward FDI activities extensively implemented by companies located in advanced countries.

to scale. In the case of Portugal, Barbosa and Louri (2005) claim that ownership tends to make a difference with respect to a firm's performance, and firms with foreign ownership outperform domestically owned firms with similar characteristics. This superior performance is explained by the fact that MNEs are large and have higher capital intensity. Indeed, the empirical literature (Castellani and Zanfei, 2006; Greenaway and Kneller, 2007; Mayer and Ottaviano, 2007) on firm heterogeneity, and in particular a strand of literature focusing on heterogeneity linked to ownership (national vs. multinational) have stressed that, on average, MNEs are larger, and have higher capital intensity and superior technology than NATs. Therefore, we can assume that inward FDIs of the greenfield type increase both the production capacity and the employment level of the host country, if they are additional to the existing local firms. This employment increase can be generated by: direct production, exports, imports, and joint ventures. In the case of inward greenfield FDIs which substitute for local firms, a market stealing effect may take place.

On the other hand, M&A FDIs, which are in the majority worldwide⁴, only tend to generate additional production capacity in the investing MNE, not in the host country. This may happen, for instance, when foreign investors privatise local firms (Sader, 1995). Specifically, in the short run no new jobs are created; in the medium run employment cuts will probably take place as a result of a firm's restructuring; and in the long run the MNE can invest through greenfield FDI, which will create new jobs.

The effects on the host employment also concern its quality: productivity, salary, professional qualifications and labour contractual power. MNE productivity levels tend to be higher than those of NATs because MNEs are larger than NATs, tend to be more innovative with respect to products, production processes, and production organisation, which may have positive effects on productivity. Higher productivity is sustained by high-quality jobs that are associated with higher pay (Girma and Gorg, 2007), staff training courses, and better working conditions (OECD, 2008b; Drieffield and Taylor, 2002). MNEs may be, indeed, willing to share their productivity advantage with their employees. For example, MNEs may wish to rely more heavily on pay incentives to ensure quality and productivity, given the higher cost of monitoring production activities from abroad. Besides, higher productivity can also be obtained through formal and informal training courses that raise the level of skills and professional profiles (O'Donnell and Blumentritt, 1999). Empirical evidence on the training and development courses offered by MNEs (UNCTAD, 1994; Driffield and Taylor, 2000) reports that inward FDIs in skilled-labour-intensive industries are mainly directed to advanced countries; nevertheless, recent empirical evidence shows that even developing countries like India are attracting FDI willing to search for the availability of sufficiently skilled labour force (Mukim and Nunnenkamp, 2012).

Besides, foreign MNEs tend to hire high skilled employees in the host country, and pay them more than their counterparts, to overcome information asymmetry (Barba-Navaretti and Venables, 2004; Castellani, 2006); they, indeed, own less information than local firms on the institutional and productive context where they offshore.

The literature on firms' heterogeneity by ownership in Italy does not provide any empirical evidence on the labour market composition. Some studies find that belonging to multinational groups leads to higher productivity, while the innovation activity is more evident in Italian MNEs than in FMNEs (Castellani and Zanfei, 2006). Meanwhile, the study by Grasseni (2007) describes a higher level of labour productivity and a higher average wage for FMNEs in respect to domestic Italian MNEs, which dominate in terms of return on sales and leverage. Even though evidence from Italy suggests that FMNEs are mostly seeking market expansion, they still may benefit from a different managerial structure in the host country. The study by Crinò and Onida (2007) confirms previous results showing that FMNEs are more knowledge-intensive, more productive, pay higher wages and have a more solid financial structure than domestic firms. However, Benfratello and Sembenelli (2006)

⁴ The value of cross-border M&A increased by 28% over 2013, reaching almost \$400 billion (Unctad, 2014).

focus on Italy in the period 1992-1999 and find that, after accounting for endogeneity in an instrumental variable set-up, the productivity advantage of foreign firms disappears. This implies that foreign firms tend to cherry pick the best Italian firms, without contributing to raising their economic performance.

Based on the arguments about the direct effects on the employment's quality, the present paper aims to test the following hypotheses:

HP1: Inward FDI's have higher labour productivity than NATs.

HP2: Inward FDI's are more willing to hire skilled labour than NATs.

HP3: Inward FDI's are less willing to hire younger and foreign employees.

This last hypothesis is related to the previous one, indeed we assume that also age and nationality of employees can play an important role in reducing the burden of information asymmetries paid by MNEs. In other words, being age and nationality related with expertise, MNEs would tend to employ experienced and national/local foreign workers if compared to local firms.

1.2 The indirect effects

Beyond the direct effects described so far, indirect effects may take place in the host high-income country as well. The MNEs' expansion generates inputs of fresh capital, which is desirable. However, inward investments not only influence the ownership structure of companies but – more importantly – also the productive ecosystem in which the firms are embedded. Indeed, acquisitions by MNEs raise concerns about the control over strategic assets that foreign companies can gain by acquiring firms located in high-income countries (Giuliani *et al.*, 2014: 681). The loss of control over local strategic assets represents a threat as it might lead to the dissipation of a local industrial commons. A recent study (Giuliani *et al.*, 2014) started to shed light on the level of exploitation of the local context by companies investing in advanced economies and their contribution to the host country territory. Specifically, the scholars investigate how subsidiaries of MNEs - both in emerging and advanced economies - investing in the industry machinery and equipment sector in Italy and Germany learn from the local context and contribute to it as much as they benefit from it. The results of the quantitative and qualitative analyses show that MNEs from emerging economies undertake different strategies compared to those from high-income ones. Specifically, subsidiaries of MNEs from advanced economies predominate in the passive typology while those from emerging markets fall either in the dual or predatory typologies⁵. This result therefore supports the idea that FMNEs can contribute to the creation of firm-level advantages through reverse knowledge transfer, and to the generation of mutually enriching opportunities for the corporation and the local context.

Indirect effects on employment may be related to the correlation between FDI's and trade. For example, inward FDI increases exports, which in turn can generate additional jobs. *Vice versa*, if FDI leads to higher imports, this may have a negative impact on employment. Besides, if the *filiere* in which the inward FDI operates is located inside the host country, positive effects on employment may arise, while they might be negative if the *filiere* is outside the host country's borders. Previous studies have also focused attention on the indirect macroeconomic effects of FMNEs expansion: those related to the Keynes/Kahn turnover and

⁵ According to the authors, the predatory subsidiary combines bottom-up knowledge transfer (the subsidiary transfers more knowledge to the remaining corporation than receives from it, therefore being a sort of knowledge source for the headquarters and the other subsidiaries), and low local embeddedness (the subsidiary maintains very limited local innovative ties), while the passive subsidiary combines top-down knowledge transfer and low local embeddedness.

employment multiplier, which exist in the case of greenfield FDIs (Ietto-Gillies, 2012). Besides, spillovers can arise when the employees move from the MNE's affiliate to local firms, thus showing an impact upstream and downstream in the supply chain in terms of number of jobs and skills (OECD, 2008a). Indeed, geographical proximity between inward FDIs and local firms may not only have an impact on knowledge flows, but it could also play an instrumental role in driving knowledge linkages and spillovers (Iammarino and McCann, 2013). Since learning is highly localised, spillovers are geographically bound; they tend to be captured firstly by local firms, located in the same region as inward FDIs, and may gradually spread to other, more distant ones (Aitken, Harrison, 1999). As stated by Driffield et al. (2010), technological interaction among firms is deeply rooted in regional space. Moreover, the literature on proximity emphasises the indirect role of the spatial dimension in fostering knowledge creation and interacting learning processes by bridging and strengthening other forms of proximity such as cognitive, organisational, social, relational, and institutional (Boschma, 2005; Torre and Rallet, 2005). Nevertheless, even negative spillovers can take place, such as the market stealing effect, environmental pollution, and an excess of demand for local services and infrastructures, with negative effects on employment structure and on quality of life. Both direct and indirect effects of inward FDIs are increasingly to be seen as dominant modes for the creation and diffusion of knowledge (Beugelsdijk et al., 2010).

3. ECONOMIC BACKGROUND AND DATA

3.1 EVIDENCE OF INWARD FDIs ON ITALY AND VENETO REGION

The role played by FDIs in manufacturing for the long-run competitiveness is crucial since manufacturing accounts for 15.1 per cent of the EU 27 GDP (2013), and each additional manufacturing job is found to be able to create 0.5-2 jobs in other sectors in Europe (Rueda-Cantuche, 2012). The manufacturing sector has attracted the largest share of inward FDI, although "other sectors" have registered an increase since year 2007. In Europe, according to the EY's EIM (2014), the manufacturing sector accounted for 45% of European FDI projects between 2009 and 2013.

The focus of the present paper on Italy is related to its sectorial composition: in 2012 the country presents one of the highest shares of manufacturing industry amongst EU-15 members. Specifically, industry accounts 35% of the total (ISTAT, 2014), with 38,9% of employees⁶ compared to 25,7% in Germany, 18,6% in Spain, and 16,8% in the UK. With respect to inward manufacturing FDIs, at the end of 2013, 1,673 FMNEs invested in 2,723 Italian firms that employ 484,784 workers, and have a turnover of 211.483 billion Euros. The control shareholding in manufacturing are the majority, with 2,425 affiliates, employing about 430,676 employees with a turnover of 180,815 billion Euros⁷. The analysis of the controlled shareholding shows a decrease in the period 2007-2013, starting from the economic downturn in 2008, an improvement in 2011, and again a decrease in 2012 and 2013 (Table 2).

⁶ Italian economies is characterised by small size of the Italian firms (3.8 employees in 2015, while the European average is 6.8 according to the national statistical institute ISTAT, 2015). Specifically, firms with less than 10 employees are 95% of the total active firms, and employ 47% of the workers. By contrast, large firms with more than 250 employees represent 0.1% and employ 19,0% of workers (ISTAT, 2015).

⁷ In 2013, the stock of inward FDIs over GDP was 19.5%, compared to the average of the world (34.3%), Europe (36.4%), UE-27 (49.4%), and the UK: 63.3%; Spain: 52.7%; France: 39.5%; Germany: 23.4%. The stock of outward FDIs over GDP in the same year was about 28.9% in Italy, while it is 61.1% on average in EU27, 74.3% in the UK, 59.8% in France, 47% in Germany, 47.3% in Spain and 47.1% on average in Europe (UNCTAD, 2014).

Table 2. Inward FDI in Italy and Veneto in 2013. Manufacturing industry

	Inward FDI in Italy (tot)	Inward FDI in Italy (control)	Inward FDI in Veneto (tot)*	Inward FDI in Veneto (control)**
Investing MNEs	1,673	1,552	257 (15.4%)	226 (14.6%)
Affiliates of MNE	2,723	2,425	299 (11%)	258 (10.6%)
Employees-affiliates	484,784	430,676	35,053 (7.2%)	30,134 (7%)
Foreign affiliates' turnover (ml Euros)	211,484	180,003	10,815 (5.1%)	8,956 (5%)

The investing FMNEs in Italy mainly come from Western Europe (66.5%), with North America (19.2%), East Asia (7.6%), Central Asia (1.2), Middle East (1.4) and Latin America (0.5), both in terms of affiliates and employees. Among the main investing countries in Europe, Germany gains the first place, followed by France, Switzerland, UK, Spain, Austria, The Netherlands, and Belgium. Although the investments originating from advanced countries are the majority, we can highlight an increasing role played by the emerging countries⁸ that, at the end of 2013, own 10.7% of the investing MNEs, 9.3% of inward FDIs, 6.8% of the employees and 14.1% of the turnover. Inward FDIs are mainly located in the North-western macro-area (47.3%) and the North-eastern area (29.7%), followed by the centre (13.2%) and South and Islands (9.8%). At regional level, Lombardy (in the north west) attracts 33.1%, and it is followed by Emilia Romagna (12.5%) and Veneto (11%), both in the North-East. Looking at the dynamics in 2000-2013, the North-East shows a growth of 33.8% vs. 5% of the North-West, with Veneto exhibiting the best performance (42% of growth).

Investments in the manufacturing mainly concern high scale economies sub-sectors (40.9% of the inward FDIs), specialised sectors (i.e. mechanics and electro mechanics 26.6%), high technology intensity sub-sectors (18.6%), and the traditional sub-sectors (amongst which we highlight fashion, furniture, and food - 14.3%) (Mariotti and Mutinelli, 2014)⁹. The concentration of the investments in the medium-high and high technology sectors is related to the market demand and market potential of these sectors, since Italy is specialised in the traditional low-technology sectors – Made in Italy sectors¹⁰ – that are typical of the Italian industrial districts¹¹. The Italian industrial system shows a distinctive nature where competitiveness is grounded on a specific structure based on industrial districts, which allows the exploitation of the agglomerative advantages also thanks to the proximity between suppliers and users (Porter, 1992; Mariotti *et al.*, 2008). The industrial districts are “geographically defined productive systems, characterized by a large number of firms that are involved at various stages, and in various ways, in the production of a homogeneous product” (Becattini, 1990: p.40). They play a key role in the Italian economy since they represent about one-fourth of the country’s productive system, as concerns the number of Local Labour Systems (LLS), employees, and productive local units. In terms of employment, more than one third of the whole employment in the country works in an industrial district.

The rationale behind the choice of investigating the direct effects of inward FDIs in Veneto region is linked to the pivotal role of manufacturing in the region’s economy, and its

⁸ Specifically, China owns the majority of FDIs, followed by India and Russian Federation.

⁹ The authors classify the investments according to Pavitt taxonomy (Pavitt, 1984).

¹⁰ According to the OECD classification (see Appendix), the Made in Italy sectors are: low technology sectors (textile and clothing, leather and shoes, home furniture, food industry, jewellery), and medium-high technology (electro mechanics, musical instruments).

¹¹ The Italian Statistical Office (ISTAT) has identified, for the year 2013, 141 industrial districts on the basis of the Local Labor Systems (LLS), selected according to their sectoral specialization (ISTAT, 2015).

foreign presence. Veneto traditionally represents a world-renowned economic area for manufacturing production based on the industrial districts in the Made in Italy sectors. Moreover, the region shows the higher performance, in term of inward and outward FDIs, if compared to the country's average: it attracted about 12% of inward FDIs (of which 10.6% are controlled firms), registered the highest inward FDIs' growth (42%) in 2000-2013, and has undertaken 14% of the outward FDIs in the country. In addition, during the economic downturn period (2007-2013), 13% of manufacturing inward FDIs invested in Veneto compared to the national average of 3% ca. This growth underlines its significant attractiveness: four time higher than the Italian average, and five times higher than those of Lombardy region, which can be considered the Italian economic and financial hub. Besides, 28 industrial districts in the Made in Italy sectors, about 20% of the total in Italy¹², are located in Veneto; they are specialised in medium-high technology (mechanics: 43%), and low technology sectors (home furniture: 25%; textile and clothing: 18%; leather and shoes: 7%; food and jewellery: 4% each) (ISTAT, 2015)¹³.

3.2 DATA

This present paper focuses on the impact of inward FDIs on the host country's labour market and skill composition by studying manufacturing companies, foreign-owned and domestic-owned, with more than 10 employees located in Veneto. Whilst foreign-owned companies are affiliates of FMNEs, NATS are Italian firms that have neither been acquired by or merged with foreign companies, nor have invested abroad. The analysis of firms located in the same region allows one to control for the legal, cultural, and socio-economic framework. The rationale behind the choice of Veneto is twofold. First, it shows a higher performance, in term of inward and outward FDIs, compared to the country average: it attracted about 12% of inward FDIs; registered the highest inward FDI growth (42%) in 2000-2013; and has been responsible for 14% of the outward FDIs in the country. Besides, during the economic downturn period (2007-2013) 13% of manufacturing inward FDIs were invested in Veneto compared to about 3% in Italy, on average. Second, Veneto traditionally represents a world-renowned economic area for manufacturing production based on the industrial districts in the Made in Italy sectors¹⁴.

The study adopts a unique rich dataset that combines the three sources of data (Table 3):

- 1) The Reprint database, which has been developed by R&P (Ricerche & Progetti) and the Polytechnic of Milan and is sponsored by the Italian Institute for International Trade (ICE). Since 1986, Reprint has recorded the flows of inward and outward manufacturing FDIs which has occurred in Italy¹⁵ (for details see Mariotti & Mutinelli, 2014). This dataset also collects detailed information (investment year, sector, FDI typology, country of origin) on inward FDIs in the Veneto region, updated in 2014.
- 2) The AIDA database by Bureau van Dijk, which provides balance sheet data of active Italian firms. This dataset allows us to collect data on the balance sheets of manufacturing firms located in Veneto from 2007 to 2013.

¹² The North West macro-area hosts 37 (26.2%) industrial districts, the Centre 38 (27%) industrial districts, and the South and Islands 21 (15%) (ISTAT, 2015; data at the year 2011, according to the 9° Census of Industry and Services).

¹³ The sector classification refers to the OECD one (see Appendix).

¹⁴ The industrial districts are "geographically defined productive systems, characterized by a large number of firms that are involved at various stages, and in various ways, in the production of a homogeneous product" (Becattini, 1990: 40). They play a key role in the Italian economy since they represent about one quarter of the country's productive system, in terms of the number of Local Labour Systems (LLS), employees, and productive local units. With regard to employment, more than one third of all employees in the country work in an industrial district. Specifically, Veneto hosts 28 industrial districts in the Made in Italy sectors, representing 62% of the districts in the North-Eastern macro-area, and about 20% of the total in Italy. They are specialized in medium-high technology (mechanics: 43%), and low technology sectors (home furniture: 25%; textile and clothing: 18%; leather and shoes: 7%; food and jewellery: 4% each) (ISTAT, 2015).

¹⁵ Since the year 2002 it also registers other sectors of the economy.

- 3) The SILV (Informative System Veneto Labour¹⁶) dataset by Veneto Lavoro, which registers the employment composition (age, gender, citizenship, professional activity, educational qualification, type of contract, new hirings/dismissals) of every single firm active in Veneto in the years 2008 and 2014.

The matching of the three datasets, based on the inward FDIs' fiscal code, allows us to compare the employment structure of FMNEs and NATs.

Table 3. Variables and Data Source

Label	Variable	Unit	Year	Source
Firm characteristics	Ownership	Dummy variable	2007-2013	Reprint
	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
	Value added per employee	Thousands of Euros	2007-2013	AIDA
	ROI	Percentage	2007-2013	AIDA
	Operating profit per employee	Thousands of Euros	2007-2013	AIDA
Labour composition	Share of high skilled workers	No. of workers/share	2008; 2014	SILV
	Share of under 30 workers	No. of workers/share	2008; 2014	SILV
	Share of women workers	No. of workers/share	2008; 2014	SILV
	Share of foreign workers	No. of workers/share	2008; 2014	SILV

Data on firms' characteristics and performance refer to the period 2007-2013, whilst data on the labour composition has a one-year lag (2008 and 2014), in order to determine the effects of companies' characteristics and performance on firms' labour composition (Table 3).

The original sample consists of 10,289 manufacturing companies, among which 257 are FMNEs' subsidiaries, and 10,036 are NATs, which - according to the information recorded in Reprint - have neither been acquired by foreign companies, nor have invested abroad throughout the period 2007-2014. After removing missing values, the final sample is composed of 9,139 manufacturing companies, among which 219 are subsidiaries of FMNEs and 8,920 are NATs.

4. METHODOLOGY

The following analyses have been carried out: a descriptive comparison between FMNEs and NATs and a counterfactual study. The descriptive statistics analyses inward FDIs in Veneto, in terms of sectors and countries of origin, as well as the dynamics of NATs and FMNEs, according to their size, workers' qualifications, productivity, profitability, and characteristics of the production process. In order to compare the two groups of firms (FMNEs and NATs) similar in key characteristics, a counterfactual analysis has been developed at the last year of the period of analysis: 2013 for firms' characteristics and performance, and 2014 for the labour composition data. The crucial assumption behind the matching is that, conditional on a set of observable characteristics X , the potential outcomes ($\sum Y_i$) are independent of the outcome. When selecting cases on this assumption, the counterfactual outcome of the cases in group A (i.e. FMNEs) should be the average outcome of the group B (NATs) with the same selected observable characteristics (Caliendo, 2008). The distribution of the vector of observable characteristics has to be balanced across the two groups (Becker & Ichino, 2002, in Brouwer and Mariotti, 2014). The propensity score (p-score) matching, developed by Rubin (1974), has been then used in order to construct an appropriate counterfactual of NATs similar to FMNEs. Specifically, according to Crinò and Onida's work (2007), the

¹⁶ SILV stands for Sistema Informativo Lavoro Veneto, which means Informative System Veneto Labour.

counterfactual has been defined by matching FMNEs with firms of the NATs sample according to the following two characteristics: sector and size, expressed in terms of turnover. A logit model has been estimated, where the dichotomy – which assumes value 1 if the company has a foreign participation – is regressed on the size proxy (natural logarithm of the turnover in 2010), and on sector dummy variables (OECD sector classification on manufacturing industries, which refers to their global technological intensity¹⁷). Turnover refers to 2010 in order to control for the FMNE cherry-picking argument, which is that the best performing local firms are taken over by foreign investors (amongst others, Criscuolo and Martin, 2004; Crinò and Onida, 2007; Crinò, 2010). Building on Caliendo and Kopeinig (2005) work, an ATT (Average Treatment on the Treated) in STATA14 has been developed, according to the 5-nearest neighbour matching method (random draw version) with replacement and caliper (=0.01), and conditioning on the common support. This specific matching method has been applied since goodness of model fit complied with the method requirements. The new sample resulting from the p-score matching (counterfactual analysis) is composed of 173 FMNEs and 637 NATs; the sample validity has been checked through econometric tests, to evaluate the absence of statistically significant difference between the two groups of companies along the dimensions used to create the counterfactual sample.

5. EMPIRICAL ANALYSIS

5.1 DESCRIPTIVE STATISTICS

The analysis of the dataset on NATs and FMNEs underlines that about 57% of the FMNEs operate in the high-technology and medium-high technology sectors, while about 73% of the NAT firms are in the low-high and low-technology sectors (Tab. 4) (see the OECD classification in the appendix). This is consistent with the evidence that foreign investors tend to acquire market shares in technological advanced sectors, and, at the same time, domestic Italian firms are specialised in the most traditional, low-tech sectors (such as the Made in Italy sectors).

Table 4. Inward FDI in Veneto and NATs in 2013 by OECD classification (NACE Rev. 1.1)

OECD classification	NAT		FMNE	
	n.	%	n.	%
High-tech	357	4.00	23	10.50
Medium-high tech	2,054	23.03	101	46.12
Medium-low tech	3,517	39.43	55	25.11
Low tech	2,992	33.54	40	18.26
Total	8920	100	219	100

The countries from where inward FDIs originate are in line with the national classification described in UNCAD (2014): the European Union (68.5%; with the EU-15 comprising 55.3%), North America (20.1%, of which the USA accounts for 93.2%), other European countries (11.4%, of which Switzerland comprises 96%), and East Asia (6.4%, of which Japan accounts for 57.1% and China 21.4%). The investments from the European Union come mainly from Germany (28.1%), France (18.2%) and the UK (14%). The origin of the investments recalls that of the country itself, with a strong presence of neighbouring advanced countries, but also of emerging ones such as China, India and the Russian Federation.

¹⁷ The OECD classification (NACE Rev. 1) comprises: high-technology, high-low technology, low-high technology, and low-technology.

Table 5. Origin of the foreign subsidiaries by country at the year 2013

	N.	%
<i>EU-15</i>	<i>121</i>	<i>55.3</i>
Austria	12	9.9
Denmark	7	5.8
France	22	18.2
Germany	34	28.1
UK	17	14.0
Spain	9	7.4
Sweden	10	8.3
<i>Northern Africa</i>	<i>1</i>	<i>0.5</i>
<i>Other countries of the central-eastern Europe</i>	<i>4</i>	<i>1.8</i>
Russian federation	2	50.0
<i>Other European countries</i>	<i>25</i>	<i>11.4</i>
Switzerland	24	96.0
<i>North America</i>	<i>44</i>	<i>20.1</i>
USA	41	93.2
<i>Central America</i>	<i>1</i>	<i>0.5</i>
<i>Middle East</i>	<i>2</i>	<i>0.9</i>
<i>Central and Southern Asia</i>	<i>2</i>	<i>0.9</i>
<i>East Asia</i>	<i>14</i>	<i>6.4</i>
China	3	21.4
Japan	8	57.1
<i>Oceania</i>	<i>2</i>	<i>0.9</i>
Tot.	219	100

The dynamics of the two groups of firms (NATs and FMNEs) differ in terms of:

- 1) size (turnover);
- 2) workers' qualifications (highly skilled workers, Figure 1);
- 3) productivity (value added per employee; cost of labour per employee, Figures 2 and 3);
- 4) profitability (ROI – return on investment; operating profit per employee, Figures 4 and 5);
- 5) characteristics of the production process (vertical integration¹⁸).

5.1.1 Size

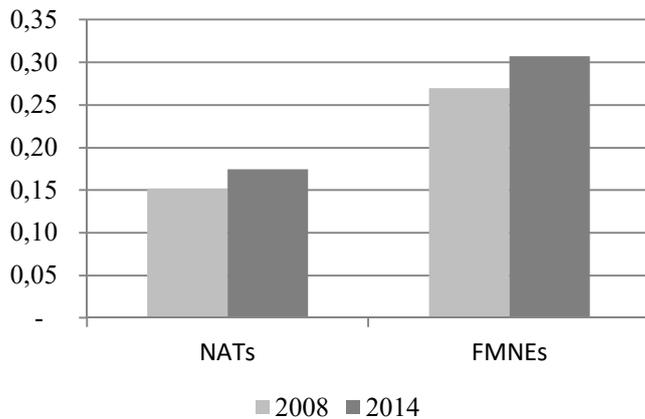
The two groups of firms are heterogeneous in term of size (turnover); FMNEs were 7.4 times larger and more skilled than NATs in 2007, and almost 6.9 times larger in 2013.

5.1.2 Workers' qualifications (highly skilled workers)

Although the share of high-skilled employees of NATs and FMNEs increased, the affiliates of FMNEs show a larger share of highly skilled employees (Figure 1) than the NATs in 2014 compared to 2008 (the first year of the economic and financial crisis).

¹⁸ We compute vertical integration as value added over turnover at a given year. This measure provides a proxy of how much the company produces in-house. Indeed, the vertical integration increases as firms integrated vertically, forwards and backwards, when transactions were carried out within instead of across firms (Davies and Morris, 1995).

Figure 1: Share of highly skilled workers (2008-2014) by firm typology.



5.1.3 Productivity

The dynamics of NATs and FMNEs are compared in terms of value added per employee and cost of labour per employee over the period 2007-2013 (Figures 2 and 3). FMNEs present higher values in both dimensions, thus they show a higher labour productivity and pay higher wages.

Figure 2. NATs' and FMNEs' value added per employee (2007-2013), pre-counterfactual

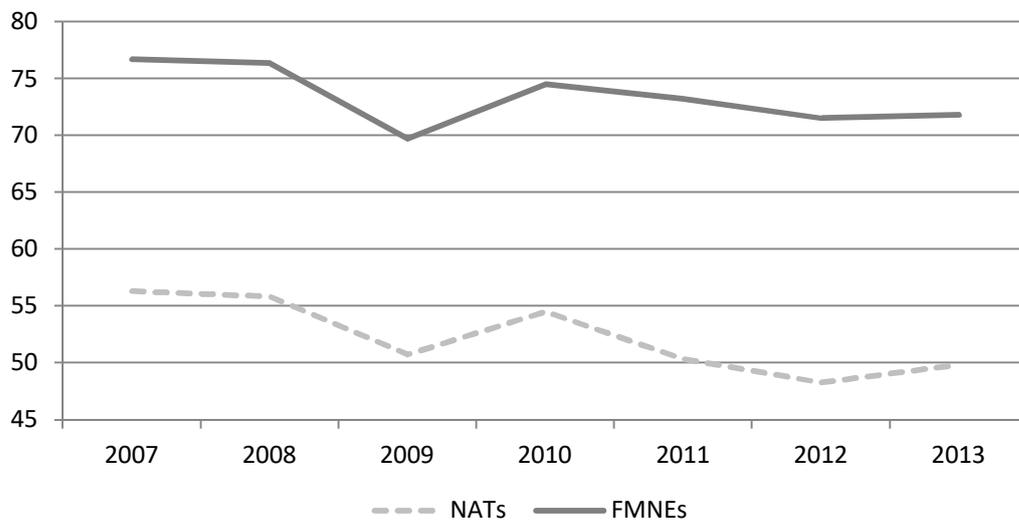
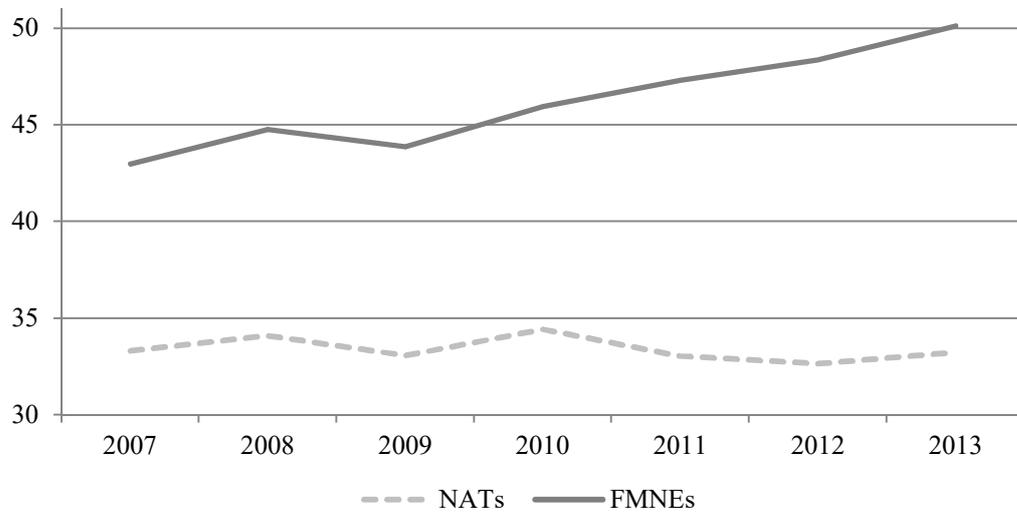


Figure 3. NATs' and FMNEs' cost of labour per employee (2007-2013), pre-counterfactual



5.1.4 Profitability

With reference to profitability, the dynamics of the two groups of companies (NATs and FMNEs) are compared in terms of ROI (Return On Investment) and operating profit per employee over the period 2007-2013 (Figures 4 and 5). It results that FMNEs have shown higher values for ROI since 2010, with a sharp drop just after the economic crisis in 2007. From 2009 and 2013, FMNEs do better than NATs with respect to operating profit.

Figure 4. NATs' and FMNEs' ROI (2007-2013), pre-counterfactual

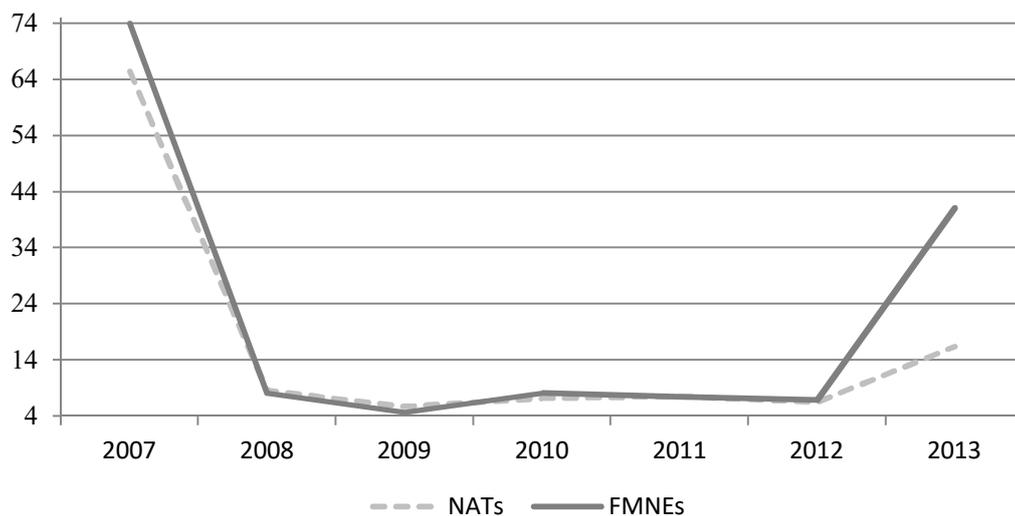
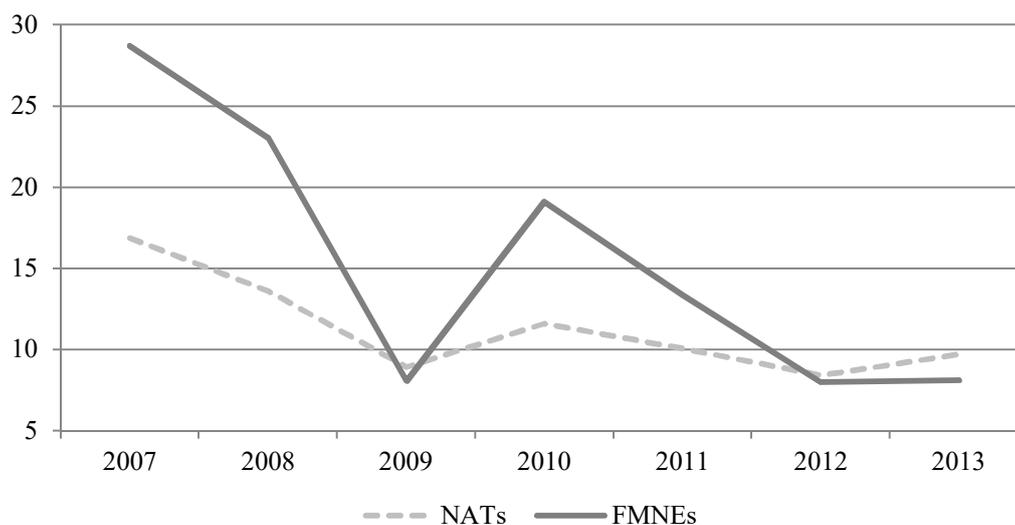


Figure 5. NATs' and FMNEs' operating profit per employee (2007-2013), pre-counterfactual



5.2 COUNTERFACTUAL ANALYSIS

The logit model, which allows to develop an appropriate counterfactual of NATs according to firms' size and sector, show that FMNEs tend to be larger in terms of turnover than NATs, and are more willing to operate in the high technology sector than in the others (Table 6), as previously showed in the descriptive analysis. This is consistent with the evidence that the R&D investment per employee in Italy in 2013 was, on average, four times higher in the affiliates of foreign MNEs than in the Italian manufacturing firms and five times higher in the services (Mutinelli, 2014).

Table 6. Logistic regression

Variable	Coeff.
LnTurnover 2010	1.0306***
Medium/High-tech sector	-0.6844***
Medium/Low-tech sector	-1.6632***
Low-tech sector	-2.1061***
Constant	-11.1912***
Number of obs	8709
Prob > chi2	0.0000
Pseudo R2	0.2547
Log likelihood	-756.8212

Note: *, **, *** are significant at 10%, 5% and 1%, respectively.

The analysis of the dynamics of the two groups of firms (FMNEs and the counterfactual of NATs) in terms of value-added per employee, labour cost, and profitability (ROI and operating profit per employee) does not significantly differ from the previous analysis concerning the total sample (Figures 6-9), with the exception of profitability, measured in terms of operating profit per employee, where NATs perform better.

Figure 6. NATs' and FMNEs' value added per employee (2007-2013), post-counterfactual

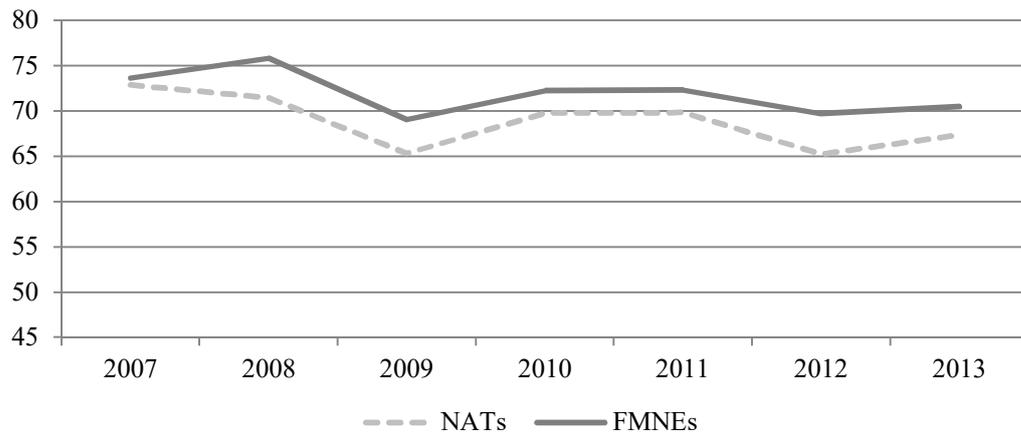


Figure 7. NATs' and FMNEs' labour cost per employee (2007-2013), post-counterfactual

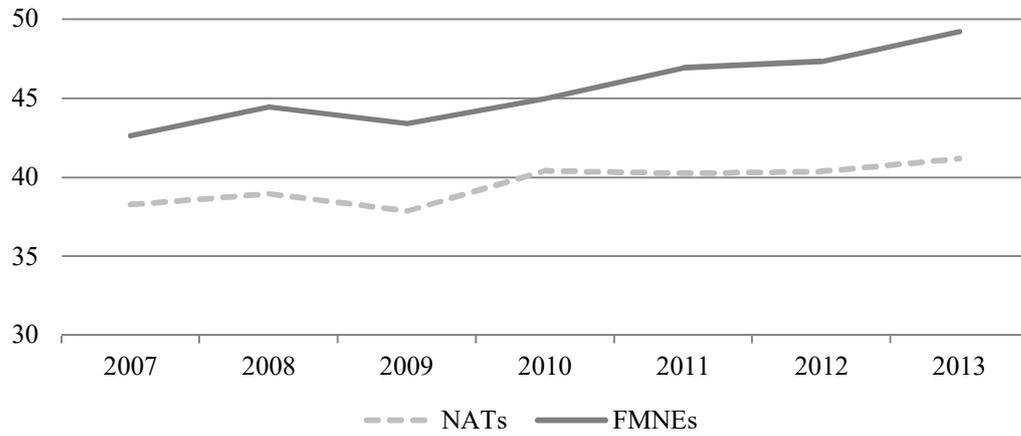


Figure 8. NATs' and FMNEs' ROI (2007-2013), post-counterfactual

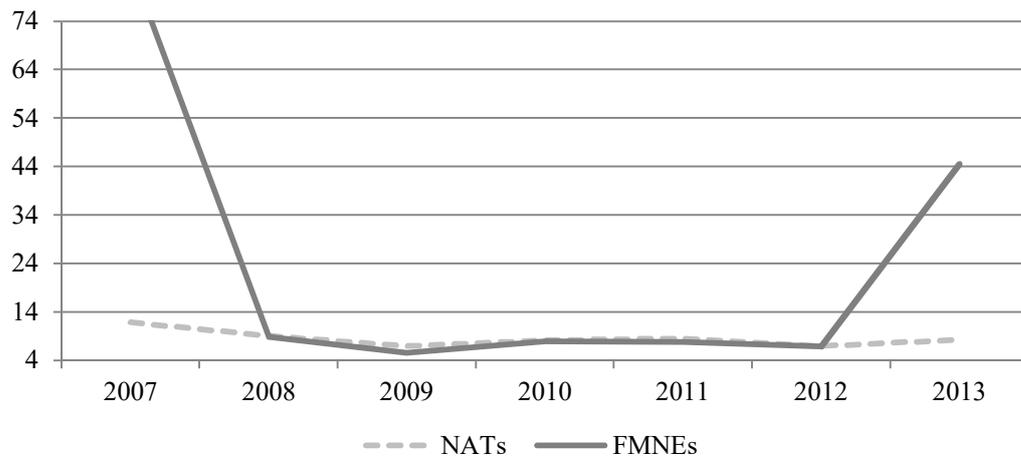
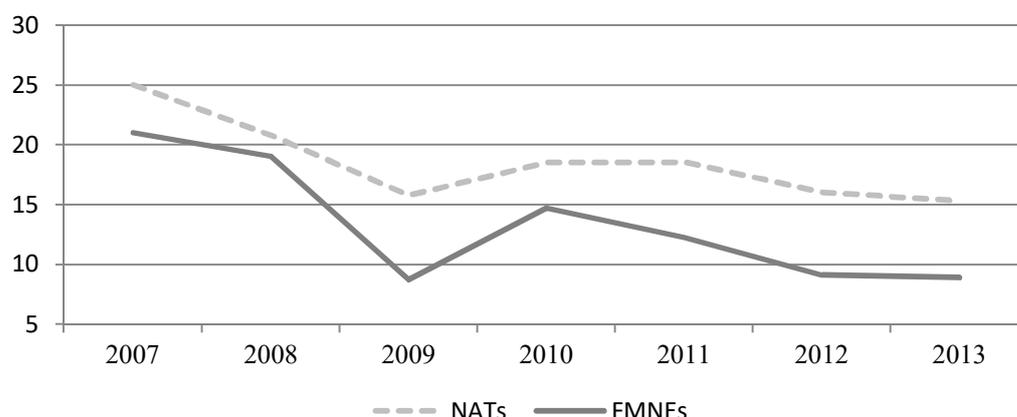


Figure 9. NATs' and FMNEs' operating profit per employee (2007-2013), post-counterfactual



Therefore, NATs show lower value added per employee and are less profitable, as underlined by the operating profit per employee (Table 7). This last finding might be related to FMNEs' behaviour and characteristics: arbitrage in taxation, higher operating costs for facilities, higher exposure to price fluctuation of raw materials, and higher competition with large and productive companies, which leads to minimisation of costs (Basile et al., 2005; Mariotti and Mutinelli, 2010; World Economic Forum, 2014). It results that:

HP1: "Inward FDIs have higher labour productivity than NATs" is rejected.

Besides, FMNEs pay higher wages, as stressed in the literature, and show a larger proportion of highly skilled labour force (Table 7). According to these results,

HP2: "Inward FDIs are more willing to hire skilled labour than NATs" is accepted.

As emphasised in the literature, labour skill is associated to age and nationality and the results show the scanty willingness of FMNEs to hire young and foreign workers (Table 7). Therefore,

HP 3: "Inward FDIs are less willing to higher younger and foreign employees" is accepted.

Specifically, in the first case, FMNEs boost know-how that is embedded in experienced workers; in the second case, they sustain the development of competencies embedded in the host-country.

Table 7. ATT estimation

Variable	Year	NATs	FMNEs	ATT	Std. Err.	Sign.
Share of high skilled workers	2014	637	173	.048	.0235	Sig.
Share of under 30 workers	2014	637	173	-.053	.0126	Sig.
Share of women workers	2014	637	173	.0334	.0186	Not Sig.
Share of foreign workers	2014	637	173	-.0294	.0105	Sig.
Labour cost per employee	2013	637	173	7.079	1.086	Sig.
Added value per employee	2013	637	173	-.414	3.123	Not Sig.
ROI	2013	637	173	36.417	26.160	Not Sig.
Operating profit per employee	2013	637	173	-6.570	3.143	Sig.

6. CONCLUSIONS

In advanced economies, skills play a crucial role in enhancing local and regional innovation capabilities. There is, indeed, a strong relationship between the firms' and workers' competitiveness, and workers' competitiveness strictly depends on the skills (education and training). Nevertheless, the public debate still swings between the awareness that inwards FDI's augment technology's development, adoption, and diffusion, and the fear of territorial commons' depletion.

The present paper contributes to this debate, by providing empirical evidence on the positive direct effects of inward FDI's on an advanced country, and specifically, on the extent to which FMNEs use the host-country's high skilled endowment. The results of the counterfactual analysis on the Veneto region underline that FMNEs are larger in terms of turnover than NATs, and are more willing to operate in the high-technology sectors, have a significant higher probability to hire high skilled workers, and pay higher wages. Besides, the high skilled workers tend to be more mature (older than 30 years) and not foreign. The rationale behind the choice to hire workers that are more experienced and embedded in the local environment is explained by the need of foreign MNEs to reduce the information asymmetry.

By contrast, foreign MNEs show lower profitability compared to NATs, probably because of the arbitrage in taxation and the higher operating costs for facilities characterising the country.

The higher intense use of local highly skilled workers made by FMNEs compared to the NATs might trigger a concentration of specialised workers, which, in turn, might lead to virtuous processes of economic growth (Moretti, 2012). Indeed, it fosters know-how circulation and knowledge spillovers (e.g. Capello and Lenzi, 2015) enabling human capital regeneration and development. As the literature suggests, MNEs are rarely participants in regions and clusters but they are frequently active players for local engagement and change as they provide new avenues for connecting the local context to outside sources of knowledge and resources (Iammarino and McCann, 2013). The positive impact of FMNEs on local skill quality might be even strengthened by their attitude to employ local workers and experienced workers, because FMNEs tend to sustain the development of competencies present in the host-country, and boost know-how that is embedded in experienced workers. The regeneration of this know-how need to providing adequate schooling and training thus appears to be an important policy tool for regional policymakers to increase the presence of high skill force pool which attracts FMNES.

Exploring the ownership composition of the companies located in a territory, therefore, offers some insights on the possible effects of foreign manufacturing MNEs on the host economy, which can be of interest for policy makers. The location of foreign manufacturing MNEs might have a positive impact on the industry itself and the local context because these firms may: (i) increase market competition, which may improve allocative efficiency; (ii) increase the number of workers, who can be directly employed by the FMNE and by its local suppliers; (iii) foster knowledge spillover towards domestic suppliers and competitors, and transfer and diffuse technology, encouraging local technical change; (iv) develop backward and forward linkages; and (v) through demonstration effects, spur domestic firms to increase their level of technical efficiency, and strengthen the high tech sectors and the national innovative system (see also Caves, 1974). Besides, as the literature on proximity emphasises, the spatial dimension has a key role in fostering knowledge creation and interacting learning processes by bridging and strengthening other forms of proximity such as cognitive, organisational, social, relational, and institutional (Boschma, 2005; Torre and Rallet, 2005).

This work has, however, some limitations that offer promising lines for future research. First, the study finds that inward FDI's account for lower profitability compared to NATs, which

may be explained by arbitrage in taxation and higher operating costs for facilities in Italy. An in-depth analysis on the *filière* will offer further insights to explain the different performance levels of the two groups of firms. Second, additional research might focus on the indirect effects of inward FDIs on the local resource system (suppliers' network and its labour composition, education system, public/associative institutions and financial system) in order to disentangle the several spillovers that arise from inward FDIs, and the impact on local industrial commons. Indeed, as the literature suggests, learning is highly localised, and the spillovers are geographically bound. Finally, an extension of the study to comprise the country will allow to capture the whole direct and indirect effects of inward FDIs as well as differences and commonalities among the Italian industrial contexts ("regional-industry", industrial districts, etc.).

ACKNOWLEDGEMENTS

We gratefully acknowledge the support of Bruno Anastasia, Maurizio Gambuzza and Maurizio Resera of Veneto Lavoro in providing data on employment in the Veneto Region and supporting us over the data analysis. An earlier version of this study was presented at the c.MET05 Workshop, Milan AIB in 2015, the Global Value Chain Workshop in Birmingham in 2015, the URSI seminar at the University of Groningen in 2016, the ERSA congress in Vienna in 2016, and the AISRe Conference in 2016. We thank these audiences. The usual disclaimer applies.

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APPENDIX

OECD classification.

It is the statistical classification of economic activities in the European Community - NACE Rev. 1.1 that has been aggregated into the agreed Eurostat high technology sectors.

High-technology NACE Revision 1.1 ISIC Revision 2

1. Aerospace 35.3 3845
 2. Computers, office machinery 30 3825
 3. Electronics-communications 32 3832
 4. Pharmaceuticals 24.4 3522
 5. Scientific instruments 33 385
- Medium-high-technology
6. Motor vehicles 34 3843
 7. Electrical machinery 31 383-3832
 8. Chemicals 24-24.4 351+352-3522
 9. Other transport equipment 35.2+35.4+35.5 3842+3844+3849
 10. Non-electrical machinery 29 382-3825
- Medium-low-technology
11. Rubber and plastic products 25 355+356
 12. Shipbuilding 35.1 3841
 13. Other manufacturing 36.2 through 36.6 39
 14. Non-ferrous metals 27.4+27.53/54 372
 15. Non-metallic mineral products 26 36
 16. Fabricated metal products 28 381
 17. Petroleum refining 23 351+354
 18. Ferrous metals 27.1 through 27.3+27.51/52 371
- Low-technology
19. Paper printing 21+22 34
 20. Textile and clothing 17 through 19 32
 21. Food, beverages, and tobacco 15+16 31
 22. Wood and furniture 20+36.1 33

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