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Air connectivity and foreign direct investments: economic effects of the introduction of new routes

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Abstract

Purpose The key research question for this study was whether the spatial network structure offered by the global airline system contributes to the development of Italian inward Foreign Direct Investments (FDIs). We argue that the introduction of a new route, by reducing firm's transport costs and facilitating tacit and complex knowledge flow, should increase the likelihood of FDI exchange between newly connected regions.

Methods We employed a comparison group design considering both small and medium enterprises and large companies at the municipality level.

Results The results showed that FDIs increased overall by 33.7% in the two years after opening of the new routes while FDIs in the control group decreased by 16.6%. Similar results were obtained using different measures of FDI (i.e. the number of generated employees) and by weighting the routes by their frequencies.

Conclusions Given the substantial benefits that urban areas can obtain from attracting multinational firms, our results provide new evidence of the contribution of transport infrastructures to local development. From a policymaker perspective, regional policies aimed at attracting FDIs must contextually promote the development of transport infrastructure and in particular international airports. Investments to improve air transport capacity, strategies to attract both traditional and low-cost airlines, providing legal authorization or financing ground transport are all critical aspects for the success of such policies.

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1 Introduction

Within policy and academic circles, there is a widespread belief that as a result of the intensifying globalization of the world's economies, the presence of multinational firms has become increasingly important for the growth, competitiveness and long-term welfare of regions and countries around the world [30]. Over time, multinational firms create new jobs, pay higher wages, increase the level of productivity, introduce new industries, promote export and stimulate innovation [12].

Reflecting the recognition of the importance of internationally active firms there has been a rather well established tradition by governments to understand the factors driving internationalization [2, 14] and there is immense academic literature that investigates the fundamental characteristics that make a region attractive. If on the one side internal firm-specific factors motivate to become a multinational enterprise in the first place, on the other one external factors are likely determinants of the location and magnitude of Foreign Direct Investment (FDI) by multinational firms.[1] These external factors range from host country's exchange rate, taxes, trade protection and flows, quality of institutions and infrastructure, for a review see [5]. In particular, the review of the literature, see for example, [9, 19] suggests that the role of infrastructure in attracting FDI has received increasing interest from academic scholars from 70s, while only few recent studies have analyzed the linkage between air traffic and the degree of

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[1] Multinational enterprises comprise companies or other entities established in more than one Country while FDI is defined as a cross-border investment by an entity located in one Country with the objective of obtaining a lasting interest in an enterprise located in another Country [26].

internationalization. Past studies have unanimously demonstrated that the geography of FDIs is related to the desire of large multinational companies to access primary international airports [9]. Although the internationalization process has begun to include a growing number of Small and Medium Enterprises (SMEs), literature traditionally has focused on larger multinational firms located in global cities [4, 29]. To our knowledge, no study has yet analyzed the impact of the airline network on FDI decisions by SMEs in secondary cities, by considering the effect of the introduction of specific routes.

In particular, we built an original database covering the period ranging from 2001 to 2010, in which we collected information about the locations of both the parent companies and newly created subsidiaries in Italy at a municipality level. We then developed an innovative methodology to estimate the impact of opening a new route to the FDI subsequently generated in the catchment areas of the connected airports, by applying a comparison group design [6].

The Italian case is of interest for two reasons. Firstly, even if Italy represents one of the most important economies in Europe, its FDI related to GDP is limited [23]. So, the study of the variables capable of triggering new investment inflows is of particular interest from a policy-maker perspective. Secondly, Italy is the fourth major market in Europe in terms of air passenger volumes [17] and its airports are among the most connected [22], so representing an ideal field for testing the relationship between new routes and FDIs.

The paper is structured as follows. Section 2 surveys existing literature on the relationship between the airport network and international investments and puts forward the research question that drives empirical analysis. Section 3 describes the data set and methodology, and Section 4 presents the empirical findings. Final comments and policy implications are reported in Section 5.

2 Literature review

Empirical studies have mainly looked at the causality relationship between the airport infrastructure and local economic development. Whereas most studies have shown that air accessibility has a significant impact on gross domestic product, employment levels, regional inequalities and investment growth, see for example [29, 18], only some have addressed the correlation between air connectivity and foreign investments (Table 1).

The scarce available empirical studies agree that air transport supply positively affects the location choices of domestic plants and, to a greater extent, the location choice of large multinational firms [34].

The earliest of the available empirical studies was performed by Hoare [15], who found that the geography of FDIs in England is related to accessibility to airports. Only later

Hong [16] demonstrated that national investors value market size when making location decisions, whereas foreign investors emphasize cheap labor and convenient airway transport. Strauss-Kahn and Vives [30] found that headquarters frequently relocate to metropolitan areas with good airport facilities while Bel and Fageda [4] demonstrated that the availability of direct nonstop flights is a major determinant in the location choices of large European firms' headquarters. In line with previous findings, Escribà and Murgui [13] found that the provision of frequent services to various destinations is successful in attracting new firms. Accordingly, the most recent studies have shown that the size of the city has little, if any, explanatory power in terms of the location choice for an investment [9, 24]. The urban and national scales appear in fact to be much less important than the structure of the airline networks [4, 19].

Theoretical explanation for the empirical findings are related to travel costs and knowledge flows.

Due to the widespread organizational framework of multinationals, air travel is often required as a means to engage in face-to-face contacts within the business group, especially from and to the head office location, by the board of directors, managers, entrepreneurs, and staff [11, 15]. In fact, although codified and mediated information is available everywhere and anytime due to information and communication technology, some important knowledge can be transmitted only by face-to-face contact [4, 32]. Accordingly, many researchers demonstrated that air travel is particularly important for service-related, young, and high-tech firms which conduct activities requiring considerable interpersonal contacts that are often only possible with high-quality transport [7, 8, 16].

If on the one side moving people is largely considered to be a way of achieving industrial strategies and firms see professional mobility as an example of the flexibility and reactivity of its organization [1], on the others physical mobility of people from the head office to worldwide subsidiaries is costly due to the opportunity cost of the travel time [33]. Therefore, investment location decisions are commonly made with consideration of future travel convenience, and subsidiaries are often located within an acceptable distance from major airports.

As previously asserted, a number of studies have investigated the relationship between air traffic and local economic development and the question of the direction of the causality relationship is inevitably raised. Many authors have analyzed the impact of air connection on local economic development and some of them have demonstrated that the opposite causal relationship is less common [10]. For example Sellner and Nagl [29] estimated a seemingly unrelated regression to control for circular causality between air accessibility and GDP and investment growth while Button et al. [8] utilized a Granger causality test. In particular, as concerns FDI, Bel and Fageda [4], by employing a simultaneous equation

Table 1 Selected list of research papers on the relationship between internationalization and air transport

Authors	Findings	Analysis	
McCann and Acs 2011	The size of a city is much less important than its level of global connectivity (for example direct intercontinental flights) in determining international investments.	Large MNE global cities	Conceptual paper
Carod et al. 2010	Among others infrastructures are key determinants of investment location.	National and foreign firms regional and municipality level	Conceptual paper
Sellner and Nagl 2010	Air accessibility has positive impact on GDP and investment growth.	Investment rate country level	1993–2006 dynamic analysis
Williams and Balaz 2009	The emergence of low-cost carriers has major implications for firms' investments and regional economies.	Firms employee knowledge regional level	Conceptual paper
Xu et al. 2009	A sound foundation in traffic infrastructure in particular in airfreight network attracts more FDI.	FDI provincial area	1998–2007 dynamic analysis
Bel and Fageda 2008	The availability of direct non-stop flights is a major determinant in the location choices of large European firms' headquarters.	Large firms' headquarters metropolitan area	2004–2005 static analysis
Hong 2007	National investors when make location decision value market size while foreign ones emphasize cheap labor and convenient airway transport.	Foreign logistic firms metropolitan area	2001 static analysis
Wickham and Vecchi 2008	Easier and cheaper air travel enables small firms to create temporary proximity on a global scale	Software industry national level	2005 qualitative analysis
Basile et al. 2005	Italian regions attracted significantly less than their potential and this could be explained among others by the low level of infrastructures.	FDI regional level	1991–1999 dynamic analysis
Strauss-Kahn and Vives 2005	Among other factors headquarters relocate to metropolitan areas with good airport facilities.	Headquarters metropolitan area	1996–2001 dynamic analysis
Doeringer et al. 2004	The presence of an international airport influences the location choices of both multinational and domestic plants.	National and foreign firms regional level	1978–1988 static analysis
Brueckner 2003	Frequent service to a variety of destinations reflected among others in attracting new firms. Air travel is less important for such firms than for service-related businesses.	Employment metropolitan area	1996 static analysis
Hoare 1975	The geography of FDI in UK is related to the accessibility to airports.	Foreign firms provincial area	1969 static analysis

system, proved that the causality is clearly from the air transport supply to the decision to locate foreign headquarters.

Accordingly with previous studies, we argue that the introduction of a new route, by reducing transport costs and facilitating tacit and complex knowledge flow, should increase the likelihood of FDI exchange between newly connected areas.

3 Empirical setting

3.1 Data

The dataset used in the empirical analysis combined two different sources: Innovata, which provides information about all new passenger-scheduled flights to Italy for the period from 2000 to 2010; and Reprint, which is a database providing a census of European inward FDIs in Italy since 2001, for further information, see [23]. For each flight, the dataset includes some basic information about departure and arrival airports, flights dates, departing and arrival times, carriers and code-share agreements (if any), flight times, distance, type of aircraft, and number of seats.

With respect to international investments, an illustration of the methodology employed in this paper to identify FDIs is essential for proper interpretation of the data and analyses. Criteria were based on the principle of economic materiality rather than on a formal and/or legal-administrative nature. Thus, foreign investments made by financial institutes were not considered. However, intermediate forms exist that are difficult to classify, such as private equity and merchant bank funds, which operate based on targeted business strategies, acquiring controlling interests in companies belonging to selected sectors and directly intervening in their management. These investments were included in our analysis. We excluded interests acquired in industrial firms by investment funds, private equity funds, and merchant banks as part of management buy-outs and when there was no direct participation in the management of the investee company. The nationality of a multinational company associated with the Italian foreign-

owned company was considered to be that of the final parent company and not that of any intermediate holding companies, which may have different nationalities [23].

The dataset obtained by merging the above two sources included information on 2,583 FDIs created in Italy by European parent firms between 2001 and 2010. It also included information on 629 new routes from Italy to EU-25 countries, which represent about 76 % of all new short-to-medium haul routes opened from Italian airports in that period. The identified analysis involved 1,302 parent firms in EU-25 countries. The FDIs considered in this study represent 97 %[2] of the international initiatives launched by foreign firms in Italy from the selected countries, and the new routes represent all of the new scheduled connections in the 25 selected countries between 2000 and 2010.

Compared to that of most other European countries and to its potential, the attractiveness of the Italian economy for FDIs has been limited. In 2009, the ratio of inward FDI stock to GDP in Italy amounted to only 18.6 %, compared with 45.5 % for the European Union as a whole [25, 31]. Notwithstanding the relatively low level of inward FDI stock, foreign-controlled companies play an important role in the Italian economy, directly employing almost 1,266,000 workers at the end of 2008. In particular, FDIs in Italy are mainly concentrated in the services sector, which accounted for 52.7 % of the total inward FDI stock in 2009. Concerning the origin of investors, FDIs from developed economies accounted for more than 96 % of the inward FDI stock in Italy in 2009. European partner countries alone were responsible for 65.7 % of total investments. Thus, by focusing on European inward investments, the analysis is highly significant with respect to all inward FDIs to Italy.

3.2 Methodology

When studying the relationship between air traffic and FDIs, the link between the airports' catchment areas and the location of foreign investments and parent companies is essential. Airports obviously serve wide territories, and many different parameters can influence the size and shape of their catchment areas. The difficulty is further increased when potential overlaps of catchment areas are considered, because it is complicated to assign new FDIs to one or more new routes. This problem has been largely ignored by existing literature. To the best of our knowledge, while previous studies have provided aggregate indicators of the level of global connectivity of different cities, no study has yet considered the impact of

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[2] Completeness of the data can be evaluated by comparison with the Istat survey (www.istat.it). Estimates for Reprint's sector aggregates confirm the reliability of the database; in terms of employees and turnover, the deviation between the database and Istat estimates oscillated regularly between 1 and 3 % less for Reprint, a very limited gap attributable to minor activities that eluded direct measurement.

single routes. Furthermore, while previous papers generally have resorted to the use of large territorial units, such as metropolitan areas and states, we relied on smaller units, at the municipality level.

Recent literature [20, 27, 28] has shown that the attractiveness of airports mainly depends on their land-side accessibility. Therefore, we worked on the basis of the travel time from home and host countries to reach their related airports, knowing that this approach only serves as a proxy of the actual catchment areas.

We developed an innovative methodology to assign FDIs to single routes, composed of the following steps:

(1) For both the Italian subsidiary and the parent company we selected airports closer than 2 h of travel time by road. The 2 h limit is generally accepted to identify the airports' catchment area outer limit [21].

(2) We selected all routes connecting the airports indentified in the previous step.

    If only one route is connecting the two areas then the new FDI is entirely assigned to it. If more than one route is operating between the two areas, the new FDI is allocated to the routes based on two different criteria:
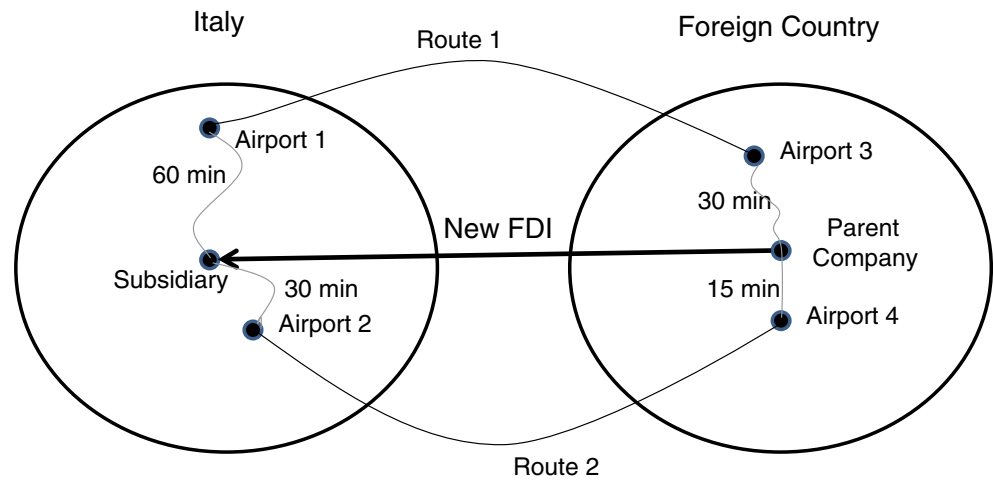
– The first is the inverse square of the travel time by road to access the related airports. So, in this case FDIs are mostly allocated to routes departing from the nearest airports, regardless of their offered frequencies.

– The second is the offered frequency multiplied by the inverse square of the travel time by road to access the airports. In this case the allocation considers the effects of both offered frequencies and land-side accessibility.

To better explain the methodology, a simple example is reported in Fig. 1.

Airport 1 and 2 are located within 2 h from the Italian FDI and airport 3 and 4 are within 2 h from the parent company. There are two different routes, Route 1 and Route 2, connecting the two areas, the former with a frequency of four flights per week and the latter with two flights per week. In order to allocate the new FDI to the two routes according to the first criterion, it is necessary to compute the travel time by road to reach the airports. If one employed Route 1, a passenger would spend 60 min by road from the Italian subsidiary to access airport 1. After flying from airport 1 to airport 3, he would spend other 30 min by road to reach the parent company. So, for Route 1, the total access time to the airports is 90 min. If one employed Route 2, he would spend 30 min by road from the Italian subsidiary to airport 2 and then other 15 min by road from airport 4 to reach the parent company. So, for Route 2, the total access time to the airports is 45 min.

Fig. 1 An example of allocation of FDI between different routes

Following the first criterion, the new FDI is allocated to Route 1 and 2 as follows:

$$FDI\,to\,Route1 = \frac{\dfrac{1}{90^2}}{\dfrac{1}{90^2} + \dfrac{1}{45^2}} = 0.2$$

$$FDI\,to\,Route2 = \frac{\dfrac{1}{45^2}}{\dfrac{1}{90^2} + \dfrac{1}{45^2}} = 0.8$$

By employing this method of allocation, 80 % of the new FDI is allocated to Route 1 that is the easiest alternative for connecting the subsidiary and parent company, and the remaining 20 % to Route 2.

Following the second method of allocation, the inverse square of travel time to access the airports is multiplied by the offered frequencies, of 4 and 2 flights per week respectively:

$$FDI\,to\,Route1 = \frac{\dfrac{4}{90^2}}{\dfrac{2}{90^2} + \dfrac{4}{45^2}} = 0.33$$

$$FDI\,to\,Route2 = \frac{\dfrac{2}{45^2}}{\dfrac{2}{90^2} + \dfrac{4}{45^2}} = 0.67$$

In this case the effect of the higher frequency for Route 1 partially compensate for the longer time to reach its departure airport.

We employ the above methods to allocate to the new routes all FDIs generated in the 2-year period after their opening. We also computed the same allocations for FDIs generated in the 2-year period before the opening.

When estimating the effects of a new connection in terms of FDIs, one major methodological difficulty is that other unobserved factors may account for the changes, rather than the existence of the new route. Evaluating the net impact is a difficult task, because it requires us to distinguish changes due to the new connections from changes due to other independent factors that may affect FDI location (for example, general economic growth or improvement in attractiveness of the destination area).

In order to address that problem, the analysis was implemented with a control group. In the control group we considered all FDIs between the Italian region in which the foreign company is investing and the related foreign country, in the 2 years before and after the opening of each new route, obviously excluding FDIs related to the new routes themselves.[3]

Estimates were based on the assumption that in the absence of a new connection, average outcomes for the catchment areas and control groups were assumed to follow parallel paths over time [6]. This assumption seems plausible, because characteristics that are associated with the internationalization dynamics were the same for the catchment area and the control group. We calculated the difference between the number of new FDIs observed 2 years after the creation of new connections compared with 2 years before for the target area and control group. Due to the different dimensions of the target area and control group (that is, newly connected areas are at a

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[3] For example, the control group for the FDI assigned to the route from Palese Bari to Barcelona includes all FDIs from the Puglia region to Spain in the same years, with the exclusion of the FDI related to the new route itself.

Table 2 Scenarios developed in the empirical analysis

Scenarios	Allocation of FDIs to new routes	Measure of FDI generated
Scenario 1	Access time to the airport	Number of FDIs
Scenario 2	Access time to the airport	Number of employees
Scenario 3	Access time to the airport and offered frequency	Number of FDIs
Scenario 4	Access time to the airport and offered frequency	Number of employees

municipality level, whereas the control group is at a regional level), we calculated the net impact as the difference in their percentages, as shown by Eq. (1):

$$IMPACT = \frac{\sum \left(FDI_{i,t+2} - FDI_{i,t-2}\right)}{\sum FDI_{i,t-2}} - \frac{\sum \left(FDI_{j,t+2} - FDI_{j,t-2}\right)}{\sum FDI_{j,t-2}} \quad (1)$$

where FDI represents new foreign investments, i represents the specific areas related to the new flight at time t, and j is the control group not covered by the new flight in the same year.
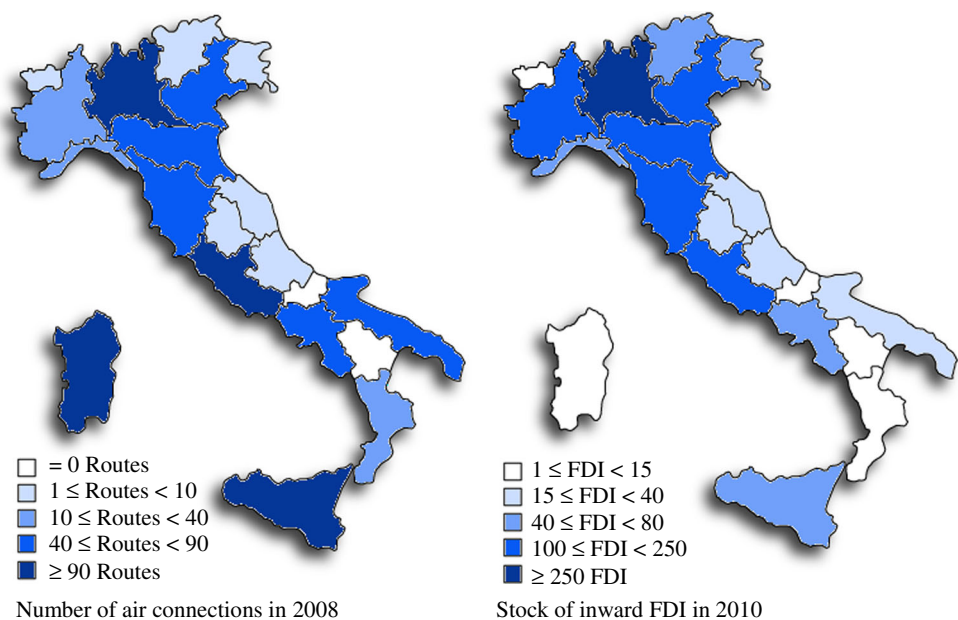
In order to improve our methodology and check the robustness of the results we also employ two different measures of FDI. The first is simply the number of FDIs generated, the second is the amount of FDIs, measured in terms of the number of employees.

Summarizing, the procedure to estimate the impact was employed in the four scenarios reported in Table 2.

4 Results

Figure 2 shows the regional level of inward internationalization in 2010 and the air connections that were active in 2008.

We observed that the distribution of foreign affiliates across Italian regions is strongly asymmetric: 63.4 % of the headquarters of foreign affiliates were located in Northwestern regions (51.9 % in Lombardy alone) and 19.6 % in Northeastern regions; 12.7 % of investments were hosted by Central regions (Tuscany, Umbria, Marche, Lazio) and only 4.4 % by Southern regions.

The distribution of available air connections across Italian regions was also strongly asymmetric: the best-connected regions at the end of 2008 were Lombardy, Lazio, and the two Isles.

The very low level of connections (less than 20 routes) in Valle d'Aosta, Umbria, Molise, and Basilicata corresponded to a very low degree of regional inward internationalization (less than 20 inward FDIs). In general, regions in Italy that were characterized by a high level of air connections were also characterized by a high level of internationalization, and regions with no or very few connections had the lowest levels of internationalization.

When implementing the comparison group design, the differences between the target and control groups provide evidence of the effects due to establishment of new routes. Overall, in the first scenario (number of FDIs allocated to the new routes based on land-side accessibility), the variation between the number of new FDIs observed 2 years after the

Fig. 2 Air connections and inward FDI at regional level

☐ = 0 Routes	☐ 1 ≤ FDI < 15
☐ 1 ≤ Routes < 10	☐ 15 ≤ FDI < 40
☐ 10 ≤ Routes < 40	☐ 40 ≤ FDI < 80
■ 40 ≤ Routes < 90	■ 100 ≤ FDI < 250
■ ≥ 90 Routes	■ ≥ 250 FDI

Number of air connections in 2008   Stock of inward FDI in 2010

Table 3 Impact of the introduction of new routes

Scenarios	FDI in the target area			FDI in the control group			Impact
	$\Sigma FDI_{i,t-2}$	$\Sigma FDI_{i,t+2}$	%.	$\Sigma FDI_{j,t-2}$	$\Sigma FDI_{j,t+2}$	%	%.
Scenario 1	128.6	172.0	33.7 %	4,531.0	3,779.0	−16.6 %	50.3 %
Scenario 2	7,811.6	10,239.0	31.1 %	329,450.7	304,460.7	−7.6 %	38.7 %
Scenario 3	74.2	96.0	29.4 %	4,531.0	3,779.0	−16.6 %	46.0 %
Scenario 4	3,651.9	4,693.9	28.5 %	329,450.7	304,460.7	−7.6 %	36.1 %

creation of new connections compared with 2 years before was +43.4 for the target groups, from Eq. (2), and −752.0 for the control group, from Eq. (3). So, in the analyzed period, FDIs strongly decreased in the control group, while significantly increasing in areas connected by new routes.

$$\sum \left(FDI_{i,t+2} - FDI_{i,t-2}\right) = 172.0 - 128.6 = 43.4 \quad (2)$$

$$\sum \left(FDI_{j,t+2} - FDI_{j,t-1}\right) = 3779.0 - 4531.0 = -752.0 \quad (3)$$

In percentage terms, inward FDIs in the target group increased by 33.7 % overall in the 2 years after opening the new routes, from Eq. (4), while FDIs in the control group decreased by 16.6 % in the same period, from Eq. (5).

$$\frac{\sum \left(FDI_{i,t+2} - FDI_{i,t-2}\right)}{\sum FDI_{i,t-2}} = 43.4/128.6 = 33.7\% \quad (4)$$

$$\frac{\sum \left(FDI_{j,t+2} - FDI_{j,t-2}\right)}{\sum FDI_{j,t-2}} = -752.0/4531.0 = -16.6\% \quad (5)$$

The net impact of new routes on inward FDIs in Italy, 50.3 %, equal to 33.7 %—(−16.6 %), appears to be very significant.

Similar results were obtained in the other scenarios. In particular the net impact when considering the amount of FDI (i.e. Scenario 2 and 4) ranges from 36.1 to 38.7 %. When allocating the number of FDIs to the new routes weighting by access time and frequencies, the net impact percentage is 46 % (i.e. scenario 3).

The results should be meaningful for the government in formulating policies (Table 3).

Table 4 shows the number of new FDIs recorded in the 2 years prior and 2 years after creation of a new connection for the target area, for the 20 new routes with the highest number of FDIs. According to the results of descriptive statistics, the

Table 4 New routes with the highest number of FDIs generated

$Year_t$	Departure	Arrival	FDI_{it+2}	FDI_{it-2}	ΔFDI_i
2004	Palese Bari	Barcelona	5.0	0.0	5.0
2007	Orio al Serio Milan	Metz-Nancy-Lorraine	4.3	0.2	4.1
2005	Orio al Serio Milan	Newcastle	4.1	0.0	4.1
2006	Parma	Stansted London	4.0	0.4	3.6
2004	Fontanarossa Catania	Gatwick London	3.0	0.0	3.0
2004	Bolzano	Munich	2.8	0.0	2.8
2003	Galileo Galilei Pisa	Manchester	2.8	0.0	2.8
2005	Verona	Stuttgart	3.7	1.3	2.3
2005	Montichiari Verona	Newcastle	2.3	0.0	2.3
2006	Galileo Galilei Pisa	Billund	2.0	0.0	2.0
2003	Ciampino Rome	Hamburg	1.9	0.0	1.9
2007	Orio al Serio Milan	Marseille	1.9	0.0	1.9
2008	Guglielmo Marconi Bologna	Brussels S. Charleroi	2.2	0.4	1.7
2005	Malpensa Milan	Bristol	2.2	0.6	1.6
2005	Cristoforo Colombo Genova	Amsterdam-Schiphol	1.9	0.4	1.6
2007	Ciampino Rome	Vienna	1.5	0.0	1.5
2005	Fiumicino Rome	Rotterdam	1.5	0.0	1.5
2003	Orio al Serio Milan	Birmingham	2.8	1.3	1.4
2005	Galileo Galilei Pisa	Bournemouth	1.4	0.0	1.4
2008	Orio al Serio Milan	Saeve Gothenburg	3.0	1.6	1.4

introduction of a new connection had a positive impact on municipalities in the North, Center, and Southern regions of Italy, and was most relevant in the North. The most frequent airports in the top-20 positions were Orio al Serio airport in Milan (16 new FDIs) and Galileo Galilei airport in Pisa (more than 6 new FDIs). The first route on the list is from Bari airport, with 5 new FDIs generated from 2004 to 2006.

5 Concluding remarks

This paper has analysed the role of air connection in determining attractiveness of urban area for FDI inflows. We assume that the introduction of a new route, by reducing transport costs and facilitating tacit and complex knowledge flow, should increase the likelihood of FDI exchange between newly connected regions. By employing an innovative methodology, we find that FDIs increased overall by 33.7 % in the 2 years after opening of the new routes while FDIs in other similar areas decreased by 16.6 %. Similar results were obtained using different measures of FDI (i.e. the number of employees) and by weighting the routes by frequencies.

Given the substantial benefits that urban areas can obtain from attracting and promoting the headquarters of large firms and subsidiaries of smaller firms, our results provide new evidence of the contribution of transport infrastructures to local development. Even in areas with existing air services, further routes result effective in attracting additional FDIs.

As concern the case of Italy, the relatively low attractiveness for inward FDIs is reflected in the results of surveys conducted by several prominent international companies and institutions.[4] This low attractiveness can be attributed to a general "country effect," which is related to a number of factors that are frequently highlighted by the above-mentioned international surveys [3], including a lack of infrastructure. Therefore, we argue that infrastructure development, and air connectivity in particular, should become an integral part of the strategy to attract FDI inflows. Our results point to the importance for legislators and regulators to allow policies aiming to attract air services on single routes or to specific regions, as an alternative to (over)financing expensive new airports. Other ways in which Governments could attract new connections is by improving the legal authorization process and the airport land-side accessibility.

This study is the first attempt to evaluate the impact of the establishment of new routes on the local level of internationalization. The novelty of the methodology employed and the relevance of the empirical findings seem to justify broader research efforts on measuring and assessing the effects of air infrastructure on FDIs in other Countries and Regions. Moreover the findings of our study stress the need for additional empirical research in the area of international business and air connectivity, possibly addressing both the directions of causality of the two phenomena.

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[4] Italy ranks only 40th in the World Competitiveness Scoreboard 2010 of the IMD and 48th in the Competitiveness Index 2010–2011 of the World Economic Forum.

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