Does Internal Migration Affect Italian Domestic Tourism? A Panel Data Analysis

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Abstract

This paper proposes a dynamic panel data investigation on the role of interregional migration on Italian domestic tourism demand, using three panel estimators characterized by different homogeneity assumptions imposed on the parameters. A standard cointegration analysis is performed before proceeding to panel regressions. The results provide ample support for a strong positive relationship between per capita domestic tourism nights and per capita internal migration stock. This evidence extends the migration-tourism nexus, already established at the international level, to the intra-national scale, and reinforces the idea that host regions should not overlook the role of migration when designing their tourism policies.

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The nexus between immigration and tourism flows has become a topic highly regarded by researchers. The general aspects of this nexus are widely discussed in Williams and Hall (2002), where migration is fundamentally described as a one of the major determinant of tourism flows motivated by visits to friends and relatives (VFR). Following this work, more recent studies propose an extensive interpretation of this relationship. Accordingly, the connection between tourism and migration can go beyond the friends and relatives channel, involving other tourist categories such as those motivated by business and holiday purposes (Seetaram, 2012a).

This literature mainly refers to the role of international migration on overseas travel demand. Instead, the relationship between the internal migration and the domestic tourism is almost entirely overlooked. The only contribution that discusses this topic is the work of Boyne et al. (2002). In this analysis, however, domestic tourism is not taken as the main focus, but as a scenario where some conceptual criticalities of the relationship between VFR tourism and migration are stronger. Therefore, it seems implicit in their argument that the mechanisms behind this relationship do not change when shifting from the international context to the domestic one. Accordingly, internal migrants are likely to enhance domestic tourism flows between their home and host regions, expanding friendship- and kinship-based networks. Conversely, Boyne et al. (2002) say nothing about mechanisms, other than friends and relatives that might link internal migration to domestic tourism.

This lack of interest for the domestic context is somehow surprising, since countries with a long tradition of internal migration and tourist flows are not rare worldwide. Therefore, there exists ample room to develop investigations into the nexus between these two phenomena. This would be useful for both policy makers and private agents who are interested in boosting their regional tourism economy. The domestic tourism is, for industrialized countries, a major part of the overall tourism industry and produces considerable macroeconomic impacts in terms of both GDP and employment. Furthermore, at a regional level, the domestic segment represents an excellent mechanism for policy makers wishing to bring stability to local economies as it is the share of tourism demand that is less sensitive to preference changes and extraordinary international events.

The aim of this paper is to contribute to this field by proposing a heterogeneous dynamic panel investigation of the role of interregional migration on domestic tourism demand in Italy. We develop the analysis for the twenty Italian regions between 1987 and 2010, and estimate a tourism demand equation where the stock of internal migrants represents one of the driving variables of domestic tourists' choice. Other covariates included in the analysis are relative prices, per capita gross domestic product at destination, the number of per capita hotels and, finally, population density. The choice of the empirical model, as detailed below, has been guided by previous empirical literature and data availability.

Italy was chosen as a case study since both domestic tourism and migration have been important social and economic phenomena. Up to now, however, the two issues have been discussed separately; therefore information on possible links between them is non-existent. As far as tourism studies, the literature shows an uneven interest in the international component of Italian tourism demand and, aside from very recent contributions (Massidda and Etzo, 2012; Marroccu and Paci, 2013), the determinants of domestic tourism are almost entirely overlooked. Conversely, the literature on internal migration is extensive but mainly focuses on the role of economic variables, such as income and unemployment (cf., inter al., Piras, 2012; Etzo, 2011). The tourism phenomenon never appears in this strand of the literature.

The rest of the paper is organized as follows. The next section reviews the relevant empirical literature on tourism and migration. The two phenomena of tourism and migration in Italy are then presented. Afterward, the research proposal and the empirical approach are illustrated. Subsequently, empirical results are analyzed, and, finally, the conclusions are offered.

Related empirical literature

Empirical literature on the tourism-migration nexus mainly focuses on the role of international migration for overseas travel demand. Early studies on this topic include Smith and Toms (1978), Hollander (1982), and Dwyer et al. (1993) for the case of Australia and Qui and Zhang (1995) for Canada. These studies suggest a positive relationship between the two phenomena, but suffer from out-of-date datasets.

More recent econometric works supportive of a positive impact of migration on tourism are Genç (2013) and Law et al. (2013) for New Zealand; Seetaram and Dwyer (2009), Dwyer et al. (2010), Seetaram (2012a), Seetaram (2012b) for Australia; Prescott et al. (2005) for Canada; Tadesse and White (2012) for USA; Gheasi et al. (2011) for UK and Leitão and Shahbaz (2012) for Portugal.

For the case of New Zealand, Genç (2013) finds a positive role for the stock of foreign born individuals living in New Zealand with respect to inbound tourism flows. Law et al. (2013), estimate the impact of migration on tourism exports and imports of both foreign-born individuals living in New Zealand and of New Zealanders living overseas. Their estimates suggest that tourism is strongly linked with international migration and that the impact of immigration on inbound tourism is less intensive than on outbound tourism.

As for Australia, Dwyer et al. (2010) explore the key migration-related determinants of inbound and outbound tourism flows. Their findings indicate a substantial influence of migration on tourism. Focusing on inbound tourism, Seetaram and Dwyer (2009) and Seetaram (2012a) find a strong support of the migration-tourism nexus. Using a different perspective, Seetaram (2012b) investigates outbound tourism. Her results indicate a fairly high influence of migration on outbound flows, higher than that arising for the inbound case.

Prescott et al. (2005) analyze the role that immigrants play in influencing the demand for visits in Canada. The authors disaggregate the dataset by purpose of visit into four categories (VFR, vacation, work and education) and find that estimated elasticities vary across specifications. The contribution of Tadesse and White (2012), closely related to that of Prescott et al. (2005), finds a positive effect of the immigrants on the number of tourists arriving in the USA. Gheasi et al. (2011) highlight a positive relationship between migration and international tourism flows (inbound and outbound) between UK and various OECD countries; both total visits and VFR are considered. Finally, Leitão and Shahbaz (2012) detect a positive relationship between tourist arrivals and immigration for Portugal.

Turning to the domestic literature, the only contribution that can be quoted is the one handled by Boyne et al. (2002) who report the main findings of a 1999 survey of VFR tourism in four case study areas of rural Scotland. In particular, they highlight the existence of a causal relationship between migration and VFR tourism, and find that, when the “quality of life” considerations motivate both migrants and tourists, a complex circular set of inter-relationships might exist among the two phenomena. Accordingly, if during the first stage of the cycle tourism experiences inform “the search spaces of future migrants”, later migration creates the potential for VFR flows that may itself “inform the search spaces of future potential migrants”. Despite the relevance of its findings, this study remains very partial for several reasons. First of all, being a research survey, it does not estimate quantitatively the relationship between internal migration and domestic tourism. Second, the proposed investigation is quite out of date. Finally, it only focuses on VFR.

Tourism and migration in Italy

Tourism flows have increased steadily over time making the Italian tourism sector one of the largest in the world. Figure 1 shows the main dynamics of arrivals and overnight stays for the period 1987-2010, for both domestic and inbound components. All data are provided by the Italian National Institute for Statistics (ISTAT, various years, a, b). As we notice, domestic tourism is a major part of this industry, which accounts on average for 60% of both arrivals (59%) and overnight stays (61%).

Insert Figure 1

With respect to national destinations, ISTAT (2010) survey data[i] indicates that Italian tourist preferences have shown little changes over the last two decades, with the Northern macro-area of the country being the most popular (46% in 2010), followed by the South (31%), and the Centre (23%). The regional market shares, in terms of domestic arrivals and nights, have also remained quite constant over time with Emilia Romagna, Toscana and Veneto being amongst the most frequently chosen destinations (cf. Table 1). Leisure is the principal driving factor for Italians holidays, with shares of 62% and 79.5% on short- and long-term visits respectively, with VFR coming second and driving 34% of short-term stays and 18% of long visits. This is comparable to the international picture where VFR, together with religion and health, motivates an average of 27% of total inbound flows.

Insert Table 1

Let us now turn the attention to internal migration which, together with its international counterpart, has been of paramount importance for Italy's history. In particular, internal migration started to boom after WWII: in little more than twenty years (1951-1975), 3,708,392 individuals moved from the backward Southern regions to the Central and, above all, the Northern areas of the country (Pugliese, 2007). The phenomenon started showing a slight decrease during the late seventies and up to the mid-eighties (Faini et al., 1997), but from the mid-nineties a new wave of interregional migration flow has been recorded (Piras, 2005). Under the conceptual classification of Bell and Ward (2000),[ii] these movements can be considered permanent for at least two reasons. First, they are recorded on the basis of a "permanent change of usual residence" (ISTAT, various years c); secondly, Italian internal migration is mainly economic in nature with the labor force searching for better economic and social conditions. Such massive migration flows, spanned over decades, have generated a huge number of people living outside their region of origin, a number that has consistently increased over time. In the absence of official data, we construct the stock of internal migrants following the approach of White (2007), as detailed in Appendix A. It is interesting to note that, according to our calculation, in 2010 the stock of internal migrants climbed to over 13 million, approximately one fifth of the Italian population.

At a regional level (cf. Table 1), Lombardia, Piemonte and Lazio are the regions that register the highest immigrant stocks. This is unsurprising, given that internal migration flows during the sixties and seventies of the last century were drawn towards areas of soaring prosperity, high employment opportunities and elevated economic growth. Both Lombardia and Piemonte, with their manufacturing and service sectors, and Lazio with its large public sector, had all these characteristics. Conversely, the lowest stocks of immigrants are reported by Valle d'Aosta, Molise and Basilicata, the smallest regions of the country.

Research proposal and empirical approach

Methodology

This paper proposes a panel investigation of the relationship between domestic tourism and internal migration for the twenty Italian regions over the period 1987-2010 (N = 20, T = 24). The analysis is performed within a tourism demand theoretical framework. The number of per capita domestic bed nights in region *i* and time *t* ($np_{i,t}$) is assumed to depend on the ratio of the stock of internal migrants to resident population in the region of destination ($imp_{i,t}$), plus four other determinants.

In choosing the dependent variable, the long-run perspective of our study led us to consider either bed nights or arrivals, since both are very well documented and offer longer homogenous time series than alternative measures. We opted for domestic bed nights since it can be considered a slightly more appropriate measure for exploring the nexus between Italian migration and tourism flows. The problem is that some regions with excellent economic performance (Lombardia, Veneto, Emilia Romagna, Toscana, and Lazio), are strongly characterized by business tourism which tends to push up the number of arrivals. These regions, due to a low unemployment rate, also register high interregional migration flows and, therefore, can deliver distorted estimated coefficients between tourism and migration. It is worth pointing out that the number of nights as dependent variable refers to the formal accommodation sector only. This means that non official accommodations, such as those provided by friends and relatives, are totally missed.

Our choice of independent variables, other than migration stocks, has been constrained by limited homogeneous long-term data availability; therefore, we rely mainly on previous empirical works which stress the role of both economic and non-economic factors in explaining tourists' behaviour. In particular, as for economic determinants, we consider relative prices ($pr_{i,t}$) given by the ratio of region *i* consumer price index deflator (CPI) to its national counterpart (the relative price index for region *i* excludes region *i*'s index from the nationwide average), and the real per capita gross domestic product at destination ($yp_{i,t}$) (constant-2000 price). The variable $pr_{i,t}$ is meant to capture whether regional destinations act as substitute, and the extent to which the different regions compete through price, thus a negative sign is expected. $yp_{i,t}$ tests whether wealth can positively affect the amount of tourism that a region can attract. Turning to non-economic factors, we include two destination-specific attributes: the number of per capita hotels ($hp_{i,t}$) and population density calculated as the ratio of population per square kilometre ($dens_{i,t}$). The variable $hp_{i,t}$ measures a destination's capacity of accommodate an increasing number of tourists, and it serves to assess the general role of tourism infrastructures in explaining tourist demand. Empirically, a positive and significant coefficient for this variable means that it plays an important part in explaining tourism expansion and that shortage of hotel accommodation, or other types of infrastructure, may represent a constraint for the development of a destination. Finally, the variable $dens_{i,t}$ tests to which extent the degree of population concentration affects tourist demand. The impact of population density on tourism flows could be positive or negative, depending on whether tourists have a preference for less crowded areas or not. Details on data sources are reported in Appendix B.

Empirical approach

Let us assume that the long-run tourism demand function in log form is as follows:

$$lnp_{i,t} = \beta_{0,i} + \beta_{1,i} lpr_{i,t} + \beta_{2,i} lyp_{i,t} + \beta_{3,i} limp_{i,t} + \beta_{4,i} lhp_{i,t} + \beta_{5,i} ldens_{i,t} + \mu_i + \varepsilon_{i,t} \quad (1)$$

where μ_i denotes the unobservable region-specific fixed effects and $\varepsilon_{i,t}$ indicates the remainder disturbance term which is assumed to be independently distributed across i and t, with mean 0 and variance $\sigma_i^2 > 0$. Since all variables are in logs, coefficients can be read in terms of elasticity.

Whenever per capita domestic bed nights do not adjust instantaneously to changes in its determinants, possibly due to habit or to other elements of friction, a dynamic structure should be given to the long-run tourism demand function (1). Typically, in order to accomplish that, an Autoregressive Distributed Lags (ARDL) model is estimated. The ARDL (1, 1, 1, 1, 1, 1) dynamic panel specification of eq. (1) is given by:

$$(2) \qquad \begin{aligned} lnp_{i,t} = {} & \lambda_i lnp_{i,\,t-1} + \gamma_{10,i} lpr_{i,\,t} + \gamma_{11,i} lpr_{i,\,t-1} + \gamma_{20,i} lyp_{i,\,t} + \\ & + \gamma_{21,i} lyp_{i,\,t-1} + \gamma_{30,i} limp_{i,t} + \gamma_{31,i} limp_{i,t-1} + \gamma_{40,i} lhp_{i,t} + \\ & + \gamma_{41,i} lhp_{i,t-1} + \gamma_{50,i} ldens_{i,t} + \gamma_{51,i} ldens_{i,t-1} + \mu_i + \varepsilon_{i,t} \end{aligned}$$

If the variables are $I(1)$ and cointegrated, then the error term is $I(0)$ for all i and eq. (2) can be re-parameterized as follows:

$$(3) \qquad \begin{aligned} \Delta lnp_{i,t} = {} & \phi_i \left(lnp_{i,\,t-1} - \beta_{0,i} - \beta_{1,i} lpr_{i,\,t} - \beta_{2,i} lyp_{i,\,t} + \beta_{3,i} limp_{i,t} + \beta_{4,i} lhp_{i,t} + \beta_{5,i} ldens_{i,t} \right) + \\ & + \gamma_{11,i} \Delta lpr_{i,\,t} + \gamma_{21,i} \Delta lyp_{i,\,t} + \gamma_{31,i} \Delta limp_{i,t} + \gamma_{41,i} \Delta lhp_{i,t} + \gamma_{51,i} \Delta ldens_{i,t} + \varepsilon_{i,t} \end{aligned}$$

where:

$$\phi_i = -(1-\lambda_i) \qquad \beta_{0,i} = \frac{\mu_i}{1-\lambda_i} \qquad \beta_{1,i} = \frac{\gamma_{10,i} + \gamma_{11,i}}{1-\lambda_i} \qquad \beta_{2,i} = \frac{\gamma_{20,i} + \gamma_{21,i}}{1-\lambda_i}$$

$$\beta_{3,i} = \frac{\gamma_{30,i} + \gamma_{31,i}}{1-\lambda_i} \qquad \beta_{4,i} = \frac{\gamma_{40,i} + \gamma_{41,i}}{1-\lambda_i} \qquad \beta_{5,i} = \frac{\gamma_{50,i} + \gamma_{51,i}}{1-\lambda_i}$$

and the error correction coefficient ϕ_i is expected to be negative in order to adjust deviations from the long-run equilibrium.

Eq. (3) is the error-correction re-parameterization of the ARDL (1, 1, 1, 1, 1, 1) dynamic panel specification model and represents our starting point for estimating long and short-run relationships between per capita domestic bed nights and the covariates considered in the analysis.

In principle, several panel estimation procedures based on single equation approaches, are available to estimate eq. (3). Choosing among them is mainly a question of what is considered the appropriate degree of "poolability" of the available data. Given that complete information on this point is often unavailable, the empirical literature suggests comparing the performance of different panel estimators with different degrees of homogeneity imposed by the slope coefficients. In this perspective, we consider three of the most commonly employed estimators, namely the dynamic fixed effects (DFE), the pool mean group (PMG) and the mean group (MG).

The DFE estimator pools cross-sectional observations by imposing common long- and short-run dynamics, convergence coefficient and error variances. Only the intercepts are allowed to differ across units. This estimator is particularly suitable as a control for country-specific effects. With respect to eq. (3), when a DFE estimation is implemented, the following parameter restrictions are imposed:

$$\lambda_i = \lambda \qquad \beta_{ki} = \beta_k \qquad \gamma_{k0,i} = \gamma_{k0} \qquad \gamma_{k1,i} = \gamma_{k1} \qquad (k = 1 \ldots 5)$$

The PMG estimator proposed by Pesaran et al. (1999) allows for cross-section heterogeneity in the short-run parameters (intercepts, short-run coefficients, speed of convergence, the error variances) and constrains the long-run coefficients to be the same across units. Using the PMG estimator, the following restrictions to eq. (3) are required:

$$\beta_{ki} = \beta_k \qquad (k = 1 \ldots 5)$$

Finally, there is the MG estimator proposed by Pesaran and Smith (1995) that allows both the intercepts and the slope coefficients to differ across units. The MG estimates separate equations for each cross-sectional unit and then averages the estimated coefficients. When estimating eq. (3) by the MG estimator, no restrictions are imposed on parameters.

The empirical performance of these three estimators depends both on panel dimension and on the degree of homogeneity across the statistical units. When T is large, comparisons between the three estimators is mainly in terms of the general trade-off between consistency and efficiency. In more detail, the MG estimator provides a consistent mean for the long-run coefficients, but these will be inefficient if slope homogeneity holds. Under long-run slope homogeneity, PMG estimates are consistent and efficient. Finally, if both short- and long-run restrictions are valid, DFE estimates dominate heterogeneous estimators in terms of efficiency. At the same time, if homogeneity does not hold, pooled estimates suffer from an upward heterogeneous bias. When *T* is small, all the three estimators suffer from a lagged dependent variable bias which leads to underestimated short-run parameters. For the case of DFE and PMG, such a bias offsets, at least partially, the upward heterogeneous bias that arises if there is no homogeneity across units. Furthermore, the MG estimates are very sensitive to outliers which are a common feature of the group-specific estimates in many applications (Hsiao et al., 1999). Accordingly, both DFE and PMG tend to perform better than MG when the time dimension of the panel is small. However, since a full homogeneity assumption "(...) can produce inconsistent and potentially very misleading estimates of the average values of the parameters unless the slope coefficients are identical" (Pesaran et al., 1999), and given that in most panels statistical tests suggest that the slope coefficient parameters differ significantly across units, the PMG estimator is to be preferred to the DFE estimator.

In sum, the choice between the three estimators relies on several arguments. In our case, the time dimension suggests the use of PMG, but the homogeneity degree remains an issue to be considered. Therefore, as it is common practice within this literature, we compare the performance of the three estimators by testing the short-run and long-run homogeneity restrictions using the Hausman and log-likelihood ratio tests.

The empirical approach that we have sketched so far does not take into account the spatial dimension of the data, as it is becoming common practice in regional studies. Actually, in our case, given the limited number of spatial units, there is no strong empirical support to shift the analysis in the framework of spatial panel data econometrics.[iii] However, taking into consideration the great relevance of this issue, we test for the presence of spatiotemporal dependence in the residuals of our estimates, and as a further diagnostic check we present the spatiotemporal version of the Moran index (STMI) very recently proposed by López et al. (2011). This test has the advantage of being robust to different types of distribution functions and has satisfactory finite sample properties.

Results

Unit root and cointegration tests

The standard methodology for estimating long-run relationships between variables is to first establish their order of integration, then test whether there is at least one linear relationship between them. As for unit root testing, we apply three commonly used tests, namely Im et al. (2003), Maddala and Wu (1999) and Pesaran (2007) (IPS, MW and PESARAN, hereafter). The results are reported in Table 2 where the variables in levels are tested with and without trend, whereas only the constant is considered for variables in first difference.

Insert Table 2

As shown in the table, the overall results taken together favor the hypothesis of $I(1)$-ness for all the variables of our dataset, despite some differences emerge in the outcomes of the three tests considered. More in details, the MW test rejects the null of non-stationarity for *limp*, *lyp* and *lpr* in levels if the time trend is not considered, whereas for *lhp* in levels the null of non-stationarity is rejected when the test is performed with both constant and trend. After a visual inspection, this result appears perfectly consistent with the characteristics of our data which reveal a smooth behavior of *lhp*. As for the PESARAN test, again results can be interpreted in favor of $I(1)$-ness for all the variables, but some problems can be noted. In particular, the null of non-stationarity is rejected for *lhp* in levels, if the test is performed with both constant and trend, and for *lpr* in levels, if the time trend is not considered. Finally, the IPS test gives clear-cut evidence of *I*(1)-ness for all the variables. Importantly, the three tests are unanimous in rejecting the null of non-stationarity for all the variables in first differences.

Given these results, we can proceed with the second step of the empirical analysis by testing for cointegration. In this regard, since our regional data set is likely to be characterized by idiosyncratic short- and/or long-run dynamics across units, from the numerous test opportunities offered by the empirical literature, we chose to follow the approach of Pedroni (1999). He suggests a set of seven cointegration tests that allow for heterogeneity among individual panel units. In particular, four tests are based on the within dimension of the panel (panel ν statistic, panel ρ statistic, panel PP statistic and panel ADF statistics) and three on the between dimension (group ρ statistic, group PP statistic and group ADF statistics). Pedroni (1999) shows that the panel ADF and the group ADF statistics have better small sample properties than the other tests. This is important in our panel, given its relatively short time dimension. Table 3 reports the results. The panel ADF and group ADF tests, namely those that have better small sample properties, strongly reject the null hypothesis of no-cointegration at 1% significance level, whether or not a time trend is taken into account. Reinforcing these two tests, also the panel PP and the group PP tests strongly support the existence of cointegration in the series. Thus, without fear of spurious results, we can conclude that there exists at least one cointegrating vector that renders stationary a linear combination of the variables

Insert Table 3

Estimated long-run elasticities

Given the existence of cointegration among the variables of the model, in this section we can go through the estimation of eq. (3). The results are reported in Table 4. Let us first concentrate on the issue of the estimated residuals' spatial dependence. Accordingly to the STMI test, the null hypothesis of spatial independence can never be rejected. This result allows us to go on without fear of incurring in misspecification biases due to omitted spatial dependence.

Insert Table 4

Turning now to the general performance of the three estimators, we see that the MG estimated coefficients have the expected signs, though none of them is significant at conventional levels. Moving from MG to PMG strongly reduces the standard errors, making all coefficients significant up to 1%. Finally, with DFE two out of five variables lose their explicative power.

To compare the performance of the three models, we investigate whether the restrictions imposed on the long-run coefficients by both the DFE and PMG against the MG are rejected or not. The Hausman test does not reject the restrictions at 1% significance level. Accordingly, attention must be restricted to PMG and DFE. In this regards, some arguments induce us to prefer the former. First of all, if both long- and short-run homogeneity is imposed, then the maximized log-likelihood falls from 835.91 to 658.71, suggesting that PMG is better specified than DFE. Secondly, the DFE is likely to deliver biased and less precise results, since restrictions might be too strong for the panel of the well-diversified twenty Italian regions. In conclusion, PMG estimates emerge as the most reliable[iv] and, consequently, those worthy of further discussion.

Let us first concentrate on the main result of this study, the statistically robust positive long-run nexus between internal migration and domestic tourism nights. The estimated elasticity of 0.81 clearly indicates that the number of nights spent by tourists in a given region can increase if this region records an increase in the stock of internal migrants. It is interesting to observe that this elasticity is higher than those detected in all previously cited studies on international flows. Additionally, due to the nature of the dependent variable, which excludes friends and relatives hosted outside formal accommodation structures, this elasticity might even be underestimated. The only work which reports an estimate higher than 0.81 is Tadesse and White (2012), where an elasticity of 1.4 is reported for the USA inbound tourism market.

To further test the robustness of this statement, we check whether our estimates are sensitive to the definition of the $im_{i,t}$ variable. More in detail, we control for possible biases due to the calculation of $im_{i,1987}$, introducing up to 5% positive and negative variations to the initial value of the regional series and repeatedly estimate eq. (3). The output of this exercise, available from the authors upon request, provides ample support to the robustness of PMG estimates and, above all, to the strong influence of migration on the domestic tourism industry.

To give a clearer insight of this influence, for each Italian region we calculate the average variation of the number of tourist nights generated by the estimated elasticity of 0.81. Table 5 describes the results of this simulation. In particular, column (a) reports the stock of per capita internal migrants; columns (b) and (c) give evidence of domestic nights per capita and their variation implied by our estimated elasticity; column (d) reports the variation of domestic nights in levels and, finally, column (e) presents the number of new domestic nights generated by any new internal migrant.

The impact of migration on tourism flows is relevant and highly different across regions, depending on the weights the two phenomena record at regional level. In relative terms (column c), the highest impact is registered for Valle d'Aosta and Trentino Alto Adige where tourism reports the highest weights (column b). Valle d'Aosta and Trentino Alto

Adige are also the regions where the highest number of domestic nights is activated by each new migrant (column e). The situation is reversed when absolute values are considered (column d). In this case, the regional ranking puts Emilia Romagna, Veneto and Toscana on top.

The results of this simulation highlight the presence, at domestic level, of an almost entirely overlooked channel through which the domestic tourism industry could be expanded. This may be particularly helpful to public and private agents when they are called on to tailor their respective business strategies and policy actions. In this scenario, special offers and marketing initiatives exploiting the networks created by migrants could be very useful.

Insert Table 5

Moving now the attention to the other covariates, let us consider the variable *lpr*. The estimated elasticity of -1.38 suggests that Italian residents are highly sensitive to price fluctuations when choosing a national destination. This means that domestic tourists are discouraged from visiting a region whose higher prices reduces their purchasing power when compared to alternative destinations. Our estimated coefficient, above the range of values suggested for the international context (cf., for instance, the average elasticity of -0.73 delivered by Khadaroo and Seetanah, 2008), confirms the contribution of Massidda and Etzo (2012) where it is highlighted the high responsiveness of Italian domestic tourism to relative price variations (-8.98). It follows that for a region the chance to boost its internal tourism market relies strongly on its ability to compete with alternate destinations by limiting the costs faced by tourists for their entire holiday. This goal requires the reduction of the service prices with the highest incidence on the total holiday cost, such as housing and transport. For many regions, this implies a commitment on the part of policy makers in medium-long term investments. In addition, agreements between the central and local governments, as well as actions in support of private enterprises, might be highly effective.

As far as the variable *lyp* is concerned, the estimated elasticity of 0.35 suggests that the general wellbeing of a region positively affects the amount of tourism that it attracts. This result is not easy to extract from the existing literature, since gross domestic product of the hosting region is rarely considered in tourism demand models. However, studies investigating the nature of the long-run relationship and causality linking tourism to growth are clearly supportive for our findings (Cf., inter al., Balaguer and Cantavella, 2002). According to this strand of literature, there are several channels through which the increasing levels of per capita gross domestic product might stimulate tourism flows. High quality of tourism infrastructure and management of local resources are only two of the many advantages that the regional wellness can bring to the tourism activity. For policy makers this result represents an incentive to stimulate the overall economic performance of a region, instead of limiting attention to the tourism sector. Higher growth, in fact, means that more public and private resources can be called upon to improve the general quality of local tourism industries.

A positive estimated impact on domestic tourism flows is also detected for the variable *lhp* with an elasticity of 0.90.This result is already established at the international level where tourism infrastructure is seen playing an important part in explaining tourism development. Khadaroo and Seetanah (2008) estimate an average elasticity of 0.22. The implications are twofold. On the one hand, investments aimed at increasing the availability of tourism accommodation facilities turn out to be necessary for the development of local tourism industries. Therefore, policy makers should have an explicit focus on long-term planning. To assist this decision process, accurate forecasts are crucial since a destination, once developed, is unlikely to decrease rapidly. At the same time, proper marketing strategies turn out fundamental to avoid unused hotel rooms (or airplane seats, vacant apartments and hire cars) which cannot be stored. On the other hand, to avoid detrimental effects on the environment, public planners should create the conditions for a sustainable expansion of the tourism activity.

Finally, as far as the variable *ldens* is concerned, our estimated elasticity of 0.58 reveals that, in Italy, domestic tourism flows are positively associated with the population density. This result confirms previous empirical work of Massidda and Etzo (2012), who estimate an elasticity of 0.71, and suggests that, in Italy, the degree of congestion is not an obstacle to the development of a tourism destination.

Conclusions

This paper proposes a panel cointegration approach to investigate the empirical relationship between domestic tourism and internal migration in Italy. The analysis is developed within a standard tourism demand framework where the stock of internal migrants in a specific region is considered to be a pull factor for tourism flows from the rest of the country, together with traditional variables, such as relative prices, per capita gross domestic product, number of hotels and population density.

The estimated elasticities provide ample support for a strong, positive relationship between domestic tourism and internal migration in Italy. Interestingly, this relationship might even be underestimated since a big part of the tourism demand generated by migration regards the VFR component that is not entirely captured by our dependent variable. This happens for those tourists that are hosted by friends and relatives and, therefore, omitted by official statistics. For the case of Italy, it could be an important missed part of the tourism phenomenon since in this country, families and friends tend to keep very strong relationships even when living in different regions. For instance, it is very common for migrants to go back to their home regions to celebrate special events, or that friends and relatives travel for holidays to regions where migrants reside in order to reduce the costs of accommodation and other services such as transport. Hence, according to our results, it is reasonable to assume that the tourism-migration link might involve non-VFR tourists, namely tourists mainly motivated by holiday and business purposes. This relationship may be based on different mechanisms. For instance, immigrants who visit their region of origin may promote their hosting region, explicitly or implicitly. More in general, awareness that regional fellow citizens reside in another region, may contribute to stimulate visit to that region. There are, moreover, trips generated by business relations between immigrants and home region residents. Business activities, such as restaurants and shops managed by immigrants in the hosting region, may require importing typical regional products.

Taking into account the upsurge of internal migration flows, the empirical evidence provided in this paper should be taken seriously into account by regional and national policy makers when designing their policies. Also private stakeholders, such as hotels, airlines and tour operators, should be conscious of the relevance of our findings when forming their business strategies.

The empirical analysis of this paper contributes to the literature in two main directions. First of all, to the best of our knowledge, it is the first attempt to estimate the nexus between domestic tourism and internal migration. From this point of view, the evidence provided aligns with the international literature and reinforces the idea that countries or regions that serve as host should take particular note of internal migrants when designing their tourism policies. This result is of great interest for the international tourist community, as a whole and, specifically for Italy. For this country, the established tourism-migration nexus highlights the presence of an almost entirely overlooked channel thought which the domestic tourism industry could be expanded.

The second important contribution of this paper is related to the proposed empirical approach. It is the first application of heterogeneous panel techniques in the tourism-migration literature. Indeed, the existing empirical literature previously briefly reported, usually applies pooled ordinary least squares, simple homogeneous paned data estimators or other estimation techniques, such as Generalized Method of Moments, that completely ignore individual heterogeneity.

Despite its novelties, this paper leaves ample room for future investigations. First of all, since the results obtained concern Italy, studies that analyze the tourism-migration nexus at domestic level for other countries are necessary. Secondly, analyses of tourism demand disaggregated in terms of tourist's motivations would be very useful to draw more precise policy suggestions. Thirdly, being of great interest to policy makers in both the tourism and immigration fields, the causal interactions characterizing the variables under analysis should be a matter of careful analysis.

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Appendix A – Computation of the stock of internal migrants.

Since ISTAT only provides data on interregional migration flows we compute the stock of internal migrants, $im_{i,t}$, , by refering to White (2007) and calculate the variable as follows:

(A1) $$im_{i,t} = im_{i,t-1} + inflow_{i,t} - \delta_{i,t}\, im_{i,t-1} = inflow_{i,t} + (1-\delta_{i,t})\, im_{i,t-1}$$

where $inflow_{i,t}$ represents the flow of immigrants in region i from all other Italian regions at time t (hence, intraregional migration flows are excluded from the computation) and $\delta_{i,t}$ is a factor that adjusts for return migration and the mortality rate among immigrants. Given the unavailability of census data on the stock of immigrants, our approach differs from the one proposed by White (2007) in two main respects. First, instead of an intra-census average δ_i, we calculate an annual adjustment factor using regional mortality and emigration rates registered, on average, among the whole population:

(A2) $$\delta_{i,t} = (em_{i,t} + mor_{i,t})$$

where, for region i, $em_{i,t}$ is the internal emigration rate and $mor_{i,t}$ is the mortality rate, both expressed as a percentage of the resident population. Secondly, the value of the regional stock at the beginning of the period under analysis, namely $im_{i,1987}$, has been computed as follows:

(A3) $$im_{i,1987} = inflow_{i,1987} + (1-\delta_{i,1986}) \times \sum_{t=1964}^{1986} inflow_{i,t}$$

We approximate the regional immigrants stock at 1986 by summing up all previously available flows and correct it by taking into account the regional mortality and emigration rates registered in 1986.

Appendix B – Variables description and statistical sources.

Variable	Description	Source
$np_{i,t}$	Ratio of domestic bed nights over resident population	ISTAT (various years a, b, e)
$imp_{i,t}$,	Ratio of internal migrants stock over resident population	ISTAT (various years c, e, d)
$pr_{i,t}$	Ratio of region *i* consumer price index deflator (CPI) to its national counterpart	ISTAT (2005, 2011)
$yp_{i,t}$	Ratio of real gross domestic product at destination over resident population	SVIMEZ (2011)
$hp_{i,t}$	Ratio of number of hotels over resident population	ISTAT (various years a, b)
$dens_{i,t}$	Ratio of population to square kilometres	ISTAT (various years e)

Table 1 – Arrivals, nights and stock of internal immigrants (average values 1987-2010)

	Arrivals	Nights	Immigrants
Northern regions			
PIEMONTE	1701825	5660928	1308690
VALLE D'AOSTA	596684	2463307	44757
LOMBARDIA	4686275	13452000	2084492
TRENTINO A.A.	3147588	17276808	148930
VENETO	4302145	20204634	686635
FRIULI V.G.	923184	4580294	272021
LIGURIA	2301977	11333204	521622
EMILIA R.	5330238	26526515	884956
Central regions			
TOSCANA	4579095	19048536	753484
UMBRIA	1248919	3311916	185038
MARCHE	1491195	9035520	276365
LAZIO	3611412	10486220	1248909
Southern regions			
ABRUZZO	1090415	5407276	282310
MOLISE	152960	493562	85146
CAMPANIA	2533253	10192913	774178
PUGLIA	1674278	7567553	632251
BASILICATA	291714	1182655	137631
CALABRIA	936099	5070713	399567
SICILIA	2255201	7179117	718613
SARDEGNA	1260594	6698463	282876

Table 2 – Panel unit roots tests

	MW			IPSHIN			PESARAN		
	Levels		First diff.	Levels		First diff.	Levels		First diff.
	C	CT	C	C	CT	C	C	CT	C
$lnp_{i,t}$	38.05 (0.56)	47.43 (0.19)	405.64 (0.00)	-1.42 (0.69)	-2.16 (0.51)	-4.91 (0.00)	-2.05 (0.08)	-2.37 (0.38)	-4.66 (0.00)
$lyp_{i,t}$	111.54 (0.00)	6.10 (1.00)	219.46 (0.00)	-1.63 (0.30)	-2.04 (0.75)	-4.47 (0.00)	-2.33 (0.74)	-2.19 (0.72)	-4.28 (0.00)
$limp_{i,t}$	240.97 (0.00)	3.50 (1.00)	124.63 (0.00)	-0.30 (1.00)	-1.57 (1.00)	-3.89 (0.00)	-1.65 (0.68)	-2.12 (0.82)	-3.53 (0.00)
$lhp_{i,t}$	36.14 (0.64)	90.38 (0.00)	433.32 (0.00)	-0.33 (1.00)	-2.03 (0.76)	-4.67 (0.00)	-0.74 (1.00)	-2.86 (0.00)	-4.52 (0.00)
$lpr_{i,t}$	65.92 (0.01)	49.44 (0.14)	258.48 (0.00)	-1.76 (0.11)	-2.30 (0.24)	-3.98 (0.00)	-2.21 (0.02)	-2.37 (0.39)	-3.76 (0.00)
$ldens_{i,t}$	14.44 (1.00)	18.28 (1.00)	184.23 (0.00)	0.43 (1.00)	-1.85 (0.95)	-3.74 (0.00)	0.07 (1.00)	-1.75 (1.00)	-3.55 (0.00)

The lag structure for the IPSHIN and PESAN tests has been selected through the Akaike information criterion. *p*-values in parentheses

Table 3 – Panel cointegration tests

	C	*C T*
Panel *v* statistic	-1.46	-2.94
	(0.93)	(1.00)
Panel *ρ* statistic	1.82	3.49
	(0.96)	(1.00)
Panel PP statistic	-4.26	-5.29
	(0.00)	(0.00)
Panel ADF statistic	-5.67	-5.28
	(0.00)	(0.00)
Group *ρ* statistic	3.32	4.66
	(1.00)	(1.00)
Group PP statistic	-4.83	-12.41
	(0.00)	(0.00)
Group ADF statistic	-5.28	-6.01
	(0.00)	(0.00)

The lag structure has been selected through the Akaike information criterion. *p*-values in parentheses.

Table 4 – Empirical estimates of short- and long-run elasticities

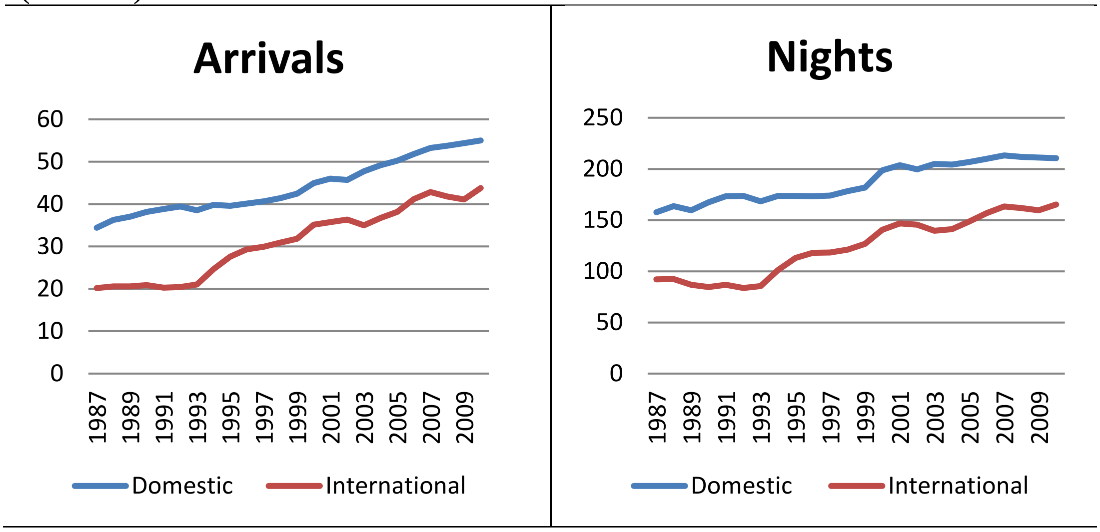
	MG	DFE	PMG
	Convergence coefficients		
	-0.73	-0.21	-0.42
	(0.00)	(0.00)	(0.00)
	Long-run coefficients		
$lpr_{i,t}$	-18.22	-3.01	-1.38
	(0.29)	(0.01)	(0.00)
$lyp_{i,t}$	3.49	2.00	0.35
	(0.29)	(0.00)	(0.03)
$limp_{i,t}$	-2.00	-0.82	0.81
	(0.62)	(0.11)	(0.00)
$lhp_{i,t}$	0.59	0.61	0.90
	(0.68)	(0.00)	(0.00)
$ldens_{i,t}$	1.53	1.05	0.58
	(0.60)	(0.18)	(0.00)
	Short-run coefficients		
$\Delta\ lpr_{i,t}$	0.36	-0.74	-0.26
	(0.76)	(0.22)	(0.62)
$\Delta\ lyp_{i,t}$	0.39	0.09	0.43
	(0.05)	(0.52)	(0.04)
$\Delta\ limp_{i,t}$	0.19	2.78	1.04
	(0.93)	(0.01)	(0.53)
$\Delta\ lhp_{i,t}$	-1.20	-0.06	-0.20
	(0.61)	(0.59)	(0.31)
$\Delta\ ldens_{i,t}$	1.20	1.80	0.53
	(0.63)	(0.08)	(0.72)
Hausman test		0.00	4.22
		(1.00)	(0.52)
Log-likelihood	976.48	658.71	835.91
STMI	0.55	1.00	0.09
	(0.50)	(0.50)	(0.50)

p-values in parentheses.

Table 5 – Long-run impact of migration stock (average values 1987-2010)

Regions	Stock of per capita internal migrants	Domestic nights per capita	Variation of domestic nights	Variation of domestic nights	New domestic nights for every new immigrant
	(a)	(b)	(c)	(d)	(e)
Northern regions					
PIEMONTE	0.30	1.31	0.01	45854	3.51
VALLE D'AOSTA	0.37	20.57	0.17	19953	44.74
LOMBARDIA	0.23	1.47	0.01	108961	5.23
TRENTINO A.A.	0.16	18.36	0.15	139942	93.73
VENETO	0.15	4.41	0.03	163658	22.02
FRIULI V.G.	0.23	3.81	0.03	37100	13.63
LIGURIA	0.32	6.88	0.06	91799	17.57
EMILIA R.	0.22	6.56	0.05	214865	24.26
Central regions					
TOSCANA	0.21	5.32	0.04	154293	20.45
UMBRIA	0.22	3.93	0.03	26827	14.47
MARCHE	0.19	6.10	0.05	73188	26.39
LAZIO	0.24	1.99	0.02	84938	6.81
Southern regions					
ABRUZZO	0.22	4.21	0.03	43799	15.49
MOLISE	0.26	1.51	0.01	3998	4.70
CAMPANIA	0.13	1.77	0.01	82563	10.68
PUGLIA	0.15	1.86	0.02	61297	9.69
BASILICATA	0.23	1.97	0.02	9580	7.02
CALABRIA	0.19	2.47	0.02	41073	10.34
SICILIA	0.14	1.42	0.01	58151	8.10
SARDEGNA	0.17	4.05	0.03	54258	19.19

Figure 1. Domestic-international arrivals and overnight stays 1987-2010 (*millions*)



Source: ISTAT (various years a, b)

[i]In Italy a long tradition of surveys on tourism demand implemented by ISTAT started in 1959. Since 1997, the survey "Viaggi e vacanze" reports quarterly data on Italian residents tourism flows to both national and foreign destinations.

[ii] Under the conceptual classification in Bell and Ward (2000), the distinction of permanent migration with temporary mobility is based on two dimensions: space and time. In particular, in terms of space, Bell and Ward (2000) define permanent migration as a permanent change of usual residence, and temporary mobility as a non-permanent move of varying duration. According to the authors, permanent migration mainly depends on economic motivations.

[iii] The statistical properties of the spatial estimators have been studied for large N and small T (Kapoor et al., 2007), for small N and large T (Lee and Yu, 2010) but not for small N and small T.

[iv]Reliability of PMG is also granted by its statistical properties extensively discussed by Pesaran et al. (1999).